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

NIAGARA MOHAWK POWER CORPORATION

DOCKET NO. 50-220

NINE MILE POINT NUCLEAR STATION UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 153
License No. DPR-63

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

   A. The application for amendment by Niagara Mohawk Power Corporation (the licensee) dated July 21, 1994, as supplemented December 5, 1994, December 14, 1994, January 11, 1995, and February 1, 1995, 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 2.C.(2) of Facility Operating License No. DPR-63 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 153, 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 the date of its issuance to be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION

LBMarsh

Ledyard B. Marsh, Director
Project Directorate I-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical Specifications

Date of Issuance: March 3, 1995

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 153 TO FACILITY OPERATING LICENSE NO. DPR-63

DOCKET NO. 50-220

Revise Appendix A as follows:

Remove Pages	Insert Pages
10	10
11	11
18	18
19	19
20	20
21	21
22	22
---	70a
74	74
199	199
200	200
202	202
203	203
206	206
213	213
227	227
251	251

SAFETY LIMIT	LIMITING SAFETY SYSTEM SETTING

c. The neutron flux shall not exceed its scram setting for longer than 1.5 seconds as indicated by the process computer. When the process computer is out of service, a safety limit violation shall be assumed if the neutron flux exceeds the scram setting and control rod scram does not occur.

To ensure that the Safety Limit established in Specifications 2.1.1a and 2.1.1b is not exceeded, each required scram shall be initiated by its expected scram signal. The Safety Limit shall be assumed to be exceeded when scram is accomplished by a means other than the expected scram signal.

d. Whenever the reactor is in the shutdown condition with irradiated fuel in the reactor vessel, the water level shall not be more than 6 feet, 3 inches (-10 inches indicator scale) below minimum normal water level (Elevation 302'9") except as specified in "e" below.

e. For the purpose of performing major maintenance (not to exceed 12 weeks in duration) on the reactor vessel; the reactor water level may be lowered 9' below the minimum normal water level (Elevation 302'9"). Whenever the reactor water level is to be lowered below the low-low-low level setpoint redundant instrumentation will be provided to monitor the reactor water level.

T = FRTP/CMFLPD (T is applied only if less than or equal to 1.0)

FRTP = Fraction of Rated Thermal Power where Rated Thermal Power equals 1850 MW

CMFLPD = Core Maximum Fraction of Limiting Power Density

With CMFLPD greater than the FRTP for a short period of time, rather than adjusting the APRM setpoints, the APRM gain may be adjusted so that APRM readings are greater than or equal to 100% times CMFLPD provided that the adjusted APRM reading does not exceed 100% of rated thermal power and a notice of adjustment is posted on the reactor control panel.

b. The IRM scram trip setting shall not exceed 12% of rated neutron flux for IRM range 9 or lower.

The IRM scram trip setting shall not exceed 38.4% of rated neutron flux for IRM range 10.

c. The reactor high pressure scram trip setting shall be ≤ 1080 psig.

d. The reactor water low level scram trip setting shall be no lower than -12 inches (53 inches indicator scale) relative to the minimum normal water level (302'9").

SAFETY LIMIT	LIMITING SAFETY SYSTEM SETTING
Written procedures will be developed and followed whenever the reactor water level is lowered below the low-low level set point (5 feet below minimum normal water level). The procedures will define the valves that will be used to lower the vessel water level. All other valves that have the potential of lowering the vessel water level will be identified by valve number in the procedures and these valves will be red tagged to preclude their operation during the major maintenance with the water level below the low-low level set point. In addition to the Facility Staff requirements given in Specification 6.2.2.b, there shall be another control room operator present in the control room with no other duties than to monitor the reactor vessel water level.	e. The reactor water low-low level setting for core spray initiation shall be no less than -5 feet (5 inches indicator scale) relative to the minimum normal water level (Elevation 302'9"). f. The reactor low pressure setting for main-steam-line isolation valve closure shall be $\geq$850 psig when the reactor mode switch is in the run position or the IRMs are on range 10. g. The main-steam-line isolation valve closure scram setting shall be $\leq$10 percent of valve closure (stem position) from full open. h. The generator load rejection scram shall be initiated by the signal for turbine control valve fast closure due to a loss of oil pressure to the acceleration relay any time the turbine first stage steam pressure is above a value corresponding to 833 Mwt, i.e., 45 percent of 1850 Mwt. i. The turbine stop valve closure scram shall be initiated at $\leq$10 percent of valve closure setting (Stem position) from full open whenever the turbine first stage steam pressure is above a value corresponding to 833 Mwt, i.e., 45 percent of 1850 Mwt.

However, in response to expressed beliefs[7] that variation of APRM flux scram with recirculation flow is a prudent measure to assure safe plant operation during the design confirmation phase of plant operation, the scram setting will be varied with recirculation flow.

An increase in the APRM scram trip setting would decrease the margin present before the fuel cladding integrity safety limit is reached. The APRM scram trip setting was determined by an analysis of margins required to provide a reasonable range for maneuvering during operation. Reducing this operating margin would increase the frequency of spurious scrams which have an adverse effect on reactor safety because of the resulting thermal stresses. Thus, the APRM scram trip setting was selected because it provides adequate margin for the fuel cladding integrity safety limit yet allows operating margin that reduces the possibility of unnecessary scrams.

The scram trip setting must be adjusted to ensure that the LHGR transient peak is not increased for any combination of FRTP and CMFLPD. The scram setting is adjusted in accordance with Specification 2.1.1a when the core maximum fraction of limiting power density exceeds the fraction of rated thermal power.

Reactor power level may be varied by moving control rods or by varying the recirculation flow rate. The APRM system provides a control rod block to prevent rod withdrawal beyond a given point at a constant recirculation flow rate, and thus to protect against the condition of a MCPR less than the SLCPR. This rod block trip setting, which is automatically varied with recirculation flow rate, prevents an increase in the reactor power level to excessive values due to control rod withdrawal. The flow variable trip setting provides substantial margin from fuel damage, assuming a steady-state operation at the trip setting, over the entire recirculation flow range. The margin to the safety limit increases as the flow decreases for the specified trip setting versus flow relationship; therefore, the worst case MCPR which could occur during steady-state operation is at 110% of rated thermal power because of the APRM rod block trip setting. The actual power distribution in the core is established by specified control rod sequences and is monitored continuously by the in-core LPRM system. As with the APRM scram trip setting, the APRM rod block trip setting is adjusted downward if the core maximum fraction of limiting power density exceeds the fraction of rated thermal power, thus, preserving the APRM rod block safety margin.

b. Normal operation of the automatic recirculation pump control will be in excess of 30% of rated flow; therefore, little operation below 30% flow is anticipated. For operation in the startup mode while the reactor is at low pressure (<800 psia), the IRM range 9 high flux[16, 17] scram setting is calibrated to correspond to 12% of rated neutron flux. The IRM range 9, 12% of rated neutron flux calibration is on a nominal basis, which provides adequate margin between the setpoint and the safety limit at 25% of rated power. The margin is also adequate to accommodate anticipated maneuvers associated with plant startup. There are a few possible sources of rapid reactivity input to the system in the low power flow condition. Effects of increasing pressure at zero or low void content are minor, cold water from sources available during startup is not much colder

than that already in the system, temperature coefficients are small, and control rod patterns are constrained to be uniform by operating procedures backed up by the rod worth minimizer. Worth of individual rods is very low in a uniform rod pattern. Thus, of all possible sources of reactivity input, uniform control rod withdrawal is the most probable cause of significant power rise. Because the flux distribution associated with uniform rod withdrawals does not involve high local peaks, and because several rods must be removed to change power by a significant percentage of rated, the rate of power rise is very slow. Generally, the heat flux is in near equilibrium with the fission rate. In an assumed uniform rod withdrawal approach to the scram level, the rate of power rise is no more than 5% of rated per minute, and the IRM system would be more than adequate to assure a scram before the power could exceed the safety limit.

Procedural controls will assure that the IRM scram is maintained for low flow condition. This is accomplished by keeping the IRMs on range 9 until 20% flow is exceeded and reactor pressure is >850 psig and that control rods shall not be withdrawn if recirculation flow is less than 30%. If the APRMs are onscale, then the reactor mode switch may be placed in run, thereby switching scram protection from the IRM to the APRM system. If the APRMs are not onscale, then operation with the mode switch in startup (including normal startup mode steam chest warming and bypass valve operation) may continue using IRM range 10, provided that the main turbine generator is not placed in operation.

To continue operation with the mode switch in startup beyond 12% of rated neutron flux, the IRMs must be transferred into range 10. The Reactor Protection System is designed such that reactor pressure must be above 850 psig to successfully transfer the IRMs into range 10, thus assuring added protection for the fuel cladding safety limit. The RPS design will cause the low reactor pressure main-steam-line isolation to be unbypassed when one IRM in trip system 11 and one IRM in trip system 12 are placed in range 10. Procedural controls assure that IRM range 9 is maintained on all IRM channels up to 850 psig reactor pressure. The IRM scram remains active until the mode switch is placed in the RUN position at which time the scram function is transferred to APRMs.

The adequacy of the IRM scram in range 10 was determined by comparing the scram level on the IRM range 10 to the minimum APRM scram level. The IRM scram is at approximately 38.4% of rated neutron flux while the minimum flow biased APRM scram which occurs at zero recirculation flow is at 65% of rated power. Therefore, startup mode transients (i.e., those not including turbine operation) requiring a scram based on a flux excursion will be terminated sooner with an IRM Range 10 scram than with an APRM scram.

Above the RWM low power setpoint of rated power, the ability of the IRMs to terminate a rod withdrawal transient is limited due to the number and location of IRM detectors. An evaluation was performed that showed by maintaining a minimum core flow of 20.25×10^6 lb/hr (30% rated flow) in range 10, a complete rod withdrawal initiated below 40% of rated power would not result in violating the fuel cladding safety limit. Normal operation of the automatic recirculation pump control will be in excess of 30% rated flow; therefore, little operation below 30% flow is anticipated. Therefore, IRM upscale rod block and scram in range 10 provide adequate protection against a rod withdrawal error transient.

The IRM Limiting Safety System Setting 2.1.2.b for IRM range 9 of <12% rated neutron flux and IRM range 10 of <38.4% of rated neutron flux are nominal trip setpoints as defined by GE Setpoint Methodology as outlined in NEDC-31336. The calibration of these Limiting Safety System Setting values is completed by adjusting IRM amplifier gain such that IRM indication is correlated to rated neutron flux. With the IRM indication correlated to neutron flux, the IRM upscale on range 9 corresponds to 12% and range 10 to 38.4% of rated neutron flux, respectively.

For IRM operation in range 9 or less, in order to ensure that the IRM provided adequate protection against the single rod withdrawal error, a range of rod withdrawal accidents was analyzed. This analysis included starting the accident at various power levels. The most severe case involves an initial condition in which the reactor is just subcritical and the IRM system is not yet on scale. This condition exists at quarter rod density. Additional conservatism was taken in this analysis by assuming that the IRM channel closest to the withdrawn rod is bypassed. The results of this analysis show that the reactor is scrammed and peak power limited to 1% of rated power, thus maintaining a limit above the SLCPR. Based on the above analysis, the IRM provides protection against local control rod withdrawal errors and continuous withdrawal of control rods in sequence and provides backup protection for the APRM.

c. As demonstrated in UFSAR Section XV-A and B, the reactor high pressure scram is a backup to the neutron flux scram, turbine stop valve closure scram, generator load rejection scram, and main steam isolation valve closure scram, for various reactor isolation incidents. However, rapid isolation at lower power levels generally results in high pressure scram preceding other scrams because the transients are slower and those trips associated with the turbine generator are bypassed.

   The operator will set the trip setting at 1080 psig or lower. However, the actual set point can be as much as 15.8 psi above the 1080 psig indicated set point due to the deviations discussed above.

d. A reactor water low level scram trip setting -12 inches (53 inches indicator scale) relative to the minimum normal water level (Elevation 302'9") will assure that power production will be terminated with adequate coolant remaining in the core. The analysis of the feedwater pump loss in UFSAR Section XV-B.3.13 has demonstrated that approximately 4 feet of water remains above the core following the low level scram.

   The operator will set the low level trip setting no lower than -12 inches relative to the lowest normal operating level. However, the actual set point can be as much as 2.6 inches lower due to the deviations discussed above.

e. A reactor water low-low level signal -5 feet (5 inches indicator scale) relative to the minimum normal water level (Elevation 302'9") will assure that core cooling will continue even if level is dropping. Core spray cooling will adequately cool the core, as discussed in LCO 3.1.4.

   The operator will set the low-low level core spray initiation point at no less than -5 feet (5 inches indicator scale) relative to the minimum normal water level (Elevation 302'9"). However, the actual set point can be as much as 2.6 inches lower due to the deviations discussed above.

f-g. The low pressure isolation of the main steam lines at 850 psig was provided to give protection against fast reactor depressurization and the resulting rapid cooldown of the vessel. Advantage was taken of the scram feature which occurs when the main steam line isolation valves are closed, to provide for reactor shutdown so that high power operation at low reactor pressure does not occur, thus providing protection for the fuel cladding integrity safety limit. Operation of the reactor at pressures lower than 850 psig requires that the reactor mode switch be in the startup position and the IRMs on range 9 or lower, where protection of the fuel cladding integrity safety limit is provided by the IRM high neutron flux scram. Thus, the combination of main steam line isolation on reactor low pressure and isolation valve closure scram assures the availability of neutron flux scram protection over the entire range of applicability of the fuel cladding integrity safety limit. In addition, the isolation valve closure scram anticipates the pressure and flux transients which occur during normal or inadvertent isolation valve closure. With the scrams set at ≤10% valve closure, there is no increase in neutron flux and peak pressure if the vessel dome is limited to 1141 psig. [8, 9, 10].

The operator will set the pressure trip at greater than or equal to 850 psig and the isolation valve stem position scram setting at less than or equal to 10% of valve stem position from full open. However, the actual pressure set point can be as much as 15.8 psi lower than the indicated 850 psig and the valve position set point can be as much as 2.5% of stem position greater. These allowable deviations are due to instrument error, operator setting error and drift with time.

In addition to the above mentioned Limiting Safety System Setting, the scram dump volume high level scram trip (LCO 3.6.2) serves as a secondary backup to the Limiting Safety System Setting chosen. This high level scram trip assures that scram capability will not be impaired because of insufficient scram dump volume to accommodate the water discharged from the control rod drive hydraulic system as a result of a reactor scram (Section X-C.2.10)*.

h. The generator load rejection scram is provided to anticipate the rapid increase in pressure and neutron flux resulting from fast closure of the turbine control valves due to the worst case transient of a load rejection and subsequent failure of the bypass. In fact, analysis [9,10] shows that heat flux does not increase from its initial value at all because of the fast action of the load rejection scram; thus, no significant change in MCPR occurs.

i. The turbine stop valve closure scram is provided for the same reasons as discussed in h above. With a scram setting of ≤10% valve closure, the resultant transients are nearly the same as for those described in i above; and, thus, adequate margin exists.

*UFSAR

(1) General Electric BWR Thermal Analysis Basis (GETAB) Data, Correlation and Design Application, NEDO-10958 and NEDE-10958.

(2) Linford, R. B., "Analytical Methods of Plant Transient Evaluations for the General Electric Boiling Water Reactor," NEDO-10801, February 1973.

(3) UFSAR Section XV-A and B.

(4) UFSAR Section XV-A and B.

(5) UFSAR Section XV-A and B.

(6) UFSAR Section XV-A and B.

(7) Letters, Peter A. Morris, Director of Reactor Licensing, USAEC, to John E. Logan, Vice-President, Jersey Central Power and Light Company, dated November 22, 1967 and January 9, 1968.

(8) UFSAR Section XV-A and B.

(9) Letter, T. J. Brosnan, Niagara Mohawk Power Corporation, to Peter A. Morris, Division of Reactor Licensing, USAEC, dated February 28, 1972.

(10) Letter, Philip D. Raymond, Niagara Mohawk Power Corporation, to A. Giambusso, USAEC, dated October 15, 1973.

(11) Nine Mile Point Nuclear Power Station Unit 1 Load Line Limit Analysis, NEDO 24012, May, 1977.

(12) Licensing Topical Report "General Electric Standard Application for Reactor Fuel," NEDE-24011-P-A, latest approved revision.

(13) Nine Mile Point Nuclear Power Station Unit 1, Extended Load Line Limit Analysis, License Amendment Submittal (Cycle 6), NEDO-24185, April 1979.

(14) General Electric SIL 299 "High Drywell Temperature Effect on Reactor Vessel Water Level Instrumentation."

(15) Letter (and attachments) from C. Thomas (NRC) to J. Charnley (GE) dated May 28, 1985, "Acceptance for Referencing of Licensing Topical Report NEDE-24011-P-B, Amendment 10."

(16) GENE-909-16-0393, "IRM/APRM Overlap Analysis for Nine Mile Point Nuclear Station Unit One," Revision 1, dated April 14, 1993.

(17) GENE-909-39-1093, "IRM/APRM Overlap Improvement for Nine Mile Point Nuclear Station Unit One," dated March 8, 1994.

LIMITING CONDITION FOR OPERATION	SURVEILLANCE REQUIREMENT
i. Required Minimum Recirculation Flow Rate for Operation in IRM Range 10 During startup mode of operation in IRM range 10, a minimum recirculation flow rate of 30% of rated core flow is required. Control rods shall not be withdrawn if recirculation flow is less than 30% of rated.	

Reporting Requirements

The LCOs associated with monitoring the fuel rod operating conditions are required to be met at all times, i.e., there is no allowable time in which the plant can knowingly exceed the limiting values of MAPLHGR, LHGR, MCPR, or Power/Flow Ratio. It is a requirement, as stated in Specifications 3.1.7a, b, c, and d that if at any time during power operation it is determined that the limiting values for MAPLHGR, LHGR, MCPR, or Power/Flow Ratio are exceeded, action is then initiated to restore operation to within the prescribed limits. This action is initiated as soon as normal surveillance indicates that an operating limit has been reached. Each event involving operation beyond a specified limit shall be reported as a Reportable Occurrence. If the specified corrective action described in the LCOs was taken, a thirty-day written report is acceptable.

Operations Beyond the End-of-Cycle (Coastdown)

The General Electric generic BWR analysis of coastdown operation (Reference 17) concludes that operation beyond the end-of-cycle (coastdown) is acceptable. Amendment No. 7 to GESTAR (Reference 18) concludes that the analysis conservatively bounds coastdown operation to forty (40) percent power. The margin to all safety limits analyzed increased linearly as the power decreased.

Required Minimum Recirculation Flow Rate for Operation in IRM Range 10

During power operation above the low power setpoint of 20% power and less than 40% power when in IRM range 10 with the mode switch in startup, the control rod withdrawal error analysis requires the minimum flow to be greater than 30% to ensure protection against the SLMCPR for control rod withdrawal error to the full out position. To ensure compliance with this analysis, the LCO prohibits control rod withdrawal in IRM range 10 if recirculation flow is less than 30%. This is procedurally controlled. This minimum flow restriction does not apply in the run mode.

TABLE 3.6.2a (cont'd)

INSTRUMENTATION THAT INITIATES SCRAM

Limiting Condition for Operation

	Parameter	Minimum No. of Tripped or Operable Trip Systems	Minimum No. of Operable Instrument Channels per Operable Trip System	Set Point	Reactor Mode Switch Position in Which Function Must Be Operable: Shutdown	Refuel	Startup	Run
(6)	Main-Steam-Line Isolation Valve Position	2	4(h)(o)	≤ 10 percent valve closure from full open		(c)	(c)	x
(7)	Deleted							
(8)	Shutdown Position of Reactor Mode Switch	2	1	---		(k)	x	x
(9)	Neutron Flux							
	(a) IRM							
	(i) Upscale	2	3(d)(o)	≤96 percent of full scale		x	x	

TABLE 3.6.2a (cont'd)

INSTRUMENTATION THAT INITIATES SCRAM

Limiting Condition for Operation

Parameter	Minimum No. of Tripped or Operable Trip Systems	Minimum No. of Operable Instrument Channels per Operable Trip System	Set Point	Reactor Mode Switch Position in Which Function Must Be Operable: Shutdown	Refuel	Startup	Run
(ii) Inoperative	2	3(d)(o)	---		x	x	
(b) APRM							
(i) Upscale	2	3(e)(o)	Specification 2.1.2a		x	x	x
(ii) Inoperative	2	3(e)(o)	---		x	x	x
(10) Turbine Stop Valve Closure	2	4(o)	≤ 10% valve closure				(i)
(11) Generator Load Rejection	2	2(o)	(j)				(i)

AMENDMENT NO. ~~142~~, ~~148~~, 153

TABLE 4.6.2a (cont'd)

INSTRUMENTATION THAT INITIATES SCRAM

Surveillance Requirement

Parameter	Sensor Check	Instrument Channel Test	Instrument Channel Calibration
(8) Shutdown Position of Reactor Mode Switch	None	Once during each major refueling outage	None
(9) Neutron Flux			
(a) IRM			
(i) Upscale	(f)(g)	(f)	(f)
(ii) Inoperative	(f)(g)	(f)	(f)
(b) APRM			
(i) Upscale	None	Once per 3 months	Once per week$^{(m)}$ Once per 3 months
(ii) Inoperative	None	Once per 3 months	None
(10) Turbine Stop Valve Closure	None	Once per 3 months	Once per operating cycle
(11) Generator Load Rejection	None	Once per 3 months	Once per 3 months

NOTES FOR TABLES 3.6.2a and 4.6.2a

(a) May be bypassed when necessary for containment inerting.

(b) May be bypassed in the refuel and shutdown positions of the reactor mode switch with a keylock switch.

(c) May be bypassed in the refuel and startup positions of the reactor mode switch when reactor pressure is less than 600 psi, or for the purpose of performing reactor coolant system pressure testing and/or control rod scram time testing with the reactor mode switch in the refuel position.

(d) No more than one of the four IRM inputs to each trip system shall be bypassed.

(e) No more than two C or D level LPRM inputs to an APRM shall be bypassed and only four LPRM inputs to an APRM shall be bypassed in order for the APRM to be considered operable. No more than one of the four APRM inputs to each trip system shall be bypassed provided that the APRM in the other instrument channel in the same core quadrant is not bypassed. A Traversing In-Core Probe (TIP) chamber may be used as a substitute APRM input if the TIP is positioned in close proximity to the failed LPRM it is replacing.

(f) Calibrate prior to startup and normal shutdown and thereafter check once per shift and test once per week until no longer required.

(g) Verify SRM/IRM channels overlap during startup after the mode switch has been placed in startup. Verify IRM/APRM channels overlap at least 1/2 decade during entry into startup from run (normal shutdown) if not performed within the previous 7 days.

(h) Each of the four isolation valves has two limit switches. Each limit switch provides input to one of two instrument channels in a single trip system.

(i) May be bypassed when reactor power level is below 45%.

(j) Trip upon loss of oil pressure to the acceleration relay.

(k) May be bypassed when placing the reactor mode switch in the SHUTDOWN position and all control rods are fully inserted.

(l) Only the trip circuit will be calibrated and tested at the frequencies specified in Table 4.6.2a, the primary sensor will be calibrated and tested once per operating cycle.

(m) This calibration shall consist of the adjustment of the APRM channel to conform to the power values calculated by a heat balance during reactor operation when THERMAL POWER ≥ 25% of RATED THERMAL POWER. Adjust the APRM channel if the absolute difference is greater than 2% of RATED THERMAL POWER. Any APRM channel gain adjustment made in compliance with Specification 2.1.2a shall not be included in determining the absolute difference.

TABLE 3.6.2b (cont'd)

INSTRUMENTATION THAT INITIATES
PRIMARY COOLANT SYSTEM OR CONTAINMENT ISOLATION

Limiting Condition for Operation

Parameter	Minimum No. of Tripped or Operable Trip Systems	Minimum No. of Operable Instrument Channels per Operable Trip System	Set Point	Reactor Mode Switch Position in Which Function Must Be Operable			
				Shutdown	Refuel	Startup	Run
(4) Deleted							
(5) Low Reactor Pressure	2	2(f)	≥ 850 psig			(h)	x
(6) Low-Low-Low Condenser Vacuum	2	2(f)	≥ 7 in. mercury vacuum			(a)	x
(7) High Temperature Main Steam Line Tunnel	2	2(f)	≤ 200°F			x	x

(g) A channel may be placed in an inoperable status for up to 6 hours for required surveillances without placing the Trip System in tripped condition provided at least one Operable Instrument Channel in the same Trip System is monitoring that Parameter.

With the number of Operable channels one less than required by the Minimum Number of Operable Instrument Channels for the Operable Trip System, either

1. Place the inoperable channel(s) in the tripped condition within 24 hours.

or

2. Take the ACTION required by Specification 3.6.2a for that Parameter.

(h) Only applicable during startup mode while operating in IRM range 10.

TABLE 3.6.2g (cont'd)

INSTRUMENTATION THAT INITIATES CONTROL ROD WITHDRAWAL BLOCK

Limiting Condition for Operation

Parameter	Minimum No. of Tripped or Operable Trip Systems	Minimum No. of Operable Instrument Channels per Operable Trip System (i)	Set Point	Reactor Mode Switch Position in Which Function Must Be Operable: Shutdown	Refuel	Startup	Run
c. Downscale	2	3(b)	≥5 percent of full scale for each scale		x	x	
d. Upscale	2	3(b)	≤88 percent of full scale for each scale		x	x	
(3) APRM							
a. Inoperative	2(h)	3(c)	---		x	x	x
b. Upscale (Biased by Recirculation Flow)	2(h)	3(c)	Specification 2.1.2a(h)		x	x	x
c. Downscale	2(h)	3(c)	≥[5.28/125] divisions of full scale		(d)	(d)	x

The set points on the generator load rejection and turbine stop valve closure scram trips are set to anticipate and minimize the consequences of turbine trip with failure of the turbine bypass system as described in the bases for Specification 2.1.2. Since the severity of the transients is dependent on the reactor operating power level, bypassing of the scrams below the specified power level is permissible.

Although the operator will set the setpoints at the values indicated in Tables 3.6.2.a-1, the actual values of the various set points can differ appreciably from the value the operator is attempting to set. The deviations include inherent instrument error, operator setting error and drift of the set point. These errors are compensated for in the transient analyses by conservatism in the controlling parameter assumptions as discussed in the bases for Specification 2.1.2. The deviations associated with the set points for the safety systems used to mitigate accidents have negligible effect on the initiation of these systems. These safety systems have initiation times which are orders of magnitude greater than the difference in time between reaching the nominal set point and the worst set point due to error. The maximum allowable set point deviations are listed below:

Neutron Flux
- APRM Scram, ±2.3% of rated neutron flux (analytical limit is 120% of rated flux)
- APRM Rod Block, ±2.3% of rated neutron flux (analytical limit is 110% of rated flux)
- IRM, ±2.5% of rated neutron flux

The APRM downscale rod block setpoint has been derived based on GE setpoint methodology as outlined in NEDC-31336, "GE Instrumentation Setpoint Methodology." In this methodology, the setpoint is defined as three values, Nominal Trip Setpoint, Allowable Value, and Analytical Limit. Table 3.6.2g shows the nominal trip setpoints. The corresponding allowable value is as follows:

APRM Downscale Rod Block, allowable value is ≥[4.24/125] divisions of full scale

Recirculation Flow Upscale, ±1.6% of rated recirculation flow (analytical limit is 107.1% of rated flow)
Recirculation Flow Comparator, ±2.09% of rated recirculation flow (analytical limit is 10% flow differential)

Reactor Pressure, ±15.8 psig

Containment Pressure ±0.053 psig

Reactor Water Level, ±2.6 inches of water

Main Steam Line Isolation Valve Position, ±2.5% of stem position

Scram Discharge Volume, +0 and -1 gallon

Condenser Low Vacuum, ±0.5 inches of mercury