Mr. Samuel L. Newton
Vice President, Operations
Vermont Yankee Nuclear Power Corporation
185 Old Ferry Road
Brattleboro, VT 05301

April 3, 2000

SUBJECT: VERMONT YANKEE NUCLEAR POWER STATION - ISSUANCE OF AMENDMENT RE: SURVEILLANCE TEST INTERVAL AND ALLOWABLE OUT-OF-SERVICE TIME (TAC NO. MA5876)

Dear Mr. Newton:

The Commission has issued the enclosed Amendment No. 186 to Facility Operating License DPR-28 for the Vermont Yankee Nuclear Power Station, in response to your application dated June 15, 1999, as supplemented on January 14, 2000. The January 14, 2000, letter provided clarifying information that did not change the initial proposed no significant hazards consideration determination or expand the scope of the original Federal Register notice.

The amendment revises Technical Specifications (TSs) Sections 3.1/4.1 Reactor Protection System and 3.2/4.2 Protective Instrument Systems instrumentation, tables, and the associated bases to increase the surveillance test intervals (STIs), add allowable out-of-service times (AOTs), replace generic emergency core cooling system actions for inoperable instrument channels with function-specific actions, and relocate selected trip functions from the TSs to a Vermont Yankee (VY) controlled document. In addition, revision to TS Section 3.1/4.1 Reactor Protection System and the associated bases is proposed to remove the RUN Mode APRM Downscale/IRM High Flux/Inoperative Scram Trip Function (APRM Downscale RUN Mode SCRAM). The submittal also proposes to implement editorial corrections and administrative changes that do not alter the meaning or intent of the requirements.

A copy of the related Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

/RA/

Richard P. Croteau, Project Manager, Section 2
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-271

Enclosures:
1. Amendment No. 186 to License No. DPR-28
2. Safety Evaluation

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Vermont Yankee Nuclear Power Station

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

VERMONT YANKEE NUCLEAR POWER CORPORATION

DOCKET NO. 50-271

VERMONT YANKEE NUCLEAR POWER STATION

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 186
License No. DPR-28

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment filed by the Vermont Yankee Nuclear Power Corporation (the licensee) dated June 15, 1999, as supplemented on January 14, 2000, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance: (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 3.B of Facility Operating License No. DPR-28 is hereby amended to read as follows:

   (B) Technical Specifications

   The Technical Specifications contained in Appendix A, as revised through Amendment No. 186 , are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 90 days.

FOR THE NUCLEAR REGULATORY COMMISSION

James W. Clifford

James W. Clifford, Chief, Section 2
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: April 3, 2000

ATTACHMENT TO LICENSE AMENDMENT NO. 186

FACILITY OPERATING LICENSE NO. DPR-28

DOCKET NO. 50-271

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the area of change.

Remove	Insert
21 through 28	21 through 28
29	29
30	30
31	31
32	32
33	33
38	38
39	39
40 through 44	40 through 44
------	44a
------	44b
45 through 49	45 through 49
------	49a
51 through 55	51 through 55
57 through 59	57 through 59
60 through 67	60 through 67
69	69
73	73
74	74
80	80
------	80a

TABLE 3.1.1

REACTOR PROTECTION SYSTEM (SCRAM) INSTRUMENT REQUIREMENTS

	Trip Function	Trip Settings	Modes in Which Functions Must be Operating: Refuel (1)	Startup (12)	Run	Minimum Number Operating Instrument Channels Per Trip System (2)	Required ACTIONS When Minimum Conditions For Operation Are Not Satisfied (3)
1.	Mode Switch in Shutdown (5A-S1)		X	X	X	1	A
2.	Manual Scram (5A-S3A/B)		X	X	X	1	A
3.	IRM (7-41(A-F))						
	High Flux	≤120/125	X	X		2	A
	INOP		X	X		2	A
4.	APRM (APRM A-F)						
	High Flux (flow bias)	≤0.66 (W-ΔW)+54% (4)			X	2	A or B
	High Flux (reduced)	≤15%	X	X		2	A
	INOP			X	X	2(5)	A or B
5.	High Reactor Pressure (PT-2-3-55(A-D)(M))	≤1055 psig	X	X	X	2	A
6.	High Drywell Pressure (PT-5-12(A-D)(M))	≤2.5 psig	X	X	X	2	A
7.	Reactor Low (6) Water Level (LT-2-3-57A/B(M)) (LT-2-3-58A/B(M))	≥127.0 inches	X	X	X	2	A
8.	Scram Discharge Volume High Level (LT-3-231(A-H)(M))	≤21 gallons	X	X	X	2 (per volume)	A

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(10) closure			X	2	A or D

Amendment No. ~~164~~, 186

TABLE 3.1.1 NOTES

1. When the reactor is subcritical and the reactor water temperature is less than 212°F, only the following trip functions need to be operable:

   a) mode switch in shutdown
   b) manual scram
   c) high flux IRM or high flux SRM in coincidence
   d) scram discharge volume high water level

2. There shall be two operable or tripped trip systems for each Trip Function, except as provided for below:

   a. For each Trip Function with one less than the required minimum number of operable instrument channels, place the inoperable instrument channel and/or its associated trip system in the tripped condition* within 12 hours. Otherwise, initiate the ACTION required by Table 3.1.1 for the Trip Function.

   b. For each Trip Function with two or more channels less than the required minimum number of operable instrument channels:

      1) Within one hour, verify sufficient instrument channels remain operable or tripped* to maintain trip capability in the Trip Function, and

      2) Within 6 hours, place the inoperable instrument channel(s) in one trip system and/or that trip system** in the tripped condition*, and

      3) Within 12 hours, restore the inoperable instrument channel(s) in the other trip system to an operable status, or place the inoperable instrument channel(s) in the trip system and/or that trip system in the tripped condition*.

   If any of these three conditions cannot be satisfied, initiate the ACTION required by Table 3.1.1 for the affected Trip Function.

   * An inoperable instrument channel or trip system need not be placed in the tripped condition where this would cause the Trip Function to occur. In these cases, if the inoperable instrument channel is not restored to operable status within the required time, the ACTION required by Table 3.1.1 for that Trip Function shall be taken.

   ** This action applies to that trip system with the greatest number of inoperable instrument channels. If both systems have the same number of inoperable instrument channels, the ACTION can be applied to either trip system.

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

TABLE 3.1.1 NOTES (Cont'd)

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

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

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

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

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

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

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

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

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

11. Not used.

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

    a. The following trip functions are operable:

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

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

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
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

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 1000 Equivalent Full Power Hours
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

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.

BASES:

3.1 Reactor Protection System

The reactor protection system automatically initiates a reactor scram to:

1. preserve the integrity of the fuel barrier;
2. preserve the integrity of the primary system barrier; and
3. minimize the energy which must be absorbed, and prevent criticality following a loss of coolant accident.

This specification provides the limiting conditions for operation necessary to preserve the ability of the system to tolerate single failures and still perform its intended function even during periods when instrument channels may be out of service because of maintenance, testing, or calibration. The basis for the allowable out-of-service times is provided in GE Topical Report NEDC-30851P-A, "Technical Specification Improvement Analysis for BWR Reactor Protection System," March 1988.

The reactor protection system is of the dual channel type. The system is made up of two independent logic channels, each having three subsystems of tripping devices. One of the three subsystems has inputs from the manual scram push buttons and the reactor mode switch. Each of the two remaining subsystems has an input from at least one independent sensor monitoring each of the critical parameters. The outputs of these subsystems are combined in a 1 out of 2 logic; i.e., an input signal on either one or both of the subsystems will cause a trip system trip. The outputs of the trip systems are arranged so that a trip on both logic channels is required to produce a reactor scram.

The required conditions when the minimum instrument logic conditions are not met are chosen so as to bring station operation promptly to such a condition that the particular protection instrument is not required; or the station is placed in the protection or safe condition that the instrument initiates. This is accomplished in a normal manner without subjecting the plant to abnormal operating conditions.

When the minimum requirements for the number of operable or operating trip system and instrumentation channels are satisfied, the effectiveness of the protection system is preserved; i.e., the system can tolerate a single failure and still perform its intended function of scramming the reactor.

Three APRM instrument channels are provided for each protection trip system to provide for high neutron flux protection. APRM's A and E operate contacts in a trip subsystem, and APRM's C an E operate contacts in the other trip subsystem. APRM's B, D, and F are arranged similarly in the other protection trip system. Each protection trip system has one more APRM than is necessary to meet the minimum number required. This allows the bypassing of one APRM per protection trip system for maintenance, testing, or calibration without changing the minimum number of channels required for inputs to each trip system. Additional IRM channels have also been provided to allow bypassing of one such channel. IRM assignment to the bypass switches is described on FSAR Figure 7.5-9 and in FSAR Section 7.5.5.4.

The bases for the scram settings for the IRM, APRM, high reactor pressure, reactor low water level, turbine control valve fast closure, and turbine stop valve closure are discussed in Specification 2.1.

BASES: 3.1 (Cont'd)

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

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

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

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

BASES: 3.1 (Cont'd)

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

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

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

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

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

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

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

BASES: 3.1 (Cont'd)

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

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

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

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

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

BASES: 4.1 REACTOR PROTECTION SYSTEM

A. The scram sensor channels listed in Tables 4.1.1 and 4.1.2 are divided into three groups: A, B and C. Sensors that make up Group A are the on-off type and will be tested and calibrated at the indicated intervals.

Group B devices utilize an analog sensor followed by an amplifier and bistable trip circuit. This type of equipment incorporates control room mounted indicators and annunciator alarms. A failure in the sensor or amplifier may be detected by an alarm or by an operator who observes that one indicator does not track the others in similar channels. The bistable trip circuit failures are detected by the periodic testing.

Group C devices are active only during a given portion of the operating cycle. For example, the IRM is active during start-up and inactive during full-power operation. Testing of these instruments is only meaningful within a reasonable period prior to their use.

The basis for a three-month functional test interval for group (A) and (B) sensors is provided in NEDC-30851P-A, "Technical Specification Improvement Analysis for BWR Reactor Protection Systems," March 1988.

SRM/IRM/APRM overlap Surveillances are established to ensure that no gaps in neutron flux indication exist from subcritical to power operation for monitoring core reactivity status.

The overlap between SRMs and IRMs is required to be demonstrated to ensure that reactor power will not be increased into a neutron flux region without adequate indication. This is required prior to withdrawing SRMs from the fully inserted position since indication is being transitioned from the SRMs to the IRMs.

The overlap between IRMs and APRMs is of concern when reducing power into the IRM range. On power increases, the system design will prevent further increases (by initiating a rod block) if adequate overlap is not maintained. Overlap between IRMs and APRMs exists when sufficient IRMs and APRMs concurrently have onscale readings such that the transition between the RUN and STARTUP/HOT STANDBY Modes can be made without either APRM downscale rod block, or IRM upscale rod block. Overlap between SRMs and IRMs similarly exists when, prior to withdrawing the SRMs from the fully inserted position, IRMs are above mid-scale on range 1 before SRMs have reached the upscale rod block.

As noted, IRM/APRM overlap is only required to be met during entry into STARTUP/HOT STANDBY Mode from the Run Mode. That is, after the overlap requirement has been met and indication has transitioned to the IRMs, maintaining overlap is not required (APRMs may be reading downscale once in the STARTUP/HOT STANDBY Mode).

If overlap for a group of channels is not demonstrated (e.g., IRM/APRM overlap), the reason for the failure of the Surveillance should be determined and the appropriate channel(s) declared inoperable. Only those appropriate channels that are required in the current condition should be declared inoperable.

B. The ratio of MFLPD to FRP shall be checked once per day to determine if the APRM gains require adjustment. Because few control rod movements or power changes occur, checking these parameters daily is adequate.

TABLE 3.2.1

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION

Core Spray - A & B (Note 1)			
Minimum Number of Operable Instrument Channels per Trip System	Trip Function	Trip Level Setting	Required ACTION When Minimum Conditions For Operation Are Not Satisfied
2 (Note 8)	High Drywell Pressure (PT-10-101 (A-D)(M))	$\leq$2.5 psig	Note 10
2 (Note 8)	Low-Low Reactor Vessel Water Level (LT-2-3-72(A-D)(M))	$\geq$82.5" above top of enriched fuel	Note 10
1 (Note 8)	Low Reactor Pressure (PT-2-3-56C/D(M))	$300 \leq P \leq 350$ psig	Note 11
2 (Note 8)	Low Reactor Pressure (PT-2-3-56A/B(M) & PT-2-3-52C/D(M))	$300 \leq P \leq 350$ psig	Note 11
1 (Note 9)	Pump Start Time Delay (14A-K16A & B)	$8 \leq t \leq 10$ seconds	Note 12
2 (Note 8)	Pump (P-46-1A/B) Discharge Pressure (PS-14-44(A-D))	$\geq$100 psig	Note 18
1 (Note 8)	Auxiliary Power Monitor (LNPX C/D)	--	Note 10
1 (Note 8)	Pump Bus Power Monitor (27/3A/B, 27/4A/B)	--	Note 10
1	Trip System Logic	--	Note 5

TABLE 3.2.1
(Cont'd)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION

Low Pressure Coolant Injection System A & B (Note 1)

Minimum Number of Operable Instrument Channels per Trip System	Trip Function	Trip Level Setting	Required ACTION When Minimum Conditions For Operation Are Not Satisfied
1 (Note 8)	Low Reactor Pressure (PT-2-3-56C/D(M))	300 $\leq$ p $\leq$ 350 psig	Note 11
2 (Note 8)	High Drywell Pressure (PT-10-101(A-D)(M))	$\leq$2.5 psig	Note 10
2 (Note 8)	Low-Low Reactor Vessel Water Level (LT-2-3-72(A-D)(S1))	$\geq$82.5" above top of enriched fuel	Note 10
1 (Note 9)	Reactor Vessel Shroud Level (LT-2-3-73A/B(M))	$\geq$2/3 core height	Note 13
1 (Note 9)	Time Delay (10A-K72A & B)	$\leq$60 seconds	Note 12
1 (Note 9)	Pump Start Time Delay (10A-K50A & B)	3 $\leq$ t $\leq$ 5 seconds	Note 12
1 (Note 9)	Low Reactor Pressure (PS-2-128A & B)	100 $\leq$ p $\leq$ 150 psig	Note 10
2 per pump (Note 8)	RHR Pump (A-D) Discharge Pressure (PS-10-105(A-H))	$\geq$100 psig	Note 18
2 (Note 8)	High Drywell Pressure (PT-10-101(A-D)(S1))	$\leq$2.5 psig	Note 13

TABLE 3.2.1
(Cont'd)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION

Low Pressure Coolant Injection System A & B (Note 1)			
Minimum Number of Operable Instrument Channels per Trip System	Trip Function	Trip Level Setting	Required ACTION When Minimum Conditions For Operation Are Not Satisfied
1 (Note 9)	Time Delay (10A-K45A & B)	≤6 minutes	Note 12
2 (Note 8)	Low Reactor Pressure (PT-2-3-56A/B(M) & PT-2-3-52C/D(M))	300 ≤ p ≤ 350 psig	Note 11
1 (Note 8)	Auxiliary Power Monitor (LNPX C/D)	--	Note 10
1 (Note 8)	Pump Bus Power Monitor (27/3A/B, 27/4A/B)	--	Note 10
1	Trip System Logic	--	Note 5

TABLE 3.2.1
(Cont'd)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION

High Pressure Coolant Injection System			
Minimum Number of Operable Instrument Channels per Trip System	Trip Function	Trip Level Setting	Required ACTION When Minimum Conditions For Operation Are Not Satisfied
2 (Notes 3, 8)	Low-Low Reactor Vessel Water Level (LT-2-3-72(A-D)(S1))	Same as LPCI	Note 14
2 (Notes 4, 8)	Low Condensate Storage Tank Water Level (LSL-107-5A/B)	≥ 3%	Note 15
2 (Notes 3, 8)	High Drywell Pressure (PT-10-101(A-D)(M))	Same as LPCI	Note 14
1 (Note 4)	Trip System Logic	--	Note 5
2 (Notes 7, 9)	High Reactor Vessel Water Level (LT-2-3-72A/B)(S4)	≤177 inches above top of enriched fuel	Note 16

TABLE 3.2.1
(Cont'd)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION

Automatic Depressurization			
Minimum Number of Operable Instrument Channels per Trip System (Notes 4)	Trip Function	Trip Level Setting	Required ACTION When Minimum Conditions For Operation Are Not Satisfied
2 (Note 8)	Low-Low Reactor Vessel Water Level (LT-2-3-72(A-D)(M))	Same as Core Spray	Note 17
2 (Note 8)	High Drywell Pressure (PT-10-101(A-D)(S1))	≤2.5 psig	Note 17
1 (Note 8)	Time Delay (2E-K5A/B)	≤120 seconds	Note 18
1	Trip System Logic	--	Note 6
2 (Note 8)	Time Delay (2E-K16A/B, 2E-K17A/B)	≤8 minutes	Note 18

TABLE 3.2.1
(Cont'd)

RECIRCULATION PUMP TRIP ACTUATION INSTRUMENTATION

Recirculation Pump Trip - A & B (Note 1)			
Minimum Number of Operable Instrument Channels per Trip System	Trip Function	Trip Level Setting	Required ACTION When Minimum Conditions For Operation Are Not Satisfied
2 (Note 8)	Low-Low Reactor Vessel Water Level (LM-2-3-68(A-D))	≥ 6' 10.5" above top of enriched fuel	Note 19
2 (Note 8)	High Reactor Pressure (PM-2-3-54(A-D))	≤ 1150 psig	Note 19
2 (Note 8)	Time Delays (2-3-68(A-D)(X))	≤ 10 seconds	Note 19
1	Trip Systems Logic	--	Note 2

TABLE 3.2.1 NOTES

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

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

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

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

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

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

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

8. When a channel is placed in an inoperable status solely for performance of required surveillances, entry into associated Limiting Conditions For Operation and required ACTIONS may be delayed for up to 6 hours provided the associated Trip Function or redundant Trip Function maintains ECCS initiation capability or Recirculation Pump Trip capability.

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

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

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

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

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

TABLE 3.2.1 NOTES (Cont'd)

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

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

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

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

14. With one or more channels inoperable for HPCI:

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

15. With one or more channels inoperable for HPCI:

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

16. With one or more channels inoperable for HPCI:

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

17. With one or more channels inoperable for ADS:

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

TABLE 3.2.1 NOTES (Cont'd)

18. With one or more channels inoperable for ADS:

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

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

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

TABLE 3.2.2

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))	$\geq$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))	$\leq$212°F	B
2/steam line (Notes 11,12)	High Main Steam Line Flow (DPT-2-(116-119)(A-D)(M))	$\leq$140% of rated flow	B
2 (Notes 1,11,12)	Low Main Steam Line Pressure (PS-2-134(A-D))	$\geq$800 psig	B
2 (Notes 6,11,12)	High Main Steam Line Flow (DPT-2-116A,117B, 118C,119D(S1))	$\leq$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))	$\leq$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	$\leq$12" Hg absolute	A
1	Trip System Logic	--	A

TABLE 3.2.2
(Cont'd)

HIGH PRESSURE COOLANT INJECTION SYSTEM ISOLATION INSTRUMENTATION

Minimum Number of Operable Instrument Channels per Trip System	Trip Function	Trip Level Setting	Required ACTION When Minimum Conditions For Operation Are Not Satisfied
2 per set of 4 (Notes 11,12)	High Steam Line Space Temperature (TS-23-(101-104)(B-D))	≤212°F	Note 3
1 (Notes 11,12)	High Steam Line d/p (Steam Line Break) (DPIS-23-77/78)	≤195 inches of water	Note 3
4 (Notes 5,11,12)	Low HPCI Steam Supply Pressure (PS-23-68(A-D))	≥70 psig	Note 3
2 (Notes 11,12)	Main Steam Line Tunnel Temperature (TS-23-(101-104)A)	≤212°F	Note 3
1 (Notes 11,12)	Time Delay (23A-K48) (23A-K49)	≤35 minutes	Note 3
1	Trip System Logic	--	Note 3

TABLE 3.2.2
(Cont'd)

REACTOR CORE ISOLATION COOLING SYSTEM ISOLATION INSTRUMENTATION

Minimum Number of Operable Instrument Channels per Trip System	Trip Function	Trip Level Setting	Required ACTION When Minimum Conditions For Operation Are Not Satisfied
2 (Notes 11,12)	Main Steam Line Tunnel Temperature (TS-13-(79-82)A)	$\leq$212°F	Note 3
1 (Notes 11,12)	Time Delay (13A-K41) (13A-K42)	$\leq$35 minutes	Note 3
2 per set of 4 (Notes 11,12)	High Steam Line Space Temperature (TS-13-(79-82)(B,C,D))	$\leq$212°F	Note 3
1 (Notes 11,12)	High Steam Line d/p (Steam Line Break)(DPIS-13-83/84)	$\leq$195 inches of water	Note 3
4 (Notes 5,11,12)	Low Steam Supply Pressure (PS-13-87(A-D))	$\geq$50 psig	Note 3
1	Trip System Logic	--	Note 3
1 (Notes 11,12)	Time Delay (13A-K7) (13A-K31)	3$\leq$ t $\leq$7 seconds	Note 3

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.

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 3.2.3

REACTOR BUILDING VENTILATION ISOLATION & STANDBY GAS TREATMENT SYSTEM INITIATION

Minimum Number of Operable Instrument Channels per Trip System	Trip Function	Trip Setting	Required ACTION When Minimum Conditions For Operation Are Not Satisfied
2 (Notes 2,3)	Low Reactor Vessel Water Level (LT-2-3-57A/B(M), LT-2-3-58A/B(M))	Same as PCIS	Note 1
2 (Notes 2,3)	High Drywell Pressure (PT-5-12(A-D)(M))	Same as PCIS	Note 1
1 (Notes 2,3)	Reactor Building Vent (RM-17-452A/B)	$\leq$14 mr/hr	Note 1
1 (Notes 2,3)	Refueling Floor Zone Radiation (RM-17-453A/B)	$\leq$100 mr/hr	Note 1
1	Reactor Building Vent Trip System Logic	--	Note 1
1	Standby Gas Treatment Trip System Logic	--	Note 1

TABLE 3.2.3 NOTES

1. If the minimum number of operable instrument channels is not available in either trip system, the reactor building ventilation system shall be isolated and the standby gas treatment system operated until the instrumentation is repaired.

2. 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 Reactor Building Ventilation Isolation and Standby Gas Treatment System Initiation.

3. Whenever Reactor Building Ventilation Isolation and Standby Gas Treatment System Initiation are required by Specification 3.7.B and 3.7.C, 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 and initiation capability in 1 hour or take the ACTION required by Table 3.2.3.

   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 3.2.3.

TABLE 3.2.5

CONTROL ROD BLOCK INSTRUMENTATION

Minimum Number of Operable Instrument Channels per Trip System		Trip Function	Modes in Which Function Must be Operable: Refuel	Startup	Run	Trip Setting
		Startup Range Monitor				
	2	a. Upscale (Note 2)(7-40(A-D))	X	X		$\leq 5 \times 10^5$ cps (Note 3)
	2	b. Detector Not Fully Inserted (7-11(A-D)(LS-4))	X	X		
		Intermediate Range Monitor				
(Notes 10, 1)	2	a. Upscale (7-41(A-F))	X	X		$\leq$108/125 Full Scale
	2	b. Downscale (Note 4) (7-41(A-F))	X	X		$\geq$5/125 Full Scale
	2	c. Detector Not Fully Inserted (7-11(E,F,G,H,J,K)(LS-4))	X	X		
		Average Power Range Monitor (APRM A-F)				
	2	a. Upscale (Flow Bias)			X	$\leq 0.66(W-\Delta W)+42\%$ (Note 5)
	2	b. Downscale			X	$\geq$2/125 Full Scale
		Rod Block Monitor (RBM A/B)				
(Notes 10, 9)	1	a. Upscale (Flow Bias) (Note 7)			X	$\leq 0.66(W-\Delta W)+N$ (Note 5)
	1	b. Downscale (Note 7)			X	$\geq$2/125 Full Scale
(Notes 10,11)	1 (per volume)	Scram Discharge Volume (LT-3-231A/G (S1))	X	X	X	$\leq$12 Gallons
(Note 8)	1	Trip System Logic	X	X	X	

TABLE 3.2.5 NOTES

1. There shall be two operable or tripped trip systems for each function in the required operating mode. If the minimum number of operable instruments are not available for one of the two trip systems, this condition may exist for up to seven days provided that during the time the operable system is functionally tested immediately and daily thereafter; if the condition lasts longer than seven days, the system shall be tripped. If the minimum number of instrument channels are not available for both trip systems, the systems shall be tripped.

2. One of these trips may be bypassed. The SRM function may be bypassed in the higher IRM ranges when the IRM upscale rod block is operable.

3. This function may be bypassed when count rate is $\geq$100 cps or when all IRM range switches are above Position 2.

4. IRM downscale may be bypassed when it is on its lowest scale.

5. "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. Refer to the Core Operating Limits Report for acceptable values for N. 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.

6. Not used.

7. The trip may be bypassed when the reactor power is $\leq$30% of rated. An RBM channel will be considered inoperable if there are less than half the total number of normal inputs from any LPRM level.

8. With the number of operable channels less than required by the minimum operable channels per trip function requirement, place the inoperable channel in the tripped condition within one hour.

9. With one RBM channel inoperable:

   a. Verify that the reactor is not operating on a limiting control rod pattern, and

   b. Restore the inoperable RBM channel to operable status within 24 hours.

   Otherwise, place the inoperable rod block monitor channel in the tripped condition within the next hour.

10. When a channel is placed in an inoperable status solely for performance of required surveillances, entry into associated Limiting Conditions for Operation and required action notes may be delayed for up to 6 hours provided the associated Trip Function maintains Control Rod Block initiation capability.

11. A. With the number of operable channels one less than required by the minimum operable channels per trip function requirement, place the inoperable channel in the tripped condition within 12 hours.

    B. With the number of operable channels two less than required by the minimum operable channels per trip function requirement, place the Trip System in the tripped condition within 1 hour.

TABLE 3.2.6

POST-ACCIDENT INSTRUMENTATION

Minimum Number of Operable Instrument Channels (Note 8)	Parameter	Type of Indication	Instrument Range
2	Drywell Atmospheric Temperature (Note 1)	Recorder #TR-16-19-45 (Blue) Meter #TI-16-19-30B	0-350°F 0-350°F
2	Containment Pressure (Note 1)	Meter #PI-16-19-12A Meter #PI-16-19-12B	(-15) -(+260) psig (-15) -(+260) psig
2	Torus Pressure (Note 1)	Meter #PI-16-19-36A Meter #PI-16-19-36B	(-15) -(+65) psig (-15) -(+65) psig
2	Torus Water Level (Note 3)	Meter #LI-16-19-12A Meter #LI-16-19-12B	0-25 ft. 0-25 ft.
2	Torus Water Temperature (Note 1)	Meter #TI-16-19-33A Meter #TI-16-19-33C	0-250°F 0-250°F
2	Reactor Pressure (Note 1)	Meter #PI-2-3-56A Meter #PI-2-3-56B	0-1500 psig 0-1500 psig
2	Reactor Vessel Water Level (Note 1)	Meter #LI-2-3-91A Meter #LI-2-3-91B	(-200)-0-(+200)"H_2O (-200)-0-(+200)"H_2O
2	Torus Air Temperature (Note 1)	Recorder #TR-16-19-45 (Red) Meter #TI-16-19-41	0-350°F 50-300°F
2/valve	Safety/Relief Valve Position From Pressure Switches (Note 4)	Lights RV-2-71(A-D) From PS-2-71-(1-3)(A-D)	Closed - Open

TABLE 3.2.6
(Cont'd)

POST-ACCIDENT INSTRUMENTATION

Minimum Number of Operable Instrument Channels (Note 8)	Parameter	Type of Indication	Instrument Range
1/valve	Safety Valve Position From Acoustic Monitor (Note 5)	Meter ZI-2-1A/B	Closed - Open
2	Containment Hydrogen/Oxygen Monitor (Note 1)	Recorder SR-VG-6A (SI) Recorder SR-VG-6B (SII)	0-30% hydrogen 0-25% oxygen
2	Containment High-Range Radiation Monitor (Note 6)	Meter RM-16-19-1A/B	1 R/hr-10^7 R/hr
1	Stack Noble Gas Effluent (Note 7)	Meter RM-17-155	0.1 - 10^7 mR/hr

TABLE 3.2.6 NOTES

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

Note 2 - Deleted.

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

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

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

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

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

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

TABLE 3.2.9

REACTOR CORE ISOLATION COOLING SYSTEM ACTUATION INSTRUMENTATION

Minimum Number of Operable Instrument Channels per Trip System	Trip Function	Trip Level Setting	Required ACTION When Minimum Conditions For Operation Are Not Satisfied
2 (Notes 1,5)	Low-Low Reactor Vessel Water Level (LT-2-3-72(A-D)(M))	≥82.5" Above Top of Enriched Fuel	Note 7
2 (Notes 2,5)	Low Condensate Storage Tank Water Level (LT-107-12A/B(M))	≥3%	Note 8
2 (Notes 3,6)	High Reactor Vessel Water Level (LT-2-3-72C/D(S2))	≤177" Above Top of Enriched Fuel	Note 9
1	Trip System Logic	--	Note 4

TABLE 3.2.9 NOTES

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

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

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

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

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 6 hours provided the associated Trip Function maintains RCIC initiation capability.

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

7. With one or more channels inoperable for RCIC:

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

8. With one or more channels inoperable for RCIC:

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

9. With one or more channels inoperable for RCIC:

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

TABLE 4.2.1

MINIMUM TEST AND CALIBRATION FREQUENCIES

EMERGENCY CORE COOLING ACTUATION INSTRUMENTATION

Core Spray System			
Trip Function	Functional Test (8)	Calibration (8)	Instrument Check
High Drywell Pressure	Every Three Months	Once/Operating Cycle	Once Each Day
Low-Low Reactor Vessel Water Level	Every Three Months	Once/Operating Cycle	Once Each Day
Low Reactor Pressure (PT-2-3-56C/D(M))	Every Three Months	Once/Operating Cycle	--
Low Reactor Pressure (PT-2-3-56A/B(M) & 52C/D(M))	Every Three Months	Once/Operating Cycle	--
Pump (P-46-1A/B) Discharge Pressure	Every Three Months	Every Three Months	--
Auxiliary Power Monitor	Every Three Months	None	Once Each Day
Pump Bus Power Monitor	Every Three Months	None	Once Each Day
Trip System Logic	Once/Operating Cycle	Once/Operating Cycle (Note 3)	--

TABLE 4.2.1
(Cont'd)

MINIMUM TEST AND CALIBRATION FREQUENCIES

EMERGENCY CORE COOLING ACTUATION INSTRUMENTATION

Low Pressure Coolant Injection System			
Trip Function	Functional Test(8)	Calibration(8)	Instrument Check
Low Reactor Pressure (PT-2-3-56C/D(M))	Every Three Months	Once/Operating Cycle	--
High Drywell Pressure (PT-10-101A-D(M))	Every Three Months	Once/Operating Cycle	Once Each Day
Low-Low Reactor Vessel Water Level	Every Three Months	Once/Operating Cycle	Once Each Day
Reactor Vessel Shroud Level	Every Three Months	Once/Operating Cycle	--
Low Reactor Pressure (PS-2-128A/B)	Every Three Months	Every Three Months	--
RHR Pump Discharge Pressure	Every Three Months	Every Three Months	--
High Drywell Pressure (PT-10-101A-D(S1))	Every Three Months	Once/Operating Cycle	--
Low Reactor Pressure (PT-2-3-56A/B)(M) & 52C/D(M))	Every Three Months	Once/Operating Cycle	--
Auxiliary Power Monitor	Every Three Months	None	Once Each Day
Pump Bus Power Monitor	Every Three Months	None	Once Each Day
Trip System Logic	Once/Operating Cycle	Once/Operating Cycle (Note 3)	--

TABLE 4.2.1
(Cont'd)

MINIMUM TEST AND CALIBRATION FREQUENCIES

EMERGENCY CORE COOLING ACTUATION INSTRUMENTATION

High Pressure Coolant Injection System			
Trip Function	Functional Test(8)	Calibration(8)	Instrument Check
Low-Low Reactor Vessel Water Level	Every Three Months	Once/operating cycle	Once each day
Low Condensate Storage Tank Water Level	Every Three Months	Every three months	--
High Drywell Pressure	Every Three Months	Once/operating cycle	Once each day
Trip System Logic	Once/operating cycle	Once/Operating cycle (Note 3)	--
High Reactor Vessel Water Level	Every Three Months	Once/operating cycle	--

TABLE 4.2.1
(Cont'd)

MINIMUM TEST AND CALIBRATION FREQUENCIES

EMERGENCY CORE COOLING ACTUATION INSTRUMENTATION

Automatic Depressurization System			
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 Drywell Pressure	Every Three Months	Once/Operating Cycle	Once Each Day
Trip System Logic (Except Solenoids of Valves)	Once/Operating Cycle (Notes 2 and 11)	Once/Operating Cycle (Note 3)	--

TABLE 4.2.1
(Cont'd)

MINIMUM TEST AND CALIBRATION FREQUENCIES

EMERGENCY CORE COOLING ACTUATION INSTRUMENTATION

Recirculation Pump Trip Actuation System			
Trip Function	Functional Test(8)	Calibration(8)	Instrument Check
Low-Low Reactor Vessel Water Level	Every Three Months (Note 4)	Once/Operating Cycle	Once Each Day
High Reactor Pressure	Every Three Months (Note 4)	Once/Operating Cycle	Once Each Day
Trip System Logic	Once/Operating Cycle	Once/Operating Cycle	--

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)	--

TABLE 4.2.2
(Cont'd)

MINIMUM TEST AND CALIBRATION FREQUENCIES

HIGH PRESSURE COOLANT INJECTION SYSTEM ISOLATION INSTRUMENTATION

Trip Function	Functional Test (8)	Calibration (8)	Instrument Check
High Steam Line Space Temperature	Every Three Months	Each refueling outage	--
High Steam Line D/P (Steam Line Break)	Every Three Months	Every three months	--
Low HPCI Steam Supply Pressure	Every Three Months	Every three months	--
Main Steam Line Tunnel Temperature	Every Three Months	Each refueling outage	--
Trip System Logic	Once/operating cycle	Once/operating cycle (Note 3)	--

TABLE 4.2.2
(Cont'd)

MINIMUM TEST AND CALIBRATION FREQUENCIES

REACTOR CORE ISOLATION COOLING SYSTEM ISOLATION INSTRUMENTATION

Trip Function	Functional Test(8)	Calibration(8)	Instrument Check
Main Steam Line Tunnel Temperature	Every Three Months	Each refueling outage	--
High Steam Line Space Temperature	Every Three Months	Each refueling outage	--
High Steam Line d/p including time delay relays (Steam Line Break)	Every Three Months	Every three months	--
Low RCIC Steam Supply Pressure	Every Three Months	Every three months	--
Trip System Logic	Once/operating cycle	Once/operating cycle (Note 3)	--

TABLE 4.2.3

MINIMUM TEST AND CALIBRATION FREQUENCIES

REACTOR BUILDING VENTILATION AND STANDBY GAS TREATMENT SYSTEM ISOLATION

Trip Function	Functional Test(8)	Calibration(8)	Instrument Check
Low Reactor Vessel Water Level	Every Three Months	Once/Operating Cycle	--
High Drywell Pressure	Every Three Months	Once/Operating Cycle	--
Reactor Building Vent Exhaust Radiation	Every Three Months	Every Three Months	Once Each Day
Refueling Floor Zone Radiation	Every Three Months	Every Three Months	Once Each Day During Refueling
Reactor Building Vent Trip System Logic	Once/Operating Cycle	Once/Operating Cycle (Note 3)	--
Standby Gas Treatment Trip System Logic	Once/Operating Cycle	Once/Operating Cycle (Note 3)	--

TABLE 4.2.5

MINIMUM TEST AND CALIBRATION FREQUENCIES

CONTROL ROD BLOCK INSTRUMENTATION

Trip Function	Functional Test	Calibration
Startup Range Monitor		
a. Upscale	Notes 4 and 6	Note 6
b. Detector Not Fully Inserted	Note 6	NA
Intermediate Range Monitor		
a. Upscale	Notes 4 and 6	Note 6
b. Downscale	Notes 4 and 6	Note 6
c. Detector Not Fully Inserted	Note 6	NA
Average Power Range Monitor		
a. Upscale (Flow Bias)	Every Three Months (Note 4)	Every Three Months
b. Downscale	Every Three Months (Note 4)	Every Three Months
Rod Block Monitor		
a. Upscale (Flow Bias)	Every Three Months (Note 4)	Every Three Months
b. Downscale	Every Three Months (Note 4)	Every Three Months
Trip System Logic	Once/Operating Cycle	Once/Operating Cycle (Note 3)
High Water Level in Scram Discharge Volume	Every Three Months	Refueling Outage

TABLE 4.2.9

MINIMUM TEST AND CALIBRATION FREQUENCIES

REACTOR CORE ISOLATION COOLING SYSTEM ACTUATION 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
Low Condensate Storage Tank Water Level	Every Three Months	Once/Operating Cycle	--
High Reactor Vessel Water Level	Every Three Months	Once/Operating Cycle	--
Trip System Logic	Once/Operating Cycle	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. 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.

BASES:

4.2 PROTECTIVE INSTRUMENTATION

The Protective Instrumentation Systems covered by this Specification are listed in Table 4.2. Most of these protective systems are composed of two or more independent and redundant subsystems which are combined in a dual-channel arrangement. Each of these subsystems contains an arrangement of electrical relays which operate to initiate the required system protective action.

The relays in a subsystem are actuated by a number of means, including manually-operated switches, process-operated switches (sensors), bistable devices operated by analog sensor signals, timers, limit switches, and other relays. In most cases, final subsystem relay actuation is obtained by satisfying the logic conditions established by a number of these relay contacts in a logic array. When a subsystem is actuated, the final subsystem relay(s) can operate protective equipment, such as valves and pumps, and can perform other protective actions, such as tripping the main turbine generator unit.

With the dual-channel arrangement of these subsystems, the single failure of a ready circuit can be tolerated because the redundant subsystem or system (in the case of high pressure coolant injection) will then initiate the necessary protective action. If a failure in one of these circuits occurs in such a way that an action is taken, the operator is immediately alerted to the failure. If the failure occurs and causes no action, it could then remain undetected, causing a loss of the redundancy in the dual-channel arrangement. Losses in redundancy of this nature are found by periodically testing the relay circuits and contacts in the subsystems to assure that they are operating properly.

The surveillance test interval for the instrumentation channel functional tests are once/three months for most instrumentation. The allowable out-of-service times and surveillance interval is based on the following NRC approved licensing topical reports:

1. GE Topical Report NEDC-30851P-A, "Technical Specification Improvement Analysis for BWR Reactor Protection System," March 1988.

2. GE Topical Report NEDC-30851P-A, Supplement 1 "Technical Specification Improvement Analysis for BWR Control Rod Block Instrumentation," October 1988.

3. GE Topical Report NEDC-30851P-A, Supplement 2 "Technical Specification Improvement Analysis for BWR Isolation Instrumentation Common to RPS and ECCS Instrumentation," July 1986.

4. GE Topical Report NEDC-31677P-A, "Technical Specification Improvement Analysis for BWR Isolation Actuation Instrumentation," July 1990.

5. GE Topical Report NEDC-30936P-A, Parts 1 and 2, "BWR Owners Group Technical Specification Improvement Methodology (With Demonstration for BWR ECCS Actuation Instrumentation)," December 1988.

6. GE Topical Report GENE-770-06-1-A, "Bases for Changes to Surveillance Test Intervals and Allowed Out-Of-Service Times For Selected Instrumentation Technical Specifications," December 1992.

7. GE Topical Report GENE-770-06-2-A, "Addendum to Bases for Changes to Surveillance Test Intervals and Allowed Out-Of-Service Times For Selected Instrumentation Technical Specifications," December 1992.

BASES:

4.2 PROTECTIVE INSTRUMENTATION (Cont'd)

Since logic circuit tests result in the actuation of plant equipment, testing of this nature was done while the plant was shut down for refueling. In this way, the testing of equipment would not jeopardize plant operation.

This Specification is a periodic testing program which is based upon the overall testing of protective instrumentation systems, including logic circuits as well as sensor circuits. Table 4.2 outlines the test, calibration, and logic system functional test schedule for the protective instrumentation systems. The testing of a subsystem includes a functional test of each relay wherever practicable. The testing of each relay includes all circuitry necessary to make the relay operate, and also the proper functioning of the relay contacts. Testing of the automatic initiation inhibit switches verifies the proper operability of the switches and relay contacts. Functional testing of the inaccessible temperature switches associated with the isolation systems is accomplished remotely by application of a heat source to individual switches.

All subsystems are functionally tested, calibrated, and operated in their entirety.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 186 TO FACILITY OPERATING LICENSE NO. DPR-28

VERMONT YANKEE NUCLEAR POWER CORPORATION

VERMONT YANKEE NUCLEAR POWER STATION

DOCKET NO. 50-271

1.0 INTRODUCTION

By letter dated June 15, 1999, as supplemented by letter dated January 14, 2000, the Vermont Yankee Nuclear Power Corporation (the licensee) submitted a request to amend the Vermont Yankee Nuclear Power Station (VY) Technical Specifications (TSs). The amendment proposed changes to the TSs for various instrumentation systems, as follows:

a. Revise the reactor protection system (RPS), isolation actuation, emergency core cooling system (ECCS) actuation, control rod block, and selected instrumentation specification (TS Sections 3.1/4.1 and 3.2/4.2) pertaining to the surveillance test intervals (STIs) and the allowed outage times (AOTs).

b. Revise TS Section 3.2 to implement ECCS function-specific AOTs and ACTIONS.

c. Revise TS Section 3.1 to delete average power range monitor (APRM) Downscale and intermediate range monitor (IRM) High Flux/Inoperative RUN Mode SCRAM.

d. Relocate ECCS high pressure coolant injection (HPCI), automatic depressurization (ADS), reactor core isolation cooling (RCIC) and isolation bus power monitors from the TS to the Technical Requirements Manual (TRM).

e. Revise the TSs to incorporate various editorial and administrative changes.

f. Corresponding Bases changes were proposed.

The January 14, 2000, letter provided clarifying information that did not change the initial proposed no significant hazards consideration determination or expand the scope of the original Federal Register notice.

2.0 BACKGROUND

Section 182a of the Atomic Energy Act of 1954, as amended (the Act) requires applicants for nuclear power plant operating licenses to include the TSs as part of the license. The Commission's regulatory requirements related to the content of the TSs are set forth in 10 CFR

50.36. That regulation requires that the TSs include items in eight specific categories. The categories are (1) safety limits, limiting safety system settings, and limiting control settings; (2) limiting conditions for operation; (3) surveillance requirements; (4) design features; (5) administrative controls; (6) decommissioning; (7) initial notification; and (8) written reports. However, the regulation does not specify the particular requirements to be included in a plant's TSs.

The Commission amended 10 CFR 50.36 (60 FR 36593, July 19, 1995), and codified four criteria to be used in determining whether a particular matter is required to be included in a limiting condition for operation (LCO), as follows: (1) Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary; (2) a process variable, design feature, or operating restriction that is an initial condition of a design-basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier; (3) a structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design-basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier; or (4) a structure, system, or component which operating experience or probabilistic safety assessment has shown to be significant to public health and safety. LCOs and related requirements that fall within or satisfy any of the criteria in the regulation must be retained in the TS, while those requirements that do not fall within or satisfy these criteria may be relocated to licensee-controlled documents. VY's TRM is one such licensee-controlled document.

2.0 EVALUATION

The proposed changes by the licensee and the staff's evaluation of the changes are discussed below:

a. Proposed Change: The licensee proposes to revise the RPS, isolation actuation, ECCS actuation, control rod block, and selected instrumentation specifications (TS Sections 3.1/4.1 and 3.2/4.2) regarding the STIs and the AOTs in accordance with General Electric (GE) licensing topical reports (LTRs) NEDC-30851P-A dated March 1988, NEDC-30851P-A (Supplement 2) dated March 1989, NEDC-31677P-A dated July 1990, NEDC-30936P-A (Parts 1 and 2) dated December 1988, NEDC-30851P-A (Supplement 1) dated October 1988, GENE-770-06-1 dated February 1991, and GENE-770-06-2 dated February 1991.

   Evaluation: On the basis of the above-listed LTRs, the licensee has proposed the following changes to the TS:

   (1) Revise note (2) to TS Table 3.1.1 to include AOTs for specified RPS functions for required surveillance or repair.

   (2) Revise TS Table 4.1.1 to increase the instrument Channel Test Interval from weekly or monthly to quarterly and delete note (1) for the following Trip Functions:

      (a) APRM - Trip Function 4

(b) High Reactor Pressure - Trip Function 5
(c) High Drywell Pressure - Trip Function 6
(d) Low Reactor Water Level - Trip Function 7
(e) High Water Level in Scram Discharge Volume - Trip Function 8
(f) High Main Steam Line Radiation - Trip Function 9
(g) Main Steam Line Isolation Valve Closure - Trip Function 10
(h) Turbine Control Valve Fast Closure - Trip Function 11
(i) Turbine Stop Valve Closure - Trip Function 12

(3) Revise note (8) to TS Table 4.1.1 to delete reference to monthly test program. Add note (9) to TS Table 4.1.1, scram test switch, to perform weekly testing of the auto-scram contactors.

(4) Add notes (8) and (9) to TS Table 3.2.1 to include AOTs for specified ECCS instrumentation for required surveillance.

(5) Increase the Instrument Functional Test Interval requirement in TS Table 4.2.1 from monthly to quarterly and delete note (1) in Table 4.2.1 for the following Trip Functions:

<u>Core Spray System</u>

(a) High Drywell Pressure
(b) Low-Low Reactor Vessel Water Level
(c) Low Reactor Pressure
(d) Low Reactor Pressure
(e) Pump Discharge Pressure
(f) Auxiliary Power Monitor
(g) Pump Bus Power Monitor

<u>Low-Pressure Cooling Injection System</u>

(a) Low Reactor Pressure
(b) High Drywell Pressure
(c) Low-Low Reactor Vessel Water Level
(d) Reactor Vessel Shroud Level
(e) Low Reactor Pressure
(f) RHR Pump Discharge Pressure
(g) High Drywell Pressure
(h) Low Reactor Pressure
(i) Auxiliary Power Monitor
(j) Pump Bus Power Monitor

<u>High-Pressure Coolant Injection System</u>

(a) Low-Low Reactor Vessel Water Level
(b) Low Condensate Storage Tank Water Level
(c) High Drywell Pressure
(d) High Reactor Vessel Water Level

Automatic Depressurization System

(a) Low-Low Reactor Vessel Water Level
(b) High Drywell Pressure

Recirculation Pump Trip Actuation

(a) Low-Low Reactor Vessel Water Level
(b) High Reactor Pressure

(6) Add notes (11) and (12) to TS Table 3.2.2 to include AOTs for specified Isolation Trip Functions for required surveillance or repair.

(7) Increase the Instrument Channel Test interval requirement in TS Table 4.2.2 from monthly to quarterly and delete note (1) for the following Trip Functions:

Primary Containment Isolation Instrumentation

(a) Low-Low Reactor Vessel Water Level
(b) High Steam Line Area Temperature
(c) High Steam Line Flow
(d) Low Main Steam Line Pressure
(e) Low Reactor Vessel Water Level
(f) High Main Steam Line Radiation
(g) High Drywell Pressure
(h) Condenser Low Vacuum

High Pressure Coolant Injection System Isolation Instrumentation

(a) High Steam Line Space Temperature
(b) High Steam Line D/P (Steam Line Break)
(c) Low HPCI Steam Supply Pressure
(d) Main Steam Line Tunnel Temperature

Reactor Core Isolation Cooling System Isolation Instrumentation

(a) Main Steam Line Tunnel Temperature
(b) High Steam Line Space Temperature
(c) High Steam Line D/P including Time Delay Relays (Steam Line Break)
(d) Low RCIC Steam Supply Pressure

(8) Delete 24 hours from note 1 and add notes 2 and 3 for AOTs for specified Isolation Trip Functions for required surveillance to TS Table 3.2.3.

(9) Increase the Instrument Channel Test interval requirement in TS Table 4.2.3 from monthly to quarterly and delete note (1) in TS Table 4.2 for the following Trip Functions: Reactor Building Ventilation and Standby Gas Treatment System Isolation

(a) Low Reactor Vessel Water Level
(b) High Drywell Pressure
(c) Reactor Building Vent Exhaust Radiation
(d) Refueling Floor Zone Radiation

(10) Delete note (6) and add notes (10) and (11) to TS Table 3.2.5 to include AOTs for specified Control Rod Block Trip Functions for required surveillance.

(11) Increase the Instrument Channel Test interval requirement in TS Table 4.2.5 from monthly to quarterly and delete note (1) in TS Table 4.2 for the following trip functions:

(a) Upscale (Flow Bias)
(b) Downscale

(12) Add note (8) to TS Table 3.2.6 to provide AOTs for specified Post-Accident Instrumentation Parameters for required surveillance.

(13) Add notes (5) and (6) to TS Table 3.2.9 to include AOTs for Reactor Core Isolation Cooling System Actuation Instrumentation Trip Functions for required surveillance or repair.

(14) Increase the Instrument Channel Test interval requirement in TS Table 4.2.9 from monthly to quarterly and delete note (1) for the following Trip Functions:

(a) Low-Low Reactor Vessel Water Level
(b) Low Condensate Storage Tank Water Level
(c) High Reactor Vessel Water Level

The staff's review of the above-mentioned LTRs concluded that potential benefits associated with an increase in the STIs and AOTs outweigh the very small increase in core-melt frequency. However, the staff's approval of the LTRs was conditional, and each licensee was required to submit the following information:

- Confirmation of the applicability of the generic analysis for the LTRs to their facilities. (This issue applies to all LTRs.)

- Demonstration that through the use of actual instrument drift information from the equipment vendor or from plant-specific data the drift characteristics for instrumentation are bounded by the assumptions used in the LTRs when the surveillance test interval is extended from weekly or monthly to quarterly. (This issue applies to all LTRs.)

- Confirmation that the differences between individual components of the RPS that perform the trip function installed in the facility are bounded by the generic analysis. (This issue applies to LTR NEDC-30851P-A only.)

The licensee has reviewed the above-listed LTRs and has verified their applicability to VY. With regard to the drift, the licensee has determined that setpoint drift that could be expected under the extended STIs has been studied and either: (1) has been shown to remain within the existing allowance in the RPS and engineered safety feature actuation system (ESFAS) instrument setpoint calculation; or (2) that the allowance and setpoint have been adjusted to account for the additional drift. Also, GE has completed a plant-specific analysis that indicates that the differences and their impact do not significantly affect the improvement in the TS developed by the generic efforts and, hence, the plant-specific changes contained in this request are bounded by both the generic analysis and the NRC's safety evaluation report. In a letter dated July 26, 1991, to the Boiling Water Reactor Owners Group (BWROG), the staff expressed a concern that Action "a" in LTR-30851P-A could be interpreted to mean that loss of RPS functional capability is permitted for a 12-hour AOT. In its letter of November 4, 1992, the BWROG proposed revised wording which was acceptable to the staff. In its note 2 to TS Table 3.1.1, the licensee has incorporated the intent of this wording. The staff finds the proposed changes acceptable because the NRC previously approved the LTRs with conditions and the licensee has adequately addressed the conditions.

b. Proposed Change: Revise TS Tables 3.2.1 and 3.2.9 for ECCS and RCIC actuation instrumentation to implement function-specific AOTs and ACTIONS.

Evaluation: There are 32 trip functions in TS Table 3.2.1 and 3 trip functions in TS Table 3.2.9 that are affected by adding new notes 10 through 19 for Table 3.2.1 and notes 6, 7, and 9 for Table 3.2.9 that may be applied under different inoperable instrument channel scenarios. The revised AOTs and actions are consistent with the requirements of "Standard Technical Specifications" (STS), NUREG-1433, Revision 1, for these trip functions. The repair AOTs are consistent with the intent of LTR NEDC-30936P-A, Appendix N (Part 1) and Appendix B (Part 2), as implemented in the STS. The revised actions and AOTs simplify the use of the TS by providing trip function-specific requirements and by ensuring consistency with the STS. The licensee's submittal provides a discussion of the application of notes associated with TS Tables 3.2.1 and 3.2.9. The licensee provided a detailed discussion of the application of TS Table 3.2.1 Note 10, which applies to core spray and/or LPCI trip functions. The discussion describes various scenarios in which one or more instrumentation channels are inoperable and how the notes are applied for these scenarios. The notes are applied in a different manner, depending on whether or not the system initiation capability is lost. This capability is lost when two channels are inoperable in one trip system but not when two channels are inoperable in separate trip systems. The NRC staff concludes that the licensee intends to interpret these notes appropriately. The staff has reviewed this issue for another plant (James A. Fitzpatrick Nuclear Power Plant) and has accepted a similar change request (NRC letter dated January 12, 1999). The AOTs proposed by the licensee are beyond the scope approved for LTRs, and the June 15, 1999, submittal did not provide adequate basis for using the extended AOTs used in the STS. By letter dated January 14, 2000, the licensee provided justification for the changes. The staff concludes that the proposed changes are acceptable because they are in accordance with the approved LTRs, because of the low probability of an event occurring coincident with a failure in the remaining operable channel, and because of the low probability of an event occurring during the short time-period allowed for multiple channels to be out-of-service.

c. Proposed Change: The licensee has proposed to delete APRM Downscale in TS Tables 3.1.1 and 4.1.1 for Trip Function 4. Also the licensee has proposed to delete the RUN Mode requirement for IRM High Flux/Inoperative and associated note (11) in TS Table 3.1.1 for Trip Function 3.

Evaluation: Removal of the APRM Downscale RUN Mode SCRAM from the TS will permit available combinations of inoperable IRM and APRM channels to be simultaneously bypassed and will avoid the need to operate the plant in the half scram condition, which entails a risk of a plant transient because of inoperable IRM/APRM combinations. GE has performed a plant-specific evaluation for removing the RUN Mode IRM High Flux/Inoperative with the associated APRM Downscale RUN Mode SCRAM Trip Function for VY. The licensee has reviewed the GE evaluation and concurred with the conclusions. Also, the updated final safety analysis report (UFSAR) and reload safety analysis do not take credit for the APRM Downscale RUN Mode SCRAM. This function does not meet 10 CFR 50.36 criteria for inclusion in TSs and has been deleted from the TSs of several plants that originally included it in their design.

The licensee has added a new surveillance requirement to the RPS by adding a note 7 to TS Table 4.1.2 to verify source range monitor (SRM)/IRM/APRM overlap to ensure that no gap in neutron flux indication exists from subcritical to power operations. The overlap between SRM and IRM must be demonstrated during startup to ensure that reactor power will not be increased into a neutron flux monitoring region without adequate indication. Additionally, rod withdrawal blocks will prevent further power increases if adequate overlap is not maintained. Similarly, the overlap between IRM and APRM is of concern during power reduction into the IRM range and transition between the RUN Mode and STARTUP/HOT STANDBY Mode can be made if adequate overlap exists between IRM and APRM without APRM downscale rod block or IRM upscale rod block.

The staff concludes that the proposed changes are acceptable because the UFSAR and VY-specific analyses do not take credit for these functions. In addition, the staff notes that the proposed change is consistent with the STS .

d. Proposed Change: The licensee proposes to relocate ECCS, HPCI, ADS, RCIC, and isolation bus power monitors from the TS to the TRM.

Evaluation: The licensee has proposed to delete these trip functions from the TSs (Tables 3.2.1, 3.2.2, 3.2.3, and 3.2.9) because they only provide control room annunciations upon detection of abnormal conditions for the associated ECCS and Isolation. These functions are not relied upon for detection or mitigation of any transient or accident conditions. In addition, existing TS requirements for these trip functions specify that an inoperable channel can be tripped and that this action serves no other purpose except to cause annunciation in the control room. The licensee has also removed the surveillance requirements for these trip functions from the TSs (Tables 4.2.1, 4.2.2, 4.2.3, and 4.2.9). The licensee has proposed to move these functions to the TRM. The staff concludes that the proposed changes are acceptable since this information is not required to be included in the TSs per 10 CFR 50.36 and the provisions of 10 CFR 50.59 provide adequate controls for these items. In addition, the staff notes that the proposed changes are consistent with the STS.

e. Proposed Change: The licensee proposes to incorporate many editorial and administrative changes in the TSs.

   Evaluation: The licensee has made many editorial and administrative changes, including correction of typographical errors and format changes, as required and has also revised the TS Bases to reflect these changes. These changes do not change the meaning of the existing TSs and are, therefore, acceptable to the staff.

f. Bases Changes: The licensee proposed Bases changes corresponding to the TS changes discussed previously in this evaluation. The staff does not object to the proposed Bases changes.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Vermont State official was notified of the proposed issuance of the amendment. The State official had no comment.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. The NRC staff has determined that the amendment involves no significant increase in amounts, and no significant change in the types of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (64 FR 56535). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor:. Hukam Garg

Date: April 3, 2000