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BVY 02-41

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

Reference: (a) Letter, VYNPC to USNRC, "Technical Specification Proposed Change No. 250, Scram and Isolation Valve Closure Functions of the Main Steam Line Radiation Monitors," BVY 02-18, dated March 19, 2002.

Subject: **Vermont Yankee Nuclear Power Station**
License No. DPR-28 (Docket No. 50-271)
Technical Specification Proposed Change No. 250, Supplement No. 1
Scram and Isolation Valve Closure Functions
of the Main Steam Line Radiation Monitors

By letter dated March 19, 2002 (BVY 02-18) Vermont Yankee (VY) proposed to amend its Facility Operating License, DPR-28 by eliminating the reactor scram and main steam isolation valve closure requirements associated with the main steam line radiation monitors (MSLRMs) and modifying other requirements related to MSLRM trip functions. The information provided herewith supplements and revises that request for a license amendment.

Attachment 1 to this letter contains additional information in support of the proposed change. Portions of the original change request are revised. The information provided in the original application as Attachment 2 (determination of no significant hazards consideration) and the determination of no required environmental review are unchanged. For the sake of completeness, and because of additional changes, the associated Attachment 3 (mark-up of the current Technical Specification pages) and Attachment 4 (retyped Technical Specification pages) that were provided by the March 19, 2002 letter are being replaced in their entirety by the enclosed Attachments 3 and 4, respectively.

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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 & Regulatory Affairs

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 & 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 WINDHAM COUNTY VERMONT

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

Attachments

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

Docket No. 50-271
BVY 02-41

Attachment 1

Vermont Yankee Nuclear Power Station

Proposed Technical Specification Change No. 250, Supplement No. 1

Scram and Isolation Valve Closure Functions of the
Main Steam Line Radiation Monitors

Supporting Information and Safety Assessment of Proposed Change

INTRODUCTION

Subsequent to Vermont Yankee's (VY) original application for license amendment in Proposed Change 250 (PC-250) that was made by letter dated March 19, 2002 (BVY 02-18), the need for certain additional changes was identified. This Attachment provides information that supplements and revises the original request for a license amendment.

Table 1 that follows, replaces in its entirety the Table 1 that was provided in Attachment 1 of VY's March 19, 2002 (BVY 02-19) request for a license amendment. Table 1 provides a revised, detailed description of each proposed change, including the basis for the change and a safety assessment as necessary to supplement the analysis provided by NEDO-31400A, or to provide the basis for change where NEDO-31400A is not applicable to the specific change. The Change Numbers in the table's left-hand column correspond to the boxed (□) annotation numbers in Attachment 3, "Marked-Up Version of the Current Technical Specifications." Attachment 3 and Attachment 4 provided herewith also replace in their entirety the original Attachment 3 and Attachment 4 submitted on March 19, 2002.

Supplemental Description of the Main Condenser Vacuum Pump

As described in VY's Updated Final Safety Analysis Report section 11.4.3.2, one mechanical vacuum pump (MVP) is provided to establish initial or partial condenser vacuum when adequate steam pressure is not available to establish vacuum conditions using the steam jet air ejectors. The MVP is an AC-driven, manually-operated, rotary-type pump. The MVP motor is automatically de-energized upon generation of a high radiation trip signal from the main steam line radiation monitors (MSLRMs). A coincident signal also closes the isolation valve (air-operated, FCV-35) on the suction line from the main condenser to the MVP. As described in Table 1 below, both of these design features will be retained; however, only the requirement for "MVP isolation" will remain in VY's Technical Specifications (TS).

The majority of this supplement to PC-250 involves TS for the MVP. VY has elected to reformat and update the TS for MVP instrumentation in one section (3/4.2.F) rather than have fragmented requirements regarding MVP instrumentation elsewhere in the TS.

Supplemental Description and Safety Assessment of VY's Main Steam Line Drain Valves

Steam line drains are provided at the low points in each main steam line (MSL), both inside and outside the drywell, to permit drainage of condensate to the main condenser hotwell and to minimize the potential for carryover of water droplets to the main turbine. The drain lines also allow for equalizing the pressure across the main steam isolation valves (MSIVs) prior to reopening after a MSL isolation and provides for the warm-up of the outboard side of the steam lines.

VY's MSL inboard (valve 2-74) and outboard (valve 2-77) drain line isolation valves are three-inch, motor-operated valves with position (open and close) indication in the main control room. The MSL drain valves are normally closed during power operation and currently are designed to automatically close (with the MSIVs and other Group 1 isolation valves) upon receipt of a high main steam line radiation signal.

The main steam line drains provide a two-phase flow path from the eight MSIVs to the main condenser. This is essentially the same flow path as the MSIVs. Since the MSL drain isolation valves do not involve any significant difference in fission product pathway from that of the MSIVs, deletion of their automatic isolation on a high main steam line radiation signal is consistent with elimination of the MSIV isolation function of the MSLRMs.

The three-inch drain lines run parallel to the 18-inch MSLs to the turbine building where the MSLs continue to the main stop valves and the drain lines go to the main condenser. Throughout their routing, the MSLs and other steam and drain lines are located in areas of the plant, e.g., the steam line tunnel, heater and condenser bay areas, that (due to Nitrogen-16 radiation) are locked closed and are inaccessible high radiation areas during power operation. Therefore, there is no appreciable difference in radiological risk to plant personnel over that of normal plant operating conditions whether the drains remain open or close on a high radiation condition in the MSLs. Except for the elimination of the MSLRM isolation signals specifically identified in this Proposed Change, all other isolation actuations associated with MSLRM trip functions will remain intact.

VY's Proposed Change No. 251 – Dated November 20, 2001 (BVY 01-85)

VY's Proposed Change No. 251 (PC-251), dated November 20, 2001 (BVY 01-85), among other things proposed to relocate Technical Specifications Table 4.7.2, "Primary Containment Isolation Valves," to VY's Technical Requirements Manual (TRM). That table currently provides requirements for the High Main Steam Line Radiation Trip Function for Group 1 isolation valves. In anticipation of NRC's approval of that license amendment request, the proposed change (identified as Change #7 in VY's March 19, 2002 submittal) to Table 4.7.2 is not included in this supplement to PC-250. Change #7 as originally submitted is hereby withdrawn from VY's request for license amendment. Assuming the sequence of events progress as planned, Table 4.7.2 will be re-located to the TRM upon approval of PC-251 with subsequent revision following approval of PC-250.

Technical Specifications Bases 3.2

In addition to the conforming changes being made to the TS Bases as a result of the TS changes identified herein, one additional change to the Bases for TS Section 3.2 is included as a result of recently issued License Amendment No. 207. A revision to the Bases for Section 3.2 regarding the operability requirements for post accident monitoring instrumentation is included herewith. In accordance with TS Table 3.2.6, as a condition for continued operation with loss of TS Post-Accident Monitoring instrumentation, a special written report must be submitted to the NRC within a 14-day period. The Bases of Section 3.2 is being revised to specifically indicate that the special written report will include the preplanned alternate method of monitoring the parameter for which indication is lost or compromised.

Remainder of VY's March 19, 2002 Submittal

Except as modified by the supplemental information provided herein, the remainder of VY's March 19, 2002 submittal (BVY 02-18) of Proposed Change 250 is retained as part of VY's request for license amendment.

Table 1

Change #	Current Technical Specifications	Proposed Change
1	Current Technical Specifications (CTS) 3.1.A requires plant operation in accordance with Table 3.1.1, "Reactor Protection System (Scram) Instrument Requirements." Trip Function #9 in Table 3.1.1 specifies requirements for a reactor scram initiated by a main steam line high radiation signal. Notes 7 and 8 of Table 3.1.1 are only applicable to this trip function.	Delete Trip Function #9 and associated requirements from Table 3.1.1. Notes 7 and 8 of Table 3.1.1, which only pertain to this trip function, are also deleted. Insert the word "deleted" in place of Trip Function #9 in Table 3.1.1 and in place of its Notes 7 and 8.
	Basis / Safety Assessment: The basis and safety assessment for elimination of the reactor scram trip function from main steam line radiation monitors are discussed in NEDO-31400A. Elimination of the scram trip function includes elimination of associated limiting conditions for operation (i.e., Trip Function #9 in Table 3.1.1). Notes 7 and 8 of Table 3.1.1 have no applicability when Trip Function #9 is deleted from Table 3.1.1. Note 7 does not impose any operational requirements and is only informational in explaining circuitry design. Therefore, Note 7 can be deleted because is imposes no requirements and is only applicable to the trip function being eliminated. Note 8 does impose operational requirements beyond the scope of the reactor trip function being eliminated in that it requires a MSLRM alarm setting of 1.5 times normal background at rated power to alert the operator to abnormal radiation levels in primary coolant. This requirement, however, does not ensure the operability of RPS instrumentation, does not provide for an action credited in the plant's accident analyses, nor does this feature meet the criteria of 10CFR50.36. Therefore, this Note can be deleted from TS. The MSLRM alarm function will be retained in the design of the plant, in plant procedures (see Change #7 that follows) to provide the control room operator with an early indication of possible fuel damage and to ensure prompt sampling of the reactor coolant to determine probable sources of the contamination, as well as to determine the need for further corrective action. These actions are consistent with the considerations in NEDO-31400A for limiting plant contamination and occupational exposures.	

Table 1
(continued)

Change #	Current Technical Specifications	Proposed Change
2	CTS 4.1.A requires that scram instrumentation systems be functionally tested in accordance with Table 4.1.1, "Scram Instrumentation and Logic Systems Functional Tests – Minimum Functional Test Frequencies for Safety Instrumentation, Logic Systems and Control Circuits." Table 4.1.1 specifies an instrument channel for "High Main Steam Line Radiation" with associated surveillance requirements. Several Notes of Table 4.1.1 are applicable to this instrument channel.	Delete Instrument Channel, "High Main Steam Line Radiation" and associated requirements from Table 4.1.1. The Table 4.1.1 Notes that are applicable to this Instrument Channel are also applicable to one or more of the other Instrument Channels specified in this table, and are therefore retained. However, Note 2 of Table 4.1.1 is modified because of the elimination of the High Main Steam Line Radiation instrument channel of the reactor protection system. Note 2 is changed to: "*An instrument check shall be performed on reactor water level and reactor pressure instrumentation once per day.*" This change to Note 2 of Table 4.1.1 deletes the existing phrase, "...and on streamline (sic) radiation monitors once per shift."
	Basis / Safety Assessment: The basis and safety assessment for elimination of the reactor scram trip function from main steam line radiation monitors (MSLRMs) are discussed in NEDO-31400A. Elimination of the scram trip function of the MSLRMs includes elimination of associated surveillance requirements (i.e., the high main steam line radiation instrument channel of reactor protection system instrumentation in Table 4.1.1). Note 2 is being revised because the high main steam line radiation scram trip function is being eliminated and all surveillance requirements (SRs) related to this function will no longer be applicable. Therefore, revising Note 2 to delete a SR for a function that is being eliminated is acceptable. Change #5 (discussed below) includes periodic functional test requirements for the High Main Steam Line Radiation Trip Function for MVP isolation that are consistent with the requirements being deleted from Table 4.1.1.	

Table 1
(continued)

Change #	Current Technical Specifications	Proposed Change
3	CTS 4.1.A requires that scram instrumentation systems be calibrated in accordance with Table 4.1.2, "Scram Instrument Calibration – Minimum Calibration Frequencies for Reactor Protection Instrument Channels." Table 4.1.2 specifies an instrument channel for "High Main Steam Line Radiation" with associated surveillance requirements. Note 3 of Table 4.1.2 is applicable to this instrument channel.	Delete Instrument Channel, "High Main Steam Line Radiation" and associated requirements from Table 4.1.2. Note 3 of Table 4.1.2 only pertains to this instrument channel and is also being eliminated from this table. Insert the word "deleted" in place of Note 3 of Table 4.1.2.
	Basis / Safety Assessment: The basis and safety assessment for elimination of the reactor scram trip function from main steam line radiation monitors are discussed in NEDO-31400A. Elimination of the scram trip function includes elimination of associated surveillance requirements (i.e., the high main steam line radiation instrument channel in Table 4.1.2). Note 3 is being deleted because no SRs applicable to a scram function from high main steam line radiation will remain in Table 4.1.2. Therefore, deleting Note 3 is acceptable because its associated SR is being deleted. Change #5 (discussed below) includes periodic calibration requirements for the High Main Steam Line Radiation Trip Function for MVP isolation that are consistent with the requirements being deleted from Table 4.1.2.	

Table 1
(continued)

Change #	Current Technical Specifications	Proposed Change
4	CTS Limiting Condition for Operation (LCO) 3.2.F, "Mechanical Vacuum Pump Isolation," requires that automatic MVP isolation and tripping be operable during all modes of plant operation whenever the MSIVs are open, or the MVP shall be manually isolated and tripped. If the MVP instrumentation is found to not meet the above condition as a result of routine surveillance, the reactor must be placed in the cold shutdown condition within 24 hours. LCO 3.2.F does not currently specify the number of instrumentation channels of the high MSL radiation trip function that are required to be operable for MVP operation, nor are actions specified for conditions where one or more channels are inoperable and the instrumentation is still capable of initiating MVP trip and isolation.	Change the title of TS 3.2.F to "Mechanical Vacuum Pump Isolation Instrumentation." Change the applicability of LCO 3.2.F.1 from "whenever the main steam line isolation valves are open" to "when the reactor is in the RUN or STARTUP/HOT STANDBY Mode and the mechanical vacuum pump is in service." Change the operability requirements of LCO 3.2.F from "...the mechanical vacuum pump shall be capable of being automatically isolated and secured by a signal of high radiation in the main steam line tunnel or shall be manually isolated and secured" to "...four (4) channels of the High Main Steam Line Radiation Trip Function for mechanical vacuum pump isolation shall be operable, except as provided below." Change LCO 3.2.F.2 from: "If Specification 3.2.F.1 is not met following a routine surveillance check, the reactor shall be in the cold shutdown within 24 hours." to the requirements that are included in the following. In total, current LCO 3.2.F is being replaced with the following: *"Mechanical Vacuum Pump Isolation Instrumentation* *When the reactor is in the RUN or STARTUP/HOT STANDBY Mode and the mechanical vacuum pump is in service, four (4) channels of the High Main Steam Line Radiation Trip Function for mechanical vacuum pump isolation shall be operable, except as provided below.* *1. With one or more channels inoperable, within 12 hours:* *a. Restore the inoperable channel(s) to operable status; or* *b. Place the inoperable channel(s) or associated trip system in the trip condition (not applicable if the inoperable channel is the result of an inoperable mechanical vacuum pump isolation valve).*

Table 1
(continued)

Change #	Current Technical Specifications	Proposed Change
4 (cont.)		2. *If the required action and associated completion time of Specification 3.2.F.1 is not met, within the following 12 hours:* *a. Isolate the mechanical vacuum pump; or* *b. Isolate the main steam lines; or* *c. Place the reactor in the SHUTDOWN Mode."*
	Basis / Safety Assessment: The change in title of TS 3.2.F to "Mechanical Vacuum Pump Isolation Instrumentation" clarifies that this Specification involves instrumentation that initiates a trip to isolate the MVP following events in which MSLRMs detect radiation levels that exceed a predetermined value. As such, the revised title is more descriptive and represents a presentation preference. The change is acceptable because it does not alter current requirements and is considered administrative. The change in applicability of LCO 3.2.F to "when the reactor is in the RUN or STARTUP/HOT STANDBY Mode and the mechanical vacuum pump is in service" is acceptable because the MVP isolation function is only needed when the MVP is in service with the reactor in startup/hot standby or power operation to mitigate the consequences of a postulated design basis control rod drop accident (CRDA). The current LCO 3.2.F is overly restrictive in its applicability during shutdown and refueling conditions when the consequences of a CRDA are not significant. Isolation of the MVP is assumed in VY's analysis for the CRDA. For this purpose, a High Main Steam Line Radiation Monitor trip setting of less than or equal to 3 times background at rated thermal power (RTP) was established. The MVP trip instrumentation isolates the MVP suction to limit offsite and control room doses resulting from fuel failures postulated to occur during the CRDA. Isolating the MVP would limit the environmental release of radioactivity. With the MVP in service, fission products released from the reactor during a CRDA could be discharged directly to the environment. Therefore, MVP isolation is necessary to assure conformance with VY's radiological evaluation of the CRDA. During shutdown and refueling the consequences of a CRDA are insignificant and are not expected to result in any fuel damage or fission product release. Therefore, significant fission products would not be released via this pathway during shutdown or refueling conditions with the MVP in service. When the MVP is not in service or the main steam lines are isolated, fission product release via this pathway would not occur regardless of reactor mode. Therefore, the change in applicability is acceptable.	

Table 1
(continued)

4 (cont.)	**Basis / Safety Assessment:** (continued) The operability of the MVP isolation feature is dependent on the operability of the individual MSLRM high radiation trip channels, which must have a required number of operable channels in each trip system with their setpoints within the specified trip setting. The change in operability requirements of LCO 3.2.F to require four channels of the High Main Steam Line Radiation Trip Function to be operable adds specificity as to the number of channels required to be operable. The trip logic consists of two trip systems with two channels in each trip system. Either channel in each trip system is needed to trip a trip system, and the outputs are arranged so that both trip systems must trip to result in an isolation signal (i.e., the trip function is a one-out-of-two, taken twice logic). To account for the possibility for a single failure, both channels in each trip system are normally required to be operable. With one or more channels inoperable, automatic MVP isolation capability may be maintained. However, the reliability and redundancy of the isolation instrumentation is reduced such that a single failure in one of the remaining channels could result in the inability of the MVP isolation instrumentation to perform its intended safety function. Therefore, only a limited time is allowed to restore the inoperable channel(s) or place the inoperable channel(s) or associated trip system(s) in a tripped condition. If either of these actions is not met, within the following 12 hours the plant must be taken out of the range of applicability (i.e., either isolate the MVP, isolate the main steam lines, or place the reactor in shutdown). Because of the low probability of extensive number of inoperabilities affecting multiple channels, and the low probability of an event requiring the initiation of MVP isolation, 12 hours has been shown to be acceptable[1] to permit restoration of any inoperable channel to operable status. Alternately, the inoperable channel, or associated trip system, 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 MVP isolation valve, since this may not adequately compensate for the inoperable MVP isolation valve (e.g., the isolation valve may be inoperable such that it will not physically close). If it is not desired to place the channel or trip system in the trip condition (e.g., as in the case where placing the inoperable channel in a trip condition would result in loss of condenser vacuum), or if the inoperable channel is the result of an inoperable MVP isolation valve, the actions specified by LCO 3.2.F.2. must be taken.

[1] NEDC-30851P-A, Supplement 2, "Technical Specifications Improvement Analysis for BWR Isolation Instrumentation Common to RPS and ECCS Instrumentation," March 1989.

Table 1
(continued)

4 (cont.)	**Basis / Safety Assessment:** (continued) If the required action and associated completion time of LCO 3.2.F.1 are not met, the plant must be brought to a mode or other specified condition in which the LCO does not apply within 12 hours. This status may be achieved in any one or a combination of three ways: (1) The reactor may be brought to a (hot or cold) shutdown condition where the consequences of a postulated CRDA are not significant; (2) The MVP may be isolated since this manual action performs the intended function of the trip instrumentation; or (3) The main steam lines may be isolated since this action effectively provides an equivalent level of protection by precluding fission product transport to the condenser. Isolation of the main steam lines is accomplished by closing all main steam isolation valves and main steam line drains which bypass the main steam isolation valves. The allowed completion time of 12 hours in proposed TS 3.2.F.2 is reasonable and acceptable, based on operating experience, to reach one of the modes or conditions specified in an orderly manner without challenging plant systems. Based on the above, current LCO 3.2.F.2 is overly restrictive in requiring that the reactor be placed in a cold shutdown condition within 24 hours when CTS 3.2.F.1 is not met. The revision to LCO 3.2.F provides acceptable alternatives that effectively limit the potential for significant quantities of radioactive fission products from reaching the main condenser. The NEDO-31400A CRDA analysis and the VY plant-specific CRDA analysis (see VY UFSAR Section 14.6.2.5.3, assumption and initial condition #1) assume that the main condenser's MVP is isolated on a signal from the MSLRMs. However, these analyses do not explicitly assume a signal is generated to de-energize (i.e., secure) the MVP motor, although this is VY's current design basis. A High Main Steam Line Radiation Monitor trip generates coincident signals to close the MVP isolation valve and trip the MVP. Isolation of the MVP suction line (i.e., automatic isolation valve closure) is adequate to prevent the release of radioactive fission products via this flow path. Because a separate trip of the MVP motor is not specifically assumed in mitigating the consequences of VY's CRDA, inclusion of this overly prescriptive requirement in TS is unnecessary. For clarity and simplification, it is adequate to only require MVP isolation in TS, and not coincident actions to secure or trip the MVP. Therefore, although the trip of the MVP motor will remain functional, it is acceptable to delete reference to tripping or securing the MVP from VY's TS. The requirement for automatic isolation of the MVP suction line will be retained in TS because this is the action credited in the CRDA analyes to limit fission product release to the environment via this pathway.

Table 1
(continued)

Change #	Current Technical Specifications	Proposed Change
5	Current Surveillance Requirement (SR) 4.2.F, "Mechanical Vacuum Pump Isolation," only requires that the automatic isolation and securing function of the MVP be verified once each operating cycle while the reactor is shutdown (typically during refueling outages).	Change the title of TS 4.2.F to "Mechanical Vacuum Pump Isolation Instrumentation." Add specific surveillance requirements regarding an Instrument Check, Instrument Functional Test, Instrument Calibration, and Logic System Functional Test. TS 4.2.F is replaced in its entirety to: *"Mechanical Vacuum Pump Isolation Instrumentation* *The High Main Steam Line Radiation Trip Function for mechanical vacuum pump isolation shall be checked, functionally tested and calibrated as indicated in Surveillance Requirements 4.2.F.1, 2, 3, 4 and 5.* *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 six (6) hours provided the associated trip function maintains mechanical vacuum pump isolation capability.* *1. Perform an instrument check once each day.* *2. Perform an instrument functional test once every three (3) months.* *3. Perform an instrument calibration, except for the radiation detectors, ,using a current source once every three (3) months. The trip setting shall be $\leq$ 3.0 times background at rated thermal power.* *4. Perform an instrument calibration using a radiation source once each refueling outage.* *5. Perform a logic system functional test, including mechanical vacuum pump isolation valve, once each operating cycle."*

5 (cont.)	**Basis / Safety Assessment:** The basis for the change in title of TS 4.2.F to "Mechanical Vacuum Pump Isolation Instrumentation" and the change to require only MVP isolation and not MVP motor trip (i.e., "securing") or similar language to require tripping of the MVP itself, are addressed in Change #4 above. A condition has been added to SR 4.2.F to modify the actions related to surveillance of the MVP to indicate that when a channel is placed in an inoperable status solely for the performance of required sureveillances, entry into associated LCOs and required actions may be delayed for up to six hours provided the associated trip function maintains MVP isolation capability. Upon completion of the surveillance, or expiration of the six hour allowance, the channel must be restored to operable status or the applicable condition entered and required actions taken. The allowance for removing instrumentation from service under administrative controls without entry into an LCO or taking other actions is acceptable for the performance of SRs because of the limited time in this condition (and low probability of an event occurring during this interval that would require this trip function), the fact that this is only permitted for surveillances and not preventive or corrective maintenance, and because the trip system remains operable. The reliability analysis in NEDC-30851P-A, Supplement 2 demonstrated that the six hour testing allowance does not significantly reduce the probability that the MVP will isolate when necessary. The proposed surveillance requirements include an Instrument Check once each day, an Instrument Functional Test and Instrument Calibration once every three months, and a Logic System Functional Test once each Operating Cycle. (Note: The terms, Instrument Check, Instrument Functional Test, Instrument Calibration, Logic System Functional Test, and Operating Cycle are defined in the Definitions section of VY's TS.) These surveillance intervals are consistent with VY's current licensing basis and do not represent any change in actual plant operation and maintenance. Performance of these four surveillance requirements at the stated frequencies is acceptable to ensure operability of the MVP isolation instrumentation. The frequencies for performing an Instrument Check and Instrument Functional Test are based on the frequency requirements currently in TS Table 4.2.2 for the High Main Steam Line Radiation trip function of the primary containment isolation instrumentation that is being deleted (see Change #6 below). The (three month) frequency for Instrument Calibration is based upon the assumption of a three-month calibration interval in the VY setpoint analysis for this instrumentation. The frequency (once per operating cycle) for performing a Logic System Functional Test is consistent with current requirements and the fact that suitable plant conditions for testing may only apply once during an operating cycle (i.e., plant outage).

Table 1
(continued)

Change #	Current Technical Specifications	Proposed Change
6	Current TS Table 3.2.2, "Primary Containment Isolation Instrumentation," contains the High Main Steam Line Radiation trip function for primary containment isolation instrumentation. In Table 3.2.2, Notes 7, 8, and 9 are only applicable to the High Main Steam Line Radiation trip function. Current TS Table 4.2.2, "Minimum Test and Calibration Frequencies – Primary Containment Isolation Instrumentation," contains surveillance requirements for the High Main Steam Line Radiation trip function of the primary containment isolation instrumentation.	Delete the High Main Steam Line Radiation trip function for primary containment isolation instrumentation from TS Tables 3.2.2 and 4.2.2. Notes 7, 8, and 9 of Table 3.2.2 are only applicable to the trip function being deleted; therefore these Notes are also being deleted. In place of the Notes 7, 8, and 9 of Table 3.2.2 insert the word "deleted" for each Note. Note 7 of Table 4.2.2 is only applicable to the High Main Steam Line Radiation trip function being deleted and is therefore also being deleted from Table 4.2.2.

6 (cont.)	**Basis / Safety Assessment:** The High Main Steam Line Radiation trip function for primary containment isolation instrumentation is only applicable to Group 1 isolation valves. Only three types of valves are considered Group 1 isolation valves: The eight main steam line isolation valves (2-80A-D and 2-86A-D), the two main steam line drain valves (2-74 and 2-77), and the two recirculation loop sample line valves (2-39 and 2-40). The MVP suction isolation valve does not constitute a primary containment isolation boundary in accordance with VY's design basis. The basis and safety assessment for the elimination of the MSIV closure trip function of the MSLRM are discussed in NEDO-31400A. Revised, plant-specific analysis of the CRDA also supports elimination of the MSLRM trip function for all Group 1 isolation valves. Because these valves need not close upon receipt of a High Main Steam Line Radiation trip signal, it is acceptable to remove this trip function from TS Tables 3.2.2 and 4.2.2. Current Note 7 of Table 3.2.2 provides information relative to the MVP suction isolation valve. Since there is no operational requirement established by this Note and the design information provided represents a detail that does not need to be included in TS, it is acceptable to delete this Note from TS. Revised TS 3.2.F and 4.2.F provide adequate requirements for operation of the MVP (see Changes #4 and #5 above). Current Note 8 of Table 3.2.2 is purely informational and provides no operational requirements. With this license amendment and the subsequent, associated plant modification, the information in Note 8 will no longer be true. Therefore, it is acceptable to delete this Note from TS. Current Note 9 addresses an alarm function of the MSLRMs. This alarm function will be retained; however, because this alarm function is not credited in plant accident analyses (nor meets the criteria of 10CFR50.36) it is not necessary to retain this requirement in TS. The plant procedures will, however, maintain a requirement for the MSLRM alarm function. Therefore, it is acceptable to remove this requirement from TS. Change #5 (discussed above) includes periodic calibration requirements for the High Main Steam Line Radiation Trip Function for MVP isolation that are consistent with the trip setting of ≤ 3 times background at rated power.

Table 1
(continued)

Change #	Current Technical Specifications	Proposed Change
7	The TS Bases provide explanation and rationale for associated TS requirements, and in some cases, how they are to be implemented.	Associated changes to the TS Bases are being made to conform to the changed TS and to add clarity to existing requirements.
	Basis / Safety Assessment: This proposed change revises the Bases of the VYNPS TSs to incorporate supporting information for the proposed TS changes. Bases changes are made for clarity purposes and to conform to the changes being made to the associated Specifications. Bases do not establish actual requirements, and as such do not change technical requirements of the TS. The Bases changes are therefore acceptable, since they administratively document the reasons and provide additional understanding for the associated TSs.	
Change #	**Current Technical Specifications**	**Proposed Change**
8	The TS Bases provide explanation and rationale for associated TS requirements, and in some cases, how they are to be implemented. License Amendment No. 207 revised operability requirements for Post-Accident Monitoring Instrumentation in TS Table 3.2.6.	A commitment was made to NRC staff as part of Amendment No. 207 to clarify in the Bases of Section 3.2 what would be included in the special written report required under the provisions of TS Table 3.2.6. The Bases are being clarified to state that the report will outline the preplanned alternate method of monitoring, the cause of the inoperability, and the plans and schedule for restoring the instrumentation to an operable status.
	Basis / Safety Assessment: The changes to the Bases of section 3.2 reflect a commitment documented in the NRC staff's Safety Evaluation supporting VY License Amendment No. 207. Bases changes are made for clarity purposes and to conform to the changes being made to the associated Specifications. Bases do not establish actual requirements, and as such do not change technical requirements of the TS. The Bases changes are therefore acceptable, since they administratively document the reasons and provide additional understanding for the associated TSs.	

Docket No. 50-271
BVY 02-41

Attachment 2

Vermont Yankee Nuclear Power Station

Proposed Technical Specification Change No. 250, Supplement No. 1

Scram and Isolation Valve Closure Functions of the
Main Steam Line Radiation Monitors

Determination of No Significant Hazards Consideration
And
Determination of No Required Environmental Review

[The determinations of No Significant Hazards Consideration and No Required Environmental Review are unchanged from that contained in Vermont Yankee's March 19, 2002 (BVY 02-18) request for a license amendment.]

Docket No. 50-271
BVY 02-41

Attachment 3

Vermont Yankee Nuclear Power Station

Proposed Technical Specification Change No. 250, Supplement No. 1

Scram and Isolation Valve Closure Functions of the
Main Steam Line Radiation Monitors

Marked-up Version of the Current Technical Specifications

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TABLE 3.1.1
(Cont'd)
REACTOR PROTECTION SYSTEM (SCRAM) INSTRUMENT REQUIREMENTS

	Trip Function	Trip Settings And Allowable Deviations	Modes in Which Functions Must be Operating: Refuel (1)	Startup	Run	Minimum Number Operating Instrument Channels Per Trip System (2)	Required ACTIONS When Minimum Conditions For Operation Are Not Satisfied (3)
9.	Main steamline high radiation (7) (RM-17-251(A-D))	3x normal background at rated power(8)	X	X	X	2	A or C
10.	Main steamline isolation valve closure (POS-2-80A-A1,B1 POS-2-86A-A1,B1 POS-2-80B-A1,B2 POS-2-86B-A1,B2 POS-2-80C-A2,B1 POS-2-86C-A2,B1 POS-2-80D-A2,B2 POS-2-86D-A2,B2)	≤10% valve closure			X	4	A or C
11.	Turbine control valve fast closure (PS-(37-40))	(9)(10)			X	2	A or D
12.	Turbine stop valve closure (SVOS-5-(1-4))	≤10% valve closure(10)			X	2	A or D

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.

1

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.

Deleted.

6. The top of the enriched fuel has been designated as 0 inches and provides a 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 closure 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 face adjacent or diagonally adjacent.

TABLE 4.1.1

SCRAM INSTRUMENTATION AND LOGIC SYSTEMS FUNCTIONAL TESTS

MINIMUM FUNCTIONAL TEST FREQUENCIES FOR SAFETY INSTRUMENTATION, LOGIC SYSTEMS AND CONTROL CIRCUITS

Instrument Channel	Group[3]	Functional Test[7]	Minimum Frequency[4]
Mode Switch in Shutdown	A	Place Mode Switch in Shutdown	Each Refueling Outage
Manual Scram	A	Trip Channel and Alarm	Every 3 Months
IRM			
High Flux	C	Trip Channel and Alarm[5]	Before Each Startup & Weekly During Refueling[6]
Inoperative	C	Trip Channel and Alarm	Before Each Startup & Weekly During Refueling[6]
APRM			
High Flux	B	Trip Output Relays[5]	Every 3 Months
High Flux (Reduced)	B	Trip Output Relays[5]	Before Each Startup & Weekly During Refueling[6]
Inoperative	B	Trip Output Relays	Every 3 Months
Flow Bias	B	Trip Output Relays[5]	Every 3 Months
High Reactor Pressure	B	Trip Channel and Alarm[5]	Every 3 Months
High Drywell Pressure	B	Trip Channel and Alarm[5]	Every 3 Months
Low Reactor Water Level[2][8]	B	Trip Channel and Alarm[5]	Every 3 Months
High Water Level in Scram Discharge Volume	B	Trip Channel and Alarm[5]	Every 3 Months
2 High Main Steam Line Radiation[2]	B	Trip Channel and Alarm[5]	Every 3 Months
Main Steam Line Iso. Valve Closure	A	Trip Channel and Alarm	Every 3 Months
Turbine Con. Valve Fast Closure	A	Trip Channel and Alarm	Every 3 Months
Turbine Stop Valve Closure	A	Trip Channel and Alarm	Every 3 Months
Scram Test Switch (5A-S2(A-D))	A	Trip Channel and Alarm	Once each week (9)
First Stage Turbine Pressure - Permissive (PS-5-14(A-D))	A	Trip Channel and Alarm	Every 6 Months

TABLE 4.1.1 NOTES

2

1. Not used

2. An instrument check shall be performed on reactor water level and reactor pressure instrumentation once per day and on streamline radiation monitors once per shift.

3. A description of the three groups is included in the basis of this Specification.

4. Functional tests are not required when the systems are not required to be operable or are tripped. If tests are missed, they shall be performed prior to returning the systems to an operable status.

5. This instrumentation is exempted from the Instrument Functional Test Definition (1.G.). This Instrument Functional Test will consist of injecting a simulated electrical signal into the measurement channels.

6. Frequency need not exceed weekly.

7. 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.

8. The water level in the reactor vessel will be perturbed and the corresponding level indicator changes will be monitored. This test will be performed every month.

9. The automatic scram contactors shall be exercised once every week by either using the RPS channel test switches or performing a functional test of any automatic scram function. If the contactors are exercised using a functional test of a scram function, the weekly test using the RPS channel test switch is considered satisfied. The automatic scram contactors shall also be exercised after maintenance on the contactors.

TABLE 4.1.2

SCRAM INSTRUMENT CALIBRATION

MINIMUM CALIBRATION FREQUENCIES FOR REACTOR PROTECTION INSTRUMENT CHANNELS

Instrument Channel	Group (1)	Calibration Standard (4)	Minimum Frequency (2)
High Flux APRM			
Output Signal	B	Heat Balance	Once Every 7 Days
Output Signal (Reduced) (7)	B	Heat Balance	Once Every 7 Days
Flow Bias	B	Standard Pressure and Voltage Source	Refueling Outage
LPRM (LPRM ND-2-1-104(80))	B (5)	Using TIP System	Every 2,000 MWD/T average core exposure (8)
High Reactor Pressure	B	Standard Pressure Source	Once/Operating Cycle
Turbine Control Valve Fast Closure	A	Standard Pressure Source	Every 3 Months
High Drywell Pressure	B	Standard Pressure Source	Once/Operating Cycle
High Water Level in Scram Discharge Volume	B	Water Level	Once/Operating Cycle
Low Reactor Water Level	B	Standard Pressure Source	Once/Operating Cycle
Turbine Stop Valve Closure	A	(6)	Refueling Outage
High Main Steam Line Radiation	B	Appropriate Radiation Source (3)	Refueling Outage
First Stage Turbine Pressure Permissive (PS-5-14(A-D))	A	Pressure Source	Every 6 Months and After Refueling
Main Steam Line Isolation Valve Closure	A	(6)	Refueling Outage

3

TABLE 4.1.2 NOTES

1. A description of the three groups is included in the bases of this Specification.

2. Calibration tests are not required when the systems are not required to be operable or are tripped. If tests are missed, they shall be performed prior to returning the systems to an operable status.

3. ~~A current source provides an instrument channel alignment every 3 months.~~

4. Response time is not part of the routine instrument check and calibration, but will be checked every operating cycle.

5. Does not provide scram function.

6. Physical inspection and actuation.

7. The IRM and SRM channels shall be determined to overlap during each startup after entering the STARTUP/HOT STANDBY MODE and the IRM and APRM channels shall be determined to overlap during each controlled shutdown, if not performed within the previous 7 days.

8. The specified frequency is met if the calibration is performed within 1.25 times the interval specified, as measured from the previous performance.

Deleted.

3

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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 Augmented Off-Gas (AOG) monitors provide further assurance against the release of radioactive materials to the site environs by isolating the AOG stack valve.

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.

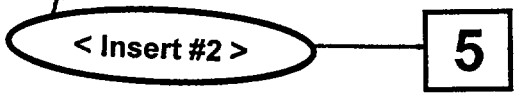
The manual scram function is active in all modes, thus providing for manual means of rapidly inserting control rods during all modes of reactor operation.

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.

3.2 LIMITING CONDITIONS FOR OPERATION	4.2 SURVEILLANCE REQUIREMENTS
D. Off-Gas System Isolation During reactor power operation, the instrumentation that initiates isolation of the off-gas system shall be operable in accordance with Table 3.2.4.	D. Off-Gas System Isolation Instrumentation and logic systems shall be functionally tested and calibrated as indicated in Table 4.2.4.
E. Control Rod Block Actuation During reactor power operation the instrumentation that initiates control rod block shall be operable in accordance with Table 3.2.5.	E. Control Rod Block Actuation Instrumentation and logic systems shall be functionally tested and calibrated as indicated in Table 4.2.5.
F. Mechanical Vacuum Pump Isolation 1. Whenever the main steam line isolation valves are open, the mechanical vacuum pump shall be capable of being automatically isolated and secured by a signal of high radiation in the main steam line tunnel or shall be manually isolated and secured. 2. If Specification 3.2.F.1 is not met following a routine surveillance check, the reactor shall be in the cold shutdown within 24 hours.	F. Mechanical Vacuum Pump Isolation During each operating cycle, automatic isolation and securing of the mechanical vacuum pump shall be verified while the reactor is shutdown.
G. Post-Accident Instrumentation During reactor power operation, the instrumentation that displays information in the Control Room necessary for the operator to initiate and control the systems used during and following a postulated accident or abnormal operating condition shall be operable in accordance with Table 3.2.6.	G. Post-Accident Instrumentation The post-accident instrumentation shall be functionally tested and calibrated in accordance with Table 4.2.6.



INSERT #1
(replaces current LCO 3.2.F)

F. Mechanical Vacuum Pump Isolation Instrumentation

When the reactor is in the RUN or STARTUP/HOT STANDBY Mode and the mechanical vacuum pump is in service, four (4) channels of the High Main Steam Line Radiation Trip Function for mechanical vacuum pump isolation shall be operable, except as provided below.

1. With one or more channels inoperable, within 12 hours:

   a. Restore the inoperable channel(s) to operable status; or

   b. Place the inoperable channel(s) or associated trip system in the trip condition (not applicable if the inoperable channel is the result of an inoperable mechanical vacuum pump isolation valve).

2. If the required action and associated completion time of Specification 3.2.F.1 is not met, within the following 12 hours:

   a. Isolate the mechanical vacuum pump; or

   b. Isolate the main steam lines; or

   c. Place the reactor in the SHUTDOWN Mode.

INSERT #2
(replaces current SR 4.2.F)

F. Mechanical Vacuum Pump Isolation Instrumentation

The High Main Steam Line Radiation Trip Function for mechanical vacuum pump isolation shall be checked, functionally tested and calibrated as indicated in Surveillance Requirements 4.2.F.1, 2, 3, 4 and 5.

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 six (6) hours provided the associated trip function maintains mechanical vacuum pump isolation capability.

1. Perform an instrument check once each day.

2. Perform an instrument functional test once every three (3) months.

3. Perform an instrument calibration, except for the radiation detectors, using a current source once every three (3) months. The trip setting shall be $\leq$ 3.0 times background at rated thermal power.

4. Perform an instrument calibration using a radiation source once each refueling outage.

5. Perform a logic system functional test, including mechanical vacuum pump isolation valve, once each operating cycle.

TABLE 3.2.2

PRIMARY CONTAINMENT ISOLATION INSTRUMENTATION

Minimum Number of Operable Instrument Channels per Trip System	Trip Function	Trip Setting	Required ACTION When Minimum Conditions For Operation Are Not Satisfied (Note 2)
2 (Notes 11,12)	Low-Low Reactor Vessel Water Level (LT-2-3-57A/B(S2), LT-2-3-58A/B(S2))	≥82.5" above the top of enriched fuel	A
2 of 4 in each of 2 channels (Notes 11,12)	High Main Steam Line Area Temperature (TS-2-(121-124)(A-D))	≤212°F	B
2/steam line (Notes 11,12)	High Main Steam Line Flow (DPT-2-(116-119)(A-D)(M))	≤140% of rated flow	B
2 (Notes 1,11,12)	Low Main Steam Line Pressure (PS-2-134(A-D))	≥800 psig	B
2 (Notes 6,11,12)	High Main Steam Line Flow (DPT-2-116A,117B, 118C,119D(S1))	≤40% of rated flow	B
2 (Notes 11,12)	Low Reactor Vessel Water Level (LT-2-3-57A/B(M), LT-2-3-58A/B(M))	Same as Reactor Protection System	A
2 (Notes 11,12)	High Main Steam Line Radiation (7) (8) (RM-17-251(A-D))	≤3 x background at rated power (9)	B
2 (Notes 11,12)	High Drywell Pressure	Same as Reactor Protection System	A
2 (Notes 10,11,12)	Condenser Low Vacuum	≤12" Hg absolute	A
1	Trip System Logic	--	A

6

TABLE 3.2.2 NOTES

1. The main steam line low pressure need be available only in the "Run" mode.

2. If the minimum number of operable instrument channels are not available for one trip system, that trip system shall be tripped. If the minimum number of operable instrument channels are not available for both trip systems, the appropriate actions listed below shall be taken:

   A. Initiate an orderly shutdown and have reactor in the cold shutdown condition in 24 hours.

   B. Initiate an orderly load reduction and have reactor in "Hot Standby" within 8 hours.

3. Close isolation valves in system and comply with Specification 3.5.

4. Deleted.

5. One trip system arranged in a one-out-of-two twice logic.

6. The main steam line high flow is available only in the "Refuel," "Shutdown," and "Startup" modes.

7. This signal also automatically closes the mechanical vacuum pump suction line isolation valves.

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

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

6 Deleted.

10. A key lock switch is provided to permit the bypass of this trip function to enable plant startup and shutdown when the condenser vacuum is greater than 12 inches Hg absolute provided that both turbine stop and bypass valves are closed.

11. When a channel, and/or the affected primary containment isolation valve, is placed in an inoperable status solely for performance of required instrumentation 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 isolation capability.

12. Whenever Primary Containment integrity is required by Specification 3.7.A.2, there shall be two operable or tripped trip systems for each Trip Function, except as provided for below:

   A. With one or more automatic functions with isolation capability not maintained restore isolation capability in 1 hour or take the ACTION required by Table 3.2.2.

   B. With one or more channels inoperable, place the inoperable channels (s) in the tripped condition within:

      1) 12 hours for trip functions common to RPS instrumentation, and
      2) 24 hours for trip functions not common to RPS instrumentation,

      or, initiate the ACTION required by Table 3.2.2.

TABLE 4.2.2

MINIMUM TEST AND CALIBRATION FREQUENCIES

PRIMARY CONTAINMENT ISOLATION INSTRUMENTATION

Trip Function	Functional Test(8)	Calibration(8)	Instrument Check
Low-Low Reactor Vessel Water Level	Every Three Months	Once/Operating Cycle	Once Each Day
High Steam Line Area Temperature	Every Three Months	Each Refueling Outage	--
High Steam Line Flow	Every Three Months	Once/Operating Cycle	Once Each Day
Low Main Steam Line Pressure	Every Three Months	Every Three Months	--
Low Reactor Vessel Water Level	Every Three Months	Once/Operating Cycle	--
High Main Steam Line Radiation	Every Three Months (Note 7)	Each Refueling Outage	Once Each Day
High Drywell Pressure	Every Three Months	Once/Operating Cycle	Once Each Day
Condenser Low Vacuum	Every Three Months	Every Three Months	--
Trip System Logic	Once/Operating Cycle (Note 2)	Once/Operating Cycle (Note 3)	--

6

TABLE 4.2 NOTES

1. Not used.

2. During each refueling outage, simulated automatic actuation which opens all pilot valves shall be performed such that each trip system logic can be verified independent of its redundant counterpart.

3. Trip system logic calibration shall include only time delay relays and timers necessary for proper functioning of the trip system.

4. This instrumentation is excepted from functional test definition. The functional test will consist of injecting a simulated electrical signal into the measurement channel.

5. Deleted.

6. Functional tests, calibrations, and instrument checks are not required when these instruments are not required to be operable or are tripped. Functional tests shall be performed before each startup with a requ... frequency not to exceed once per week. Calibration shall be perfo... prior to or during each startup or controlled shutdown with a requ... frequency not to exceed once per week. Instrument checks shall be performed at least once per day during those periods when instruments are required to be operable.

7. This instrumentation is excepted from the functional test definitions and shall be calibrated using simulated electrical signals once every three months.

8. Functional tests and calibrations are not required when systems are not required to be operable.

9. The thermocouples associated with safety/relief valves and safety valve position, that may be used for back-up position indication, shall be verified to be operable every operating cycle.

10. Separate functional tests are not required for this instrumentation. The calibration and integrated ECCS tests which are performed once per operating cycle will adequately demonstrate proper equipment operation.

11. Trip system logic functional tests will include verification of operation of all automatic initiation inhibit switches by monitoring relay contact movement. Verification that the manual inhibit switches prevent opening all relief valves will be accomplished in conjunction with Section 4.5.F.1.

6

Deleted.

BASES: 3.2 (Cont'd)

For the complete circumferential break of 28-inch recirculation line and with the trip setting given above, ECCS initiation and primary system isolation are initiated in time to meet the above criteria. The instrumentation also covers the full range of spectrum breaks and meets the above criteria.

7

The high drywell [illegible] is a backup to the water level instru[illegible]CS, it causes isolation of c[illegible] circumferential break [illegible]eration at about [illegible]s, the results including and sump drywell [illegible] as not [illegible] full imary

Isolation of the condenser mechanical vacuum pump (MVP) is assumed in the safety analysis for the control rod drop accident (CRDA). The MVP isolation instrumentation initiates closure of the MVP suction isolation valve following events in which main steam line radiation monitors exceed a predetermined value. A High Main Steam Line Radiation Monitor trip setting for MVP isolation of ≤ 3 times background at rated thermal power (RTP) is as low as practicable without consideration of spurious trips from nitrogen-16 spikes, instrument instabilities and other operational occurrences. Isolating the condenser MVP limits the release of fission products in the event of a CRDA.

[illegible]ng steam [illegible] during a [illegible]ow, isolation valves. [illegible] a break in the main steam [illegible] for the worst case accident, main [illegible]e drywell, this trip setting of 140 percent of rated steam flow in conjunction with the flow limiters and main steam line valve closure limit the mass inventory loss such that fuel is not uncovered, cladding temperatures remain less than 1295°F and release of radioactivity to the environs is well below 10CFR100.

Temperature monitoring instrumentation is provided in the main steam line tunnel to detect leaks in this area. Trips are provided on this instrumentation and when exceeded cause closure of Group 1 isolation valves. Its setting of ambient plus 95°F is low enough to detect leaks of the order of 5 to 10 gpm; thus, it is capable of covering the entire spectrum of breaks. For large breaks, it is a backup to high steam flow instrumentation discussed above, and for small breaks, with the resultant small release of radioactivity, gives isolation before the limits of 10CFR100 are exceeded.

High radiation monitors in the main steam line tunnel have been provided to detect gross fuel failure resulting from a control rod drop accident. This instrumentation causes closure of Group 1 valves, the only valves required to close for this accident. With the established setting of 3 times normal background and main steam line isolation valve closure, fission product release is limited so that 10CFR100 limits are not exceeded for the control rod drop accident. With an alarm setting of 1.5 times normal background, the operator is alerted to possible gross fuel failure or abnormal fission product releases from failed fuel due to transient reactor operation.

Pressure instrumentation is provided which trips when main steam line pressure drops below 800 psig. A trip of this instrumentation results in closure of Group 1 isolation valves. In the refuel, shutdown, and startup modes, this trip function is provided when main steam line flow exceeds 40% of rated capacity. This function is provided primarily to provide protection against a pressure regulator malfunction which would cause the

BASES: 3.2 (Cont'd)

Specification 3.2.G requires that the post-accident monitoring (PAM) instrumentation of Table 3.2.6 be operable during reactor power operation. PAM instrumentation is not required to be operable during shutdown and refueling conditions when the likelihood of an event that would require PAM instrumentation is extremely low. The primary purpose of the PAM instrumentation is to display plant variables that provide information required by the control room operators during accident situations. This information provides the necessary support for the operator to take the manual actions for which no automatic control is provided and that are required for safety systems to accomplish their safety functions for design basis accidents. The operability of the PAM instrumentation ensures that there is sufficient information available on selected plant parameters to monitor and assess plant status and behavior following an accident. This capability is consistent with the recommendations of Regulatory Guide 1.97, "Instrumentation for Light Water Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident."

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When a special written report is required in accordance with the provisions of Table 3.2.6, the report will outline the preplanned alternate method of monitoring, the cause of the inoperability, and the plans and schedule for restoring the instrumentation to an operable status.

In most c
ensure
deter
it i
param
requi
days. Th
takes into ac
parameter that has
monitor the parameter), the passive nature of the instrument (no critical automatic action is assumed to occur from these instruments), and the low probability of an event requiring PAM instrumentation during this interval.

If a PAM instrument channel has not been restored to an operable status within the specified interval, the required action is to prepare a written report to be submitted to the NRC within the following 14 days. This report will detail the corrective actions taken, an evaluation of the cause of the inoperability, proposed restorative actions, and a schedule for returning the inoperable system to service. This action is appropriate in lieu of a shutdown requirement, since alternative actions are identified before loss of functional capability, and given the likelihood of plant conditions that would require information provided by this instrumentation.

For the majority of PAM instrumentation, when two required channels are inoperable (or in the case of a parameter that is monitored by only one channel, the channel and an alternate means are inoperable), one channel (or the required alternate means) should be restored to an operable status within seven days. The completion time of seven days is based on the relatively low probability of an event requiring PAM instrumentation and the normal availability of alternate means to obtain the required information. Where specified, continuous operation with two required channels inoperable (or one channel and the required alternate means inoperable) is not acceptable after seven days. Therefore, restoration of one inoperable channel limits the risk that the PAM function will be in a degraded condition should an accident occur.

Docket No. 50-271
BVY 02-41

Attachment 4

Vermont Yankee Nuclear Power Station

Proposed Technical Specification Change No. 250, Supplement No. 1

Scram and Isolation Valve Closure Functions of the
Main Steam Line Radiation Monitors

Retyped Technical Specification Pages

Listing of Affected Technical Specifications Pages

Replace the Vermont Yankee Nuclear Power Station Technical Specifications pages listed below with the revised pages included herein. The revised pages contain vertical lines in the margin indicating the areas of change.

Remove	Insert
22	22
24	24
25	25
26	26
27	27
28	28
31	31
35	35
36	36
37	37
45	45
48	48
64	64
74	74
76	76
79	79

TABLE 3.1.1
(Cont'd)
REACTOR PROTECTION SYSTEM (SCRAM) INSTRUMENT REQUIREMENTS

	Trip Function	Trip Settings And Allowable Deviations	Modes in Which Functions Must be Operating			Minimum Number Operating Instrument Channels Per Trip System (2)	Required ACTIONS When Minimum Conditions For Operation Are Not Satisfied (3)
			Refuel (1)	Startup	Run		
9.	Deleted						
10.	Main steamline isolation valve closure (POS-2-80A-A1,B1 POS-2-86A-A1,B1 POS-2-80B-A1,B2 POS-2-86B-A1,B2 POS-2-80C-A2,B1 POS-2-86C-A2,B1 POS-2-80D-A2,B2 POS-2-86D-A2,B2)	≤10% valve closure			X	4	A or C
11.	Turbine control valve fast closure (PS-(37-40))	(9)(10)			X	2	A or D
12.	Turbine stop valve closure (SVOS-5-(1-4))	≤10% valve(10) closure			X	2	A or D

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. Deleted.

8. Deleted.

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 closure 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 face adjacent or diagonally adjacent.

TABLE 4.1.1

SCRAM INSTRUMENTATION AND LOGIC SYSTEMS FUNCTIONAL TESTS

MINIMUM FUNCTIONAL TEST FREQUENCIES FOR SAFETY INSTRUMENTATION, LOGIC SYSTEMS AND CONTROL CIRCUITS

Instrument Channel	Group(3)	Functional Test(7)	Minimum Frequency(4)
Mode Switch in Shutdown	A	Place Mode Switch in Shutdown	Each Refueling Outage
Manual Scram	A	Trip Channel and Alarm	Every 3 Months
IRM			
High Flux	C	Trip Channel and Alarm(5)	Before Each Startup & Weekly During Refueling(6)
Inoperative	C	Trip Channel and Alarm	Before Each Startup & Weekly During Refueling(6)
APRM			
High Flux	B	Trip Output Relays(5)	Every 3 Months
High Flux (Reduced)	B	Trip Output Relays(5)	Before Each Startup & Weekly During Refueling(6)
Inoperative	B	Trip Output Relays	Every 3 Months
Flow Bias	B	Trip Output Relays(5)	Every 3 Months
High Reactor Pressure	B	Trip Channel and Alarm(5)	Every 3 Months
High Drywell Pressure	B	Trip Channel and Alarm(5)	Every 3 Months
Low Reactor Water Level(2)(8)	B	Trip Channel and Alarm(5)	Every 3 Months
High Water Level in Scram Discharge Volume	B	Trip Channel and Alarm(5)	Every 3 Months
Main Steam Line Iso. Valve Closure	A	Trip Channel and Alarm	Every 3 Months
Turbine Con. Valve Fast Closure	A	Trip Channel and Alarm	Every 3 Months
Turbine Stop Valve Closure	A	Trip Channel and Alarm	Every 3 Months
Scram Test Switch (5A-S2(A-D))	A	Trip Channel and Alarm	Once each week (9)
First Stage Turbine Pressure - Permissive (PS-5-14(A-D))	A	Trip Channel and Alarm	Every 6 Months

TABLE 4.1.1 NOTES

1. Not used

2. An instrument check shall be performed on reactor water level and reactor pressure instrumentation once per day.

3. A description of the three groups is included in the basis of this Specification.

4. Functional tests are not required when the systems are not required to be operable or are tripped. If tests are missed, they shall be performed prior to returning the systems to an operable status.

5. This instrumentation is exempted from the Instrument Functional Test Definition (1.G.). This Instrument Functional Test will consist of injecting a simulated electrical signal into the measurement channels.

6. Frequency need not exceed weekly.

7. 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.

8. The water level in the reactor vessel will be perturbed and the corresponding level indicator changes will be monitored. This test will be performed every month.

9. The automatic scram contactors shall be exercised once every week by either using the RPS channel test switches or performing a functional test of any automatic scram function. If the contactors are exercised using a functional test of a scram function, the weekly test using the RPS channel test switch is considered satisfied. The automatic scram contactors shall also be exercised after maintenance on the contactors.

TABLE 4.1.2

SCRAM INSTRUMENT CALIBRATION

MINIMUM CALIBRATION FREQUENCIES FOR REACTOR PROTECTION INSTRUMENT CHANNELS

Instrument Channel	Group(1)	Calibration Standard(4)	Minimum Frequency(2)
High Flux APRM			
Output Signal	B	Heat Balance	Once Every 7 Days
Output Signal (Reduced) (7)	B	Heat Balance	Once Every 7 Days
Flow Bias	B	Standard Pressure and Voltage Source	Refueling Outage
LPRM (LPRM ND-2-1-104(80))	B(5)	Using TIP System	Every 2,000 MWD/T average core exposure (8)
High Reactor Pressure	B	Standard Pressure Source	Once/Operating Cycle
Turbine Control Valve Fast Closure	A	Standard Pressure Source	Every 3 Months
High Drywell Pressure	B	Standard Pressure Source	Once/Operating Cycle
High Water Level in Scram Discharge Volume	B	Water Level	Once/Operating Cycle
Low Reactor Water Level	B	Standard Pressure Source	Once/Operating Cycle
Turbine Stop Valve Closure	A	(6)	Refueling Outage
First Stage Turbine Pressure Permissive (PS-5-14(A-D))	A	Pressure Source	Every 6 Months and After Refueling
Main Steam Line Isolation Valve Closure	A	(6)	Refueling Outage

TABLE 4.1.2 NOTES

1. A description of the three groups is included in the bases of this Specification.

2. Calibration tests are not required when the systems are not required to be operable or are tripped. If tests are missed, they shall be performed prior to returning the systems to an operable status.

3. Deleted.

4. Response time is not part of the routine instrument check and calibration, but will be checked every operating cycle.

5. Does not provide scram function.

6. Physical inspection and actuation.

7. The IRM and SRM channels shall be determined to overlap during each startup after entering the STARTUP/HOT STANDBY MODE and the IRM and APRM channels shall be determined to overlap during each controlled shutdown, if not performed within the previous 7 days.

8. The specified frequency is met if the calibration is performed within 1.25 times the interval specified, as measured from the previous performance.

BASES: 3.1 (Cont'd)

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.

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.

3.2 LIMITING CONDITIONS FOR OPERATION	4.2 SURVEILLANCE REQUIREMENTS
D. Off-Gas System Isolation During reactor power operation, the instrumentation that initiates isolation of the off-gas system shall be operable in accordance with Table 3.2.4.	D. Off-Gas System Isolation Instrumentation and logic systems shall be functionally tested and calibrated as indicated in Table 4.2.4.
E. Control Rod Block Actuation During reactor power operation the instrumentation that initiates control rod block shall be operable in accordance with Table 3.2.5.	E. Control Rod Block Actuation Instrumentation and logic systems shall be functionally tested and calibrated as indicated in Table 4.2.5.
F. Mechanical Vacuum Pump Isolation Instrumentation When the reactor is in the RUN or STARTUP/HOT STANDBY Mode and the mechanical vacuum pump is in service, four (4) channels of the High Main Steam Line Radiation Trip Function for mechanical vacuum pump isolation shall be operable, except as provided below. 1. With one or more channels inoperable, within 12 hours: a. Restore the inoperable channel(s) to operable status; or b. Place the inoperable channel(s) or associated trip system in the trip condition (not applicable if the inoperable channel is the result of an inoperable mechanical vacuum pump isolation valve).	F. Mechanical Vacuum Pump Isolation Instrumentation The High Main Steam Line Radiation Trip Function for mechanical vacuum pump isolation shall be checked, functionally tested and calibrated as indicated in Surveillance Requirements 4.2.F.1, 2, 3, 4 and 5. 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 six (6) hours provided the associated trip function maintains mechanical vacuum pump isolation capability. 1. Perform an instrument check once each day. 2. Perform an instrument functional test once every three (3) months.

3.2 LIMITING CONDITIONS FOR OPERATION	4.2 SURVEILLANCE REQUIREMENTS
2. If the required action and associated completion time of Specification 3.2.F.1 is not met, within the following 12 hours: a. Isolate the mechanical vacuum pump; or b. Isolate the main steam lines; or c. Place the reactor in the SHUTDOWN Mode.	3. Perform an instrument calibration, except for the radiation detectors, using a current source once every three (3) months. The trip setting shall be ≤ 3.0 times background at rated thermal power. 4. Perform an instrument calibration using a radiation source once each refueling outage. 5. Perform a logic system functional test, including mechanical vacuum pump isolation valve, once each operating cycle.
G. Post-Accident Instrumentation During reactor power operation, the instrumentation that displays information in the Control Room necessary for the operator to initiate and control the systems used during and following a postulated accident or abnormal operating condition shall be operable in accordance with Table 3.2.6.	G. Post-Accident Instrumentation The post-accident instrumentation shall be functionally tested and calibrated in accordance with Table 4.2.6.
H. Drywell to Torus ΔP Instrumentation 1. During reactor power operation, the Drywell to Torus ΔP Instrumentation (recorder #1-156-3 and instrument DPI-1-158-6) shall be operable except as specified in 3.2.H.2. 2. From and after the date that one of the Drywell to Torus ΔP instruments is made or found to be inoperable for any reason, reactor operation is permissible only during the succeeding thirty days unless the instrument is	H. Drywell to Torus ΔP Instrumentation The Drywell to Torus ΔP Instrumentation shall be calibrated once every six months and an instrument check will be made once per shift.

3.2 LIMITING CONDITIONS FOR OPERATION	4.2 SURVEILLANCE REQUIREMENTS
sooner made operable. If both instruments are made or found to be inoperable, and indication cannot be restored within a six hour period, 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 eighteen hours.	
I. Recirculation Pump Trip Instrumentation During reactor power operation, the Recirculation Pump Trip Instrumentation shall be operable in accordance with Table 3.2.1.	I. Recirculation Pump Trip Instrumentation The Recirculation Pump Trip Instrumentation shall be functionally tested and calibrated in accordance with Table 4.2.1.
J. Deleted	J. Deleted
K. Degraded Grid Protective System During reactor power operation, the emergency bus undervoltage instrumentation shall be operable in accordance with Table 3.2.8.	K. Degraded Grid Protective System The emergency bus undervoltage instrumentation shall be functionally tested and calibrated in accordance with Table 4.2.8.
L. Reactor Core Isolation Cooling System Actuation When the Reactor Core Isolation Cooling System is required in accordance with Specification 3.5.G, the instrumentation which initiates actuation of this system shall be operable in accordance with Table 3.2.9.	L. Reactor Core Isolation Cooling System Actuation Instrumentation and Logic Systems shall be functionally tested and calibrated as indicated in Table 4.2.9.

TABLE 3.2.2

PRIMARY CONTAINMENT ISOLATION INSTRUMENTATION

Minimum Number of Operable Instrument Channels per Trip System	Trip Function	Trip Setting	Required ACTION When Minimum Conditions For Operation Are Not Satisfied (Note 2)
2 (Notes 11,12)	Low-Low Reactor Vessel Water Level (LT-2-3-57A/B(S2), LT-2-3-58A/B(S2))	≥82.5" above the top of enriched fuel	A
2 of 4 in each of 2 channels (Notes 11,12)	High Main Steam Line Area Temperature (TS-2-(121-124)(A-D))	≤212°F	B
2/steam line (Notes 11,12)	High Main Steam Line Flow (DPT-2-(116-119)(A-D)(M))	≤140% of rated flow	B
2 (Notes 1,11,12)	Low Main Steam Line Pressure (PS-2-134(A-D))	≥800 psig	B
2 (Notes 6,11,12)	High Main Steam Line Flow (DPT-2-116A,117B, 118C,119D(S1))	≤40% of rated flow	B
2 (Notes 11,12)	Low Reactor Vessel Water Level (LT-2-3-57A/B(M), LT-2-3-58A/B(M))	Same as Reactor Protection System	A
2 (Notes 11,12)	High Drywell Pressure	Same as Reactor Protection System	A
2 (Notes 10,11,12)	Condenser Low Vacuum	≤12" Hg absolute	A
1	Trip System Logic	--	A

TABLE 3.2.2 NOTES

1. The main steam line low pressure need be available only in the "Run" mode.

2. If the minimum number of operable instrument channels are not available for one trip system, that trip system shall be tripped. If the minimum number of operable instrument channels are not available for both trip systems, the appropriate actions listed below shall be taken:

   A. Initiate an orderly shutdown and have reactor in the cold shutdown condition in 24 hours.

   B. Initiate an orderly load reduction and have reactor in "Hot Standby" within 8 hours.

3. Close isolation valves in system and comply with Specification 3.5.

4. Deleted.

5. One trip system arranged in a one-out-of-two twice logic.

6. The main steam line high flow is available only in the "Refuel," "Shutdown," and "Startup" modes.

7. Deleted.

8. Deleted.

9. Deleted.

10. A key lock switch is provided to permit the bypass of this trip function to enable plant startup and shutdown when the condenser vacuum is greater than 12 inches Hg absolute provided that both turbine stop and bypass valves are closed.

11. When a channel, and/or the affected primary containment isolation valve, is placed in an inoperable status solely for performance of required instrumentation 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 isolation capability.

12. Whenever Primary Containment integrity is required by Specification 3.7.A.2, there shall be two operable or tripped trip systems for each Trip Function, except as provided for below:

   A. With one or more automatic functions with isolation capability not maintained restore isolation capability in 1 hour or take the ACTION required by Table 3.2.2.

   B. With one or more channels inoperable, place the inoperable channels (s) in the tripped condition within:

      1) 12 hours for trip functions common to RPS instrumentation, and
      2) 24 hours for trip functions not common to RPS instrumentation,

      or, initiate the ACTION required by Table 3.2.2.

TABLE 4.2.2

MINIMUM TEST AND CALIBRATION FREQUENCIES

PRIMARY CONTAINMENT ISOLATION INSTRUMENTATION

Trip Function	Functional Test(8)	Calibration(8)	Instrument Check
Low-Low Reactor Vessel Water Level	Every Three Months	Once/Operating Cycle	Once Each Day
High Steam Line Area Temperature	Every Three Months	Each Refueling Outage	--
High Steam Line Flow	Every Three Months	Once/Operating Cycle	Once Each Day
Low Main Steam Line Pressure	Every Three Months	Every Three Months	--
Low Reactor Vessel Water Level	Every Three Months	Once/Operating Cycle	--
High Drywell Pressure	Every Three Months	Once/Operating Cycle	Once Each Day
Condenser Low Vacuum	Every Three Months	Every Three Months	--
Trip System Logic	Once/Operating Cycle (Note 2)	Once/Operating Cycle (Note 3)	--

TABLE 4.2 NOTES

1. Not used.

2. During each refueling outage, simulated automatic actuation which opens all pilot valves shall be performed such that each trip system logic can be verified independent of its redundant counterpart.

3. Trip system logic calibration shall include only time delay relays and timers necessary for proper functioning of the trip system.

4. This instrumentation is excepted from functional test definition. The functional test will consist of injecting a simulated electrical signal into the measurement channel.

5. Deleted.

6. Functional tests, calibrations, and instrument checks are not required when these instruments are not required to be operable or are tripped. Functional tests shall be performed before each startup with a required frequency not to exceed once per week. Calibration shall be performed prior to or during each startup or controlled shutdown with a required frequency not to exceed once per week. Instrument checks shall be performed at least once per day during those periods when instruments are required to be operable.

7. Deleted.

8. Functional tests and calibrations are not required when systems are not required to be operable.

9. The thermocouples associated with safety/relief valves and safety valve position, that may be used for back-up position indication, shall be verified to be operable every operating cycle.

10. Separate functional tests are not required for this instrumentation. The calibration and integrated ECCS tests which are performed once per operating cycle will adequately demonstrate proper equipment operation.

11. Trip system logic functional tests will include verification of operation of all automatic initiation inhibit switches by monitoring relay contact movement. Verification that the manual inhibit switches prevent opening all relief valves will be accomplished in conjunction with Section 4.5.F.1.

BASES: 3.2 (Cont'd)

For the complete circumferential break of 28-inch recirculation line and with the trip setting given above, ECCS initiation and primary system isolation are initiated in time to meet the above criteria. The instrumentation also covers the full range of spectrum breaks and meets the above criteria.

The high drywell pressure instrumentation is a backup to the water level instrumentation, and in addition to initiating ECCS, it causes isolation of Group 2, 3, and 4 isolation valves. For the complete circumferential break discussed above, this instrumentation will initiate ECCS operation at about the same time as the low-low water level instrumentation, thus, the results given above are applicable here also. Certain isolation valves including the TIP blocking valves, CAD inlet and outlet, drywell vent, purge and sump valves are isolated on high drywell pressure. However, since high drywell pressure could occur as the result of non-safety-related causes, such as not venting the drywell during startup, complete system isolation is not desirable for these conditions and only certain valves are required to close. The water level instrumentation initiates protection for the full spectrum of loss of coolant accidents and causes a trip of certain primary system isolation valves.

Venturis are provided in the main steam lines as a means of measuring steam flow and also limiting the loss of mass inventory from the vessel during a steam line break accident. In addition to monitoring steam flow, instrumentation is provided which causes a trip of Group 1 isolation valves. The primary function of the instrumentation is to detect a break in the main steam line, thus only Group 1 valves are closed. For the worst case accident, main steam line break outside the drywell, this trip setting of 140 percent of rated steam flow in conjunction with the flow limiters and main steam line valve closure limit the mass inventory loss such that fuel is not uncovered, cladding temperatures remain less than 1295°F and release of radioactivity to the environs is well below 10CFR100.

Temperature monitoring instrumentation is provided in the main steam line tunnel to detect leaks in this area. Trips are provided on this instrumentation and when exceeded cause closure of Group 1 isolation valves. Its setting of ambient plus 95°F is low enough to detect leaks of the order of 5 to 10 gpm; thus, it is capable of covering the entire spectrum of breaks. For large breaks, it is a backup to high steam flow instrumentation discussed above, and for small breaks, with the resultant small release of radioactivity, gives isolation before the limits of 10CFR100 are exceeded.

Isolation of the condenser mechanical vacuum pump (MVP) is assumed in the safety analysis for the control rod drop accident (CRDA). The MVP isolation instrumentation initiates closure of the MVP suction isolation valve following events in which main steam line radiation monitors exceed a predetermined value. A High Main Steam Line Radiation Monitor trip setting for MVP isolation of $\leq$ 3 times background at rated thermal power (RTP) is as low as practicable without consideration of spurious trips from nitrogen-16 spikes, instrument instabilities and other operational occurrences. Isolating the condenser MVP limits the release of fission products in the event of a CRDA.

Pressure instrumentation is provided which trips when main steam line pressure drops below 800 psig. A trip of this instrumentation results in closure of Group 1 isolation valves. In the refuel, shutdown, and startup modes, this trip function is provided when main steam line flow exceeds 40% of rated capacity. This function is provided primarily to provide protection against a pressure regulator malfunction which would cause the

BASES: 3.2 (Cont'd)

Specification 3.2.G requires that the post-accident monitoring (PAM) instrumentation of Table 3.2.6 be operable during reactor power operation. PAM instrumentation is not required to be operable during shutdown and refueling conditions when the likelihood of an event that would require PAM instrumentation is extremely low. The primary purpose of the PAM instrumentation is to display plant variables that provide information required by the control room operators during accident situations. This information provides the necessary support for the operator to take the manual actions for which no automatic control is provided and that are required for safety systems to accomplish their safety functions for design basis accidents. The operability of the PAM instrumentation ensures that there is sufficient information available on selected plant parameters to monitor and assess plant status and behavior following an accident. This capability is consistent with the recommendations of Regulatory Guide 1.97, "Instrumentation for Light Water Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident."

In most cases, Table 3.2.6 requires a minimum of two operable channels to ensure that the operators are provided the information necessary to determine the status of the plant and to bring the plant to, and maintain it in, a safe condition following an accident. For the majority of parameters monitored, when one of the required channels is inoperable, the required inoperable channel must be restored to operable status within 30 days. The 30-day completion time is based on operating experience and takes into account the remaining operable channel (or in the case of a parameter that has only one required channel, an alternate means to monitor the parameter), the passive nature of the instrument (no critical automatic action is assumed to occur from these instruments), and the low probability of an event requiring PAM instrumentation during this interval.

If a PAM instrument channel has not been restored to an operable status within the specified interval, the required action is to prepare a written report to be submitted to the NRC within the following 14 days. When a special written report is required in accordance with the provisions of Table 3.2.6, the report will outline the preplanned alternate method of monitoring, the cause of the inoperability, and the plans and schedule for restoring the instrumentation to an operable status. This action is appropriate in lieu of a shutdown requirement, since alternative actions are identified before loss of functional capability, and given the likelihood of plant conditions that would require information provided by this instrumentation.

For the majority of PAM instrumentation, when two required channels are inoperable (or in the case of a parameter that is monitored by only one channel, the channel and an alternate means are inoperable), one channel (or the required alternate means) should be restored to an operable status within seven days. The completion time of seven days is based on the relatively low probability of an event requiring PAM instrumentation and the normal availability of alternate means to obtain the required information. Where specified, continuous operation with two required channels inoperable (or one channel and the required alternate means inoperable) is not acceptable after seven days. Therefore, restoration of one inoperable channel limits the risk that the PAM function will be in a degraded condition should an accident occur.