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

COMMONWEALTH EDISON COMPANY

DOCKET NO. 50-237

DRESDEN NUCLEAR POWER STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 139
License No. DPR-19

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

   A. The application for amendment by the Commonwealth Edison Company (the licensee) dated December 8, 1992, as supplemented by letters dated September 10, 1993, and May 17, 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-19 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 139 , 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 and shall be implemented no later than December 31, 1995.

FOR THE NUCLEAR REGULATORY COMMISSION

John F. Stang, Senior Project Manager
Project Directorate III-2
Division of Reactor Projects - III/IV
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: September 20, 1995

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

COMMONWEALTH EDISON COMPANY

DOCKET NO. 50-249

DRESDEN NUCLEAR POWER STATION, UNIT 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 133
License No. DPR-25

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

   A. The application for amendment by the Commonwealth Edison Company (the licensee) dated December 8, 1992, as supplemented by letters dated September 10, 1993, and May 17, 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 3.B. of Facility Operating License No. DPR-25 is hereby amended to read as follows:

B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 133, 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 and shall be implemented no later than December 31, 1995.

FOR THE NUCLEAR REGULATORY COMMISSION

John F. Stang, Senior Project Manager
Project Directorate III-2
Division of Reactor Projects - III/IV
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: September 20, 1995

ATTACHMENT TO LICENSE AMENDMENT NOS. 139 AND 133

FACILITY OPERATING LICENSE NOS. DPR-19 AND DPR-25

DOCKET NOS. 50-237 AND 50-249

Revise the Appendix A Technical Specifications by removing the pages identified below and inserting the attached pages. The revised pages are identified by the captioned amendment number.

UNIT 2 REMOVE	UNIT 3 REMOVE	INSERT
3/4.1-1	3/4.1-1	3/4.1-1
3/4.1-2	3/4.1-2	3/4.1-2
3/4.1-3	3/4.1-3	3/4.1-3
3/4.1-4	3/4.1-4	3/4.1-4
3/4.1-5	3/4.1-5	3/4.1-5
3/4.1-6	3/4.1-6	3/4.1-6
3/4.1-7	3/4.1-7	3/4.1-7
3/4.1-8	3/4.1-8	3/4.1-8
3/4.1-9	3/4.1-9	3/4.1-9
3/4.1-10	3/4.1-10	3/4.1-10
B 3/4.1-11	B 3/4.1-11	B 3/4.1-1
B 3/4.1-12	B 3/4.1-12	B 3/4.1-2
B 3/4.1-13	B 3/4.1-13	B 3/4.1-3
B 3/4.1-14	B 3/4.1-14	---
B 3/4.1-15	B 3/4.1-15	---
B 3/4.1-16	B 3/4.1-16	---
B 3/4.1-17	B 3/4.1-17	---
B 3/4.1-18	B 3/4.1-18	---
B 3/4.1-19	B 3/4.1-19	---
B 3/4.1-20	B 3/4.1-20	---

3.1 - LIMITING CONDITIONS FOR OPERATION

A. Reactor Protection System (RPS)

The reactor protection system (RPS) instrumentation CHANNEL(s) shown in Table 3.1.A-1 shall be OPERABLE.

APPLICABILITY:

As shown in Table 3.1.A-1.

ACTION:

1. With the number of OPERABLE CHANNEL(s) less than required by the Minimum CHANNEL(s) per TRIP SYSTEM requirement for one TRIP SYSTEM, place the inoperable CHANNEL(s) and/or that TRIP SYSTEM in the tripped condition[a] within 1 hour.

2. With the number of OPERABLE CHANNEL(s) less than required by the Minimum CHANNEL(s) per TRIP SYSTEM requirement for both TRIP SYSTEM(s), place at least one TRIP SYSTEM in the tripped condition[b] within 1 hour and take the ACTION required by Table 3.1.A-1.

4.1 - SURVEILLANCE REQUIREMENTS

A. Reactor Protection System

1. Each reactor protection system instrumentation CHANNEL shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION operations for the OPERATIONAL MODE(s) and at the frequencies shown in Table 4.1.A-1.

2. LOGIC SYSTEM FUNCTIONAL TEST(s) and simulated automatic operation of all CHANNEL(s) shall be performed at least once per 18 months.

3. The response time of each reactor trip functional unit shown in Table 3.1.A-1 shall be demonstrated at least once per 18 months. Each test shall include at least one CHANNEL per TRIP SYSTEM such that all CHANNEL(s) are tested at least once every N times 18 months where N is the total number of redundant CHANNEL(s) in a specific reactor TRIP SYSTEM. The system response time for each trip function from the opening of the sensor contact up to and including the opening of the trip actuator shall not exceed 50 milliseconds.

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a An inoperable CHANNEL need not be placed in the tripped condition when this would cause the trip function to occur. In these cases, the inoperable CHANNEL shall be restored to OPERABLE status within 2 hours or the ACTION required by Table 3.1.A-1 for that trip function shall be taken.

b The TRIP SYSTEM need not be placed in the tripped condition if this would cause the trip function to occur. When a TRIP SYSTEM can be placed in the tripped condition without causing the trip function to occur, place the TRIP SYSTEM with the most inoperable CHANNEL(s) in the tripped condition; if both systems have the same number of inoperable CHANNEL(s), place either TRIP SYSTEM in the tripped condition.

TABLE 3.1.A-1

REACTOR PROTECTION SYSTEM INSTRUMENTATION

Functional Unit	Applicable OPERATIONAL MODE(s)	Minimum OPERABLE CHANNEL(s) per TRIP SYSTEM[a]	ACTION
1. Intermediate Range Monitor:			
a. Neutron Flux - High	2	3	11
	3, 4	2	12
	5[c]	3	13
b. Inoperative	2	3	11
	3, 4	2	12
	5	3	13
2. Average Power Range Monitor[e]:			
a. Setdown Neutron Flux - High	2	2	11
	3	2	12
	5[c,g]	2	13
b. Flow Biased Neutron Flux - High	1	2	14
c. Fixed Neutron Flux - High	1	2	14
d. Inoperative	1, 2	2	11
	3	2	12
	5[g]	2	13
3. Reactor Vessel Steam Dome Pressure - High	1, 2[f]	2	11
4. Reactor Vessel Water Level - Low	1, 2	2	11

TABLE 3.1.A-1 (Continued)

REACTOR PROTECTION SYSTEM INSTRUMENTATION

Functional Unit	Applicable OPERATIONAL MODE(s)	Minimum OPERABLE CHANNEL(s) per TRIP SYSTEM[a]	ACTION
5. Main Steam Line Isolation Valve - Closure	1, 2[j]	4	10
6. Main Steam Line Radiation - High	1, 2[f]	2	15
7. Drywell Pressure - High	1, 2[h]	2	11
8. Scram Discharge Volume Water Level - High			
a. ΔP Switch, and	1, 2	2	11
	5[b,i]	2	13
b. Thermal Switch (Unit 2), or Float Switch (Unit 3)	1, 2	2	11
	5[b,i]	2	13
9. Turbine Stop Valve - Closure	1[d]	4	16
10. Turbine EHC Control Oil Pressure - Low	1[d]	2	16
11. Turbine Control Valve Fast Closure	1[d]	2	16
12. Turbine Condenser Vacuum - Low	1, 2[j]	2	10

TABLE 3.1.A-1 (Continued)

REACTOR PROTECTION SYSTEM INSTRUMENTATION

Functional Unit	Applicable OPERATIONAL MODE(s)	Minimum OPERABLE CHANNEL(s) per TRIP SYSTEM(*)	ACTION
13. Reactor Mode Switch Shutdown Position	1, 2	1	11
	3, 4	1	17
	5	1	13
14. Manual Scram	1, 2	1	11
	3, 4	1	18
	5	1	19

TABLE 3.1.A-1 (Continued)

REACTOR PROTECTION SYSTEM INSTRUMENTATION

ACTION

ACTION 10 - Be in at least STARTUP with reactor pressure less than 600 psig within 8 hours.

ACTION 11 - Be in at least HOT SHUTDOWN within 12 hours.

ACTION 12 - Verify all insertable control rods to be fully inserted in the core and lock the reactor mode switch in the Shutdown position within one hour.

ACTION 13 - Suspend all operations involving CORE ALTERATIONS, and fully insert all insertable control rods within one hour. If SRM instrumentation is not OPERABLE per Specification 3.10.B, also suspend replacement of LPRMs.

ACTION 14 - Be in at least STARTUP within 8 hours.

ACTION 15 - Be in STARTUP with the main steam line isolation valves closed within 8 hours or in at least HOT SHUTDOWN within 12 hours.

ACTION 16 - Initiate a reduction in THERMAL POWER within 15 minutes and reduce reactor power to less than 45% of RATED THERMAL POWER within 2 hours.

ACTION 17 - Verify all insertable control rods to be fully inserted in the core within one hour.

ACTION 18 - Lock the reactor mode switch in the Shutdown position within one hour.

ACTION 19 - Suspend all operations involving CORE ALTERATIONS, and fully insert all insertable control rods and lock the reactor mode switch in the Shutdown position within one hour. If SRM instrumentation is not OPERABLE per Specification 3.10.B, also suspend replacement of LPRMs.

TABLE 3.1.A-1 (Continued)

REACTOR PROTECTION SYSTEM INSTRUMENTATION

TABLE NOTATION

(a) A CHANNEL may be placed in an inoperable status for up to 2 hours for required surveillance without placing the TRIP SYSTEM in the tripped condition provided at least one OPERABLE CHANNEL in the same TRIP SYSTEM is monitoring that parameter.

(b) This function may be bypassed, provided a control rod block is actuated, for reactor protection system logic reset in Refuel and Shutdown positions of the reactor mode switch.

(c) Unless adequate SHUTDOWN MARGIN has been demonstrated per Specification 3/4.3.A and the "one-rod-out" Refuel mode switch interlock has been demonstrated OPERABLE per Specification 3.10.A, the "shorting links" shall be removed from the RPS circuitry prior to and during the time any control rod is withdrawn. However, this is not required for control rods removed per Specification 3.10.I or 3.10.J.

(d) This function shall be automatically bypassed when THERMAL POWER is less than 45% of RATED THERMAL POWER.

(e) An APRM CHANNEL is inoperable if there are fewer than 2 LPRM inputs per level or there are less than 50% of the normal complement of LPRM inputs to an APRM CHANNEL.

(f) This function is not required to be OPERABLE when the reactor pressure vessel head is unbolted or removed per Specification 3.12.A.

(g) Required to be OPERABLE only prior to and during required SHUTDOWN MARGIN demonstrations performed per Specification 3.12.B.

(h) This function is not required to be OPERABLE when PRIMARY CONTAINMENT INTEGRITY is not required.

(i) With any control rod withdrawn. Not applicable to control rods removed per Specification 3.10.I or 3.10.J.

(j) This function is not required to be OPERABLE when reactor pressure is less than 600 psig.

TABLE 4.1.A-1

REACTOR PROTECTION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Functional Unit	Applicable OPERATIONAL MODES	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL[n] CALIBRATION
1. Intermediate Range Monitor:				
a. Neutron Flux - High	2 3, 4, 5	SU, S, [b] S	S/U[c], W[c] W	*
b. Inoperative	2, 3, 4, 5	NA	W[c]	NA
2. Average Power Range Monitor[f]:				
a. Setdown Neutron Flux - High	2 3, 5[m]	SU, S, [b] S	S/U[c], W[c] W	SA[c] SA
b. Flow Biased Neutron Flux - High	1	S, D[g]	W	W[d,e], SA
c. Fixed Neutron Flux - High	1	S	W	W[d], SA
d. Inoperative	1, 2, 3, 5[m]	NA	W	NA
3. Reactor Vessel Steam Dome Pressure - High	1, 2[i]	NA	M	Q
4. Reactor Vessel Water Level - Low	1, 2	D	M	E[h]
5. Main Steam Line Isolation Valve - Closure	1, 2[p]	NA	M	E
6. Main Steam Line Radiation - High	1, 2[i]	S	M	*
7. Drywell Pressure - High	1, 2[n]	NA	M	Q

TABLE 4.1.A-1 (Continued)

REACTOR PROTECTION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Functional Unit	Applicable OPERATIONAL MODES	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL[a] CALIBRATION
8. Scram Discharge Volume Water Level - High				
a. ΔP Switch, and	1, 2, 5[i,k]	NA	Q	E
b. Thermal Switch (Unit 2), or Float Switch (Unit 3)	1, 2, 5[i,k]	NA	Q	NA
9. Turbine Stop Valve - Closure	1[f]	NA	M	E
10. Turbine EHC Control Oil Pressure - Low	1[f]	NA	M	Q
11. Turbine Control Valve Fast Closure	1[f]	NA	M	E
12. Turbine Condenser Vacuum - Low	1, 2[p]	NA	M	Q
13. Reactor Mode Switch Shutdown Position	1, 2, 3, 4, 5	NA	E	NA
14. Manual Scram	1, 2, 3, 4, 5	NA	M	NA

TABLE 4.1.A-1 (Continued)

REACTOR PROTECTION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TABLE NOTATION

(a) Neutron detectors may be excluded from the CHANNEL CALIBRATION.

(b) The IRM and SRM channels shall be determined to overlap for at least (½) decades during each startup after entering OPERATIONAL MODE 2 and the IRM and APRM channels shall be determined to overlap for at least (½) decades during each controlled shutdown, if not performed within the previous 7 days.

(c) Within 24 hours prior to startup, if not performed within the previous 7 days. The weekly CHANNEL FUNCTIONAL TEST may be used to fulfill this requirement.

(d) This calibration shall consist of the adjustment of the APRM CHANNEL to conform, within 2% of RATED THERMAL POWER, to the power values calculated by a heat balance during OPERATIONAL MODE 1 when THERMAL POWER is ≥25% of RATED THERMAL POWER. This adjustment must be accomplished: a) within 2 hours if the APRM CHANNEL is indicating lower power values than the heat balance, or b) within 12 hours if the APRM CHANNEL is indicating higher power values than the heat balance. Until any required APRM adjustment has been accomplished, notification shall be posted on the reactor control panel.

Any APRM CHANNEL gain adjustment made in compliance with Specification 3.11.B shall not be included in determining the above difference. This calibration is not required when THERMAL POWER is <25% of RATED THERMAL POWER. The provisions of Specification 4.0.D are not applicable.

(e) This calibration shall consist of the adjustment of the APRM flow biased channel to conform to a calibrated flow signal.

(f) The LPRMs shall be calibrated at least once per 1000 effective full power hours (EFPH).

(g) Verify measured recirculation loop flow to be greater than or equal to established recirculation loop flow at the existing pump speed.

(h) Trip units are calibrated at least once per 31 days and transmitters are calibrated at the frequency identified in the table.

(i) This function is not required to be OPERABLE when the reactor pressure vessel head is unbolted or removed per Specification 3.12.A.

(j) With any control rod withdrawn. Not applicable to control rods removed per Specification 3.10.I or 3.10.J.

(k) This function may be bypassed, provided a control rod block is actuated, for reactor protection system reset in Refuel and Shutdown positions of the reactor mode switch.

TABLE 4.1.A-1 (Continued)

REACTOR PROTECTION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

(l) This function not required to be OPERABLE when THERMAL POWER is less than 45% of RATED THERMAL POWER.

(m) Required to be OPERABLE only prior to and during required SHUTDOWN MARGIN demonstrations performed per Specification 3.12.B.

(n) This function is not required to be OPERABLE when PRIMARY CONTAINMENT INTEGRITY is not required.

(o) The provisions of Specification 4.0.D are not applicable to the CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION surveillances for entry into their OPERATIONAL MODE(s) from OPERATIONAL MODE 1 provided the surveillances are performed within 12 hours after such entry.

(p) This function is not required to be OPERABLE when reactor pressure is less than 600 psig.

* The frequency of this calibration has been left as an open item.

BASES

3/4.1 A REACTOR PROTECTION SYSTEM INSTRUMENTATION

The reactor protection system (RPS) automatically initiates a reactor scram to:

a. preserve the integrity of the fuel cladding,

b. preserve the integrity of the primary system, and

c. 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 perform its intended function, even during periods when instrument CHANNEL(s) may be out-of-service because of maintenance. When necessary, one CHANNEL may be made inoperable for brief intervals to conduct required surveillance.

The reactor protection system is made up of two independent TRIP SYSTEM(s), each having a minimum of two CHANNEL(s) of tripping devices. Each CHANNEL has an input from at least one instrument CHANNEL which monitors a critical parameter. The outputs of the CHANNEL(s) are combined in a one-out- of-two-logic, i.e., an input signal on either one or both of the CHANNEL(s) will cause a TRIP SYSTEM trip. The outputs of the TRIP SYSTEM(s) are arranged so that a trip on both systems is required to produce a reactor scram. This system meets the intent of the proposed IEEE 279, "Standard for Nuclear Power Plant Protection Systems" issued September 13, 1966. The system has a reliability greater than that of a two-out-of-three system and somewhat less than that of a one-out-of-two system (reference APED 5179). The bases for the trip settings of the RPS are discussed in the Bases for Specification 2.2.A.

The IRM system provides protection against excessive power levels and short reactor periods in the startup and intermediate power ranges (reference SAR Sections 7.4.4.2 and 7.4.4.3). During refueling, the primary Neutron Monitoring System (NMS) indication of neutron flux levels is provided by the Source Range Monitors (SRM). The SRMs provide input to the RPS, but shorting links are installed across the normally closed contacts such that tripping an SRM CHANNEL does not result in the trip of the RPS CHANNEL. To activate the SRM scram function, these shorting links must be removed from the RPS. The SRM control rod scram provides backup protection to refueling interlocks and SHUTDOWN MARGIN should a prompt reactivity excursion occur. Although the IRM and APRM functions are required to be OPERABLE during refueling, the SRMs provide the only on-scale monitoring of neutron flux levels during refueling and therefore the shorting links must be removed to enable the scram function of the SRMs. The non-coincident NMS reactor trip function logic is such that all channels go to both trip systems (1 out of n). However, 3 IRM CHANNELs and 2 APRM CHANNELs per TRIP SYSTEM are still required, i.e. a minimum of 6 IRMs and 4 APRMs.

The RPS (and therefore removal of the RPS shorting links) is required to be OPERABLE in Refuel only with any control rod withdrawn from a core cell containing one or more fuel assemblies. Control rods withdrawn from a core cell containing no fuel assemblies do not affect the reactivity

of the core and therefore are not required to have the capability to scram. If all control rods are inserted, the RPS function is not required. In this condition, the required SHUTDOWN MARGIN and the one-rod-out interlock provide assurance that the reactor will not become critical. If the SHUTDOWN MARGIN has been demonstrated, the RPS shorting links are not required to be removed. Under these conditions, the capability of the one-rod-out interlock to prevent criticality has been demonstrated and the scram protection provided by the IRMs is sufficient to ensure a highly reliable scram if required.

In the power range, the APRM system provides required protection (reference SAR Section 7.4.5.2). Thus, the IRM system is not required (and is automatically bypassed) in OPERATIONAL MODE 1, the APRMs cover only the intermediate and power range; and the IRMs provide adequate coverage in the startup and intermediate range. The IRM inoperative function ensures that the instrument CHANNEL fails in the tripped condition upon loss of detector voltage.

Three APRM instrument CHANNEL(s) are provided for each TRIP SYSTEM. APRM CHANNEL(s) #1 and #3 operate contacts in one logic path and APRM CHANNEL(s) #2 and #3 operate contacts in the other logic path of the TRIP SYSTEM. APRM CHANNEL(s) #4, #5 and #6 are arranged similarly in the other TRIP SYSTEM's dual logic paths. Each TRIP SYSTEM has one more APRM than is necessary to meet the minimum number required per CHANNEL. This allows the bypassing of one APRM per TRIP SYSTEM for maintenance, testing, or calibration. Additional IRM CHANNEL(s) have also been provided to allow for bypassing of one such CHANNEL.
A reactor mode switch is provided which actuates or bypasses the various scram functions appropriate to the particular plant operating status (reference SAR Section 7.7.1.2). A bypass in the Refuel or Startup/Hot Standby operational modes is provided for the turbine condenser low vacuum scram and main steam line isolation valve closure scrams for flexibility during startup and to allow repairs to be made to the turbine condenser. While this bypass is in effect, protection is provided against pressure or flux increases by the high-pressure scram and APRM 15% scram, respectively, which are effective in Startup/Hot Standby.

The manual scram function is available in OPERATIONAL MODE(s) 1 through 5, thus providing for a manual means of rapidly inserting control rods whenever fuel is in the reactor.

The turbine stop valve closure scram, the turbine EHC control oil low pressure scram, and the turbine control valve fast closure scram occur by design on turbine first stage pressure which is normally equivalent to ~45% RATED THERMAL POWER. However, since this is dependent on bypass valve position, the conservative reactor power is used to determine applicability.

Surveillance requirements for the reactor protection system are selected in order to demonstrate proper function and operability. The surveillance intervals are determined in many different ways, such as, 1) operating experience, 2) good engineering judgement, 3) reliability analyses, or 4) other analyses that are found acceptable to the NRC. The performance of the specified surveillances at the specified frequencies provides assurance that the protective functions associated with each CHANNEL can be completed as assumed in the safety analyses. A surveillance interval of "prior to startup" assures that these functions are available to perform their safety functions during control

rod withdrawal, and hence these surveillances must be completed prior to initiating control rod withdrawal for the purpose of "approach to criticality".

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

COMMONWEALTH EDISON COMPANY

AND

MIDAMERICAN ENERGY COMPANY

DOCKET NO. 50-254

QUAD CITIES NUCLEAR POWER STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 161
License No. DPR-29

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

   A. The application for amendment by Commonwealth Edison Company (the licensee) dated December 8, 1992, as supplemented by letters dated September 10, 1993, and May 17, 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.

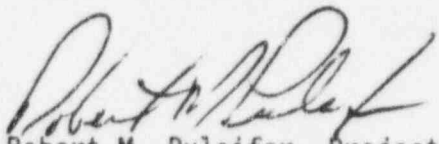
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 3.B. of Facility Operating License No. DPR-29 is hereby amended to read as follows:

B. Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 161 , 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 and shall be implemented no later than June 30, 1996.

FOR THE NUCLEAR REGULATORY COMMISSION



Robert M. Pulsifer, Project Manager
Project Directorate III-2
Division of Reactor Projects - III/IV
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: September 20, 1995

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

COMMONWEALTH EDISON COMPANY

AND

MIDAMERICAN ENERGY COMPANY

DOCKET NO. 50-265

QUAD CITIES NUCLEAR POWER STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 157
License No. DPR-30

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

   A. The application for amendment by Commonwealth Edison Company (the licensee) dated December 8, 1992, as supplemented by letters dated September 10, 1993, and May 17, 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 3.B. of Facility Operating License No. DPR-30 is hereby amended to read as follows:

B. Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 157 , 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 and shall be implemented no later than June 30, 1996.

FOR THE NUCLEAR REGULATORY COMMISSION

Robert M. Pulsifer, Project Manager
Project Directorate III-2
Division of Reactor Projects - III/IV
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: September 20, 1995

ATTACHMENT TO LICENSE AMENDMENT NOS. 161 AND 157

FACILITY OPERATING LICENSE NOS. DPR-29 AND DPR-30

DOCKET NOS. 50-254 AND 50-265

Revise the Appendix A Technical Specifications by removing the pages identified below and inserting the attached pages. The revised pages are identified by the captioned amendment number.

UNIT 1 REMOVE	UNIT 2 REMOVE	INSERT
3.1/4.1-1	3.1/4.1-1	3/4.1-1
3.1/4.1-2	3.1/4.1-2	3/4.1-2
3.1/4.1-3	3.1/4.1-2a	3/4.1-3
3.1/4.1-4	3.1/4.1-3	3/4.1-4
3.1/4.1-5	3.1/4.1-4	3/4.1-5
3.1/4.1-6	3.1/4.1-5	3/4.1-6
3.1/4.1-7	3.1/4.1-6	3/4.1-7
3.1/4.1-8	3.1/4.1-7	3/4.1-8
3.1/4.1-9	3.1/4.1-7a	3/4.1-9
3.1/4.1-10	3.1/4.1-7b	3/4.1-10
3.1/4.1-11	3.1/4.1-8	B 3/4.1-1
3.1/4.1-12	3.1/4.1-9	B 3/4.1-2
3.1/4.1-13	3.1/4.1-10	B 3/4.1-3
3.1/4.1-14	3.1/4.1-11	---
3.1/4.1-15	3.1/4.1-11a	---
3.1/4.1-16	3.1/4.1-12	---
3.1/4.1-17	3.1/4.1-13	---
Figure 4.1-1	3.1/4.1-14	---
---	3.1/4.1-15	---
---	Figure 4.1-1	---

3.1 - LIMITING CONDITIONS FOR OPERATION

A. Reactor Protection System (RPS)

The reactor protection system (RPS) instrumentation CHANNEL(s) shown in Table 3.1.A-1 shall be OPERABLE.

APPLICABILITY:

As shown in Table 3.1.A-1.

ACTION:

1. With the number of OPERABLE CHANNEL(s) less than required by the Minimum CHANNEL(s) per TRIP SYSTEM requirement for one TRIP SYSTEM, place the inoperable CHANNEL(s) and/or that TRIP SYSTEM in the tripped condition[a] within 1 hour.

2. With the number of OPERABLE CHANNEL(s) less than required by the Minimum CHANNEL(s) per TRIP SYSTEM requirement for both TRIP SYSTEM(s), place at least one TRIP SYSTEM in the tripped condition[b] within 1 hour and take the ACTION required by Table 3.1.A-1.

4.1 - SURVEILLANCE REQUIREMENTS

A. Reactor Protection System

1. Each reactor protection system instrumentation CHANNEL shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION operations for the OPERATIONAL MODE(s) and at the frequencies shown in Table 4.1.A-1.

2. LOGIC SYSTEM FUNCTIONAL TEST(s) and simulated automatic operation of all CHANNEL(s) shall be performed at least once per 18 months.

3. The response time of each reactor trip functional unit shown in Table 3.1.A-1 shall be demonstrated at least once per 18 months. Each test shall include at least one CHANNEL per TRIP SYSTEM such that all CHANNEL(s) are tested at least once every N times 18 months where N is the total number of redundant CHANNEL(s) in a specific reactor TRIP SYSTEM. The system response time for each trip function from the opening of the sensor contact up to and including the opening of the trip actuator shall not exceed 50 milliseconds.

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a An inoperable CHANNEL need not be placed in the tripped condition when this would cause the trip function to occur. In these cases, the inoperable CHANNEL shall be restored to OPERABLE status within 2 hours or the ACTION required by Table 3.1.A-1 for that trip function shall be taken.

b The TRIP SYSTEM need not be placed in the tripped condition if this would cause the trip function to occur. When a TRIP SYSTEM can be placed in the tripped condition without causing the trip function to occur, place the TRIP SYSTEM with the most inoperable CHANNEL(s) in the tripped condition; if both systems have the same number of inoperable CHANNEL(s), place either TRIP SYSTEM in the tripped condition.

TABLE 3.1.A-1

REACTOR PROTECTION SYSTEM INSTRUMENTATION

Functional Unit	Applicable OPERATIONAL MODE(s)	Minimum OPERABLE CHANNEL(s) per TRIP SYSTEM[a]	ACTION
1. Intermediate Range Monitor:			
a. Neutron Flux - High	2	3	11
	3, 4	2	12
	5[c]	3	13
b. Inoperative	2	3	11
	3, 4	2	12
	5	3	13
2. Average Power Range Monitor[e]:			
a. Setdown Neutron Flux - High	2	2	11
	3	2	12
	5[c,g]	2	13
b. Flow Biased Neutron Flux - High	1	2	14
c. Fixed Neutron Flux - High	1	2	14
d. Inoperative	1, 2	2	11
	3	2	12
	5[g]	2	13
3. Reactor Vessel Steam Dome Pressure - High	1, 2[f]	2	11
4. Reactor Vessel Water Level - Low	1, 2	2	11

TABLE 3.1.A-1 (Continued)

REACTOR PROTECTION SYSTEM INSTRUMENTATION

Functional Unit	Applicable OPERATIONAL MODE(s)	Minimum OPERABLE CHANNEL(s) per TRIP SYSTEM[a]	ACTION
5. Main Steam Line Isolation Valve - Closure	1	4	14
6. Main Steam Line Radiation - High	1, 2[f]	2	15
7. Drywell Pressure - High	1, 2[h]	2	11
8. Scram Discharge Volume Water Level - High			
a. ΔP Switch, and	1, 2	2	11
	5[b,i]	2	13
b. Thermal Switch	1, 2	2	11
	5[b,i]	2	13
9. Turbine Stop Valve - Closure	1[d]	4	16
10. Turbine EHC Control Oil Pressure - Low	1[d]	2	16
11. Turbine Control Valve Fast Closure	1[d]	2	16
12. Turbine Condenser Vacuum - Low	1	2	14

TABLE 3.1.A-1 (Continued)

REACTOR PROTECTION SYSTEM INSTRUMENTATION

Functional Unit	Applicable OPERATIONAL MODE(s)	Minimum OPERABLE CHANNEL(s) per TRIP SYSTEM(*)	ACTION
13. Reactor Mode Switch Shutdown Position	1, 2	1	11
	3, 4	1	17
	5	1	13
14. Manual Scram	1, 2	1	11
	3, 4	1	18
	5	1	19

TABLE 3.1.A-1 (Continued)

REACTOR PROTECTION SYSTEM INSTRUMENTATION

ACTION

ACTION 11 - Be in at least HOT SHUTDOWN within 12 hours.

ACTION 12 - Verify all insertable control rods to be fully inserted in the core and lock the reactor mode switch in the Shutdown position within one hour.

ACTION 13 - Suspend all operations involving CORE ALTERATIONS, and fully insert all insertable control rods within one hour. If SRM instrumentation is not OPERABLE per Specification 3.10.B, also suspend replacement of LPRMs.

ACTION 14 - Be in at least STARTUP within 8 hours.

ACTION 15 - Be in STARTUP with the main steam line isolation valves closed within 8 hours or in at least HOT SHUTDOWN within 12 hours.

ACTION 16 - Initiate a reduction in THERMAL POWER within 15 minutes and reduce reactor power to less than 45% of RATED THERMAL POWER within 2 hours.

ACTION 17 - Verify all insertable control rods to be fully inserted in the core within one hour.

ACTION 18 - Lock the reactor mode switch in the Shutdown position within one hour.

ACTION 19 - Suspend all operations involving CORE ALTERATIONS, and fully insert all insertable control rods and lock the reactor mode switch in the Shutdown position within one hour. If SRM instrumentation is not OPERABLE per Specification 3.10.B, also suspend replacement of LPRMs.

TABLE 3.1.A-1 (Continued)

REACTOR PROTECTION SYSTEM INSTRUMENTATION

TABLE NOTATION

(a) A CHANNEL may be placed in an inoperable status for up to 2 hours for required surveillance without placing the TRIP SYSTEM in the tripped condition provided at least one OPERABLE CHANNEL in the same TRIP SYSTEM is monitoring that parameter.

(b) This function may be bypassed, provided a control rod block is actuated, for reactor protection system logic reset in Refuel and Shutdown positions of the reactor mode switch.

(c) Unless adequate SHUTDOWN MARGIN has been demonstrated per Specification 3/4.3.A and the "one-rod-out" Refuel mode switch interlock has been demonstrated OPERABLE per Specification 3.10.A, the "shorting links" shall be removed from the RPS circuitry prior to and during the time any control rod is withdrawn. However, this is not required for control rods removed per Specification 3.10.I or 3.10.J.

(d) This function shall be automatically bypassed when THERMAL POWER is less than 45% of RATED THERMAL POWER.

(e) An APRM CHANNEL is inoperable if there are fewer than 2 LPRM inputs per level or there are less than 50% of the normal complement of LPRM inputs to an APRM CHANNEL.

(f) This function is not required to be OPERABLE when the reactor pressure vessel head is unbolted or removed per Specification 3.12.A.

(g) Required to be OPERABLE only prior to and during required SHUTDOWN MARGIN demonstrations performed per Specification 3.12.B.

(h) This function is not required to be OPERABLE when PRIMARY CONTAINMENT INTEGRITY is not required.

(i) With any control rod withdrawn. Not applicable to control rods removed per Specification 3.10.I or 3.10.J.

TABLE 4.1.A-1

REACTOR PROTECTION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Functional Unit	Applicable OPERATIONAL MODES	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL[a] CALIBRATION
1. Intermediate Range Monitor:				
a. Neutron Flux - High	2 3, 4, 5	SU, S, [b] S	S/U[c], W[c] W	* .
b. Inoperative	2, 3, 4, 5	NA	W[c]	NA
2. Average Power Range Monitor[f]:				
a. Setdown Neutron Flux - High	2 3, 5[m]	SU, S, [b] S	S/U[c], W[c] W	SA[c] SA
b. Flow Biased Neutron Flux - High	1	S, D[g]	W	W[d,e], SA
c. Fixed Neutron Flux - High	1	S	W	W[d], SA
d. Inoperative	1, 2, 3, 5[m]	NA	W	NA
3. Reactor Vessel Steam Dome Pressure - High	1, 2[i]	NA	M	Q
4. Reactor Vessel Water Level - Low	1, 2	D	M	E[h]
5. Main Steam Line Isolation Valve - Closure	1	NA	M	E
6. Main Steam Line Radiation - High	1, 2[i]	S	M	*
7. Drywell Pressure - High	1, 2[n]	NA	M	Q

TABLE 4.1.A-1 (Continued)

REACTOR PROTECTION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Functional Unit	Applicable OPERATIONAL MODES	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL[e] CALIBRATION
8. Scram Discharge Volume Water Level - High				
a. ΔP Switch, and	1, 2, 5[j,k]	NA	Q	E
b. Thermal Switch	1, 2, 5[j,k]	NA	Q	NA
9. Turbine Stop Valve - Closure	1[f]	NA	M	E
10. Turbine EHC Control Oil Pressure - Low	1[f]	NA	M	Q
11. Turbine Control Valve Fast Closure	1[f]	NA	M	E
12. Turbine Condenser Vacuum - Low	1	NA	M	Q
13. Reactor Mode Switch Shutdown Position	1, 2, 3, 4, 5	NA	E	NA
14. Manual Scram	1, 2, 3, 4, 5	NA	M	NA

TABLE 4.1.A-1 (Continued)

REACTOR PROTECTION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TABLE NOTATION

(a) Neutron detectors may be excluded from the CHANNEL CALIBRATION.

(b) The IRM and SRM channels shall be determined to overlap for at least (½) decades during each startup after entering OPERATIONAL MODE 2 and the IRM and APRM channels shall be determined to overlap for at least (½) decades during each controlled shutdown, if not performed within the previous 7 days.

(c) Within 24 hours prior to startup, if not performed within the previous 7 days. The weekly CHANNEL FUNCTIONAL TEST may be used to fulfill this requirement.

(d) This calibration shall consist of the adjustment of the APRM CHANNEL to conform, within 2% of RATED THERMAL POWER, to the power values calculated by a heat balance during OPERATIONAL MODE 1 when THERMAL POWER is ≥25% of RATED THERMAL POWER. This adjustment must be accomplished: a) within 2 hours if the APRM CHANNEL is indicating lower power values than the heat balance, or b) within 12 hours if the APRM CHANNEL is indicating higher power values than the heat balance. Until any required APRM adjustment has been accomplished, notification shall be posted on the reactor control panel.

Any APRM CHANNEL gain adjustment made in compliance with Specification 3.11.B shall not be included in determining the above difference. This calibration is not required when THERMAL POWER is < 25% of RATED THERMAL POWER. The provisions of Specification 4.0.D are not applicable.

(e) This calibration shall consist of the adjustment of the APRM flow biased channel to conform to a calibrated flow signal.

(f) The LPRMs shall be calibrated at least once per 1000 effective full power hours (EFPH).

(g) Verify measured recirculation loop flow to be greater than or equal to established recirculation loop flow at the existing pump speed.

(h) Trip units are calibrated at least once per 31 days and transmitters are calibrated at the frequency identified in the table.

(i) This function is not required to be OPERABLE when the reactor pressure vessel head is unbolted or removed per Specification 3.12.A.

(j) With any control rod withdrawn. Not applicable to control rods removed per Specification 3.10.I or 3.10.J.

(k) This function may be bypassed, provided a control rod block is actuated, for reactor protection system reset in Refuel and Shutdown positions of the reactor mode switch.

TABLE 4.1.A-1 (Continued)

REACTOR PROTECTION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

(l) This function not required to be OPERABLE when THERMAL POWER is less than 45% of RATED THERMAL POWER.

(m) Required to be OPERABLE only prior to and during required SHUTDOWN MARGIN demonstrations performed per Specification 3.12.B.

(n) This function is not required to be OPERABLE when PRIMARY CONTAINMENT INTEGRITY is not required.

(o) The provisions of Specification 4.0.D are not applicable to the CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION surveillances for entry into their OPERATIONAL MODE(s) from OPERATIONAL MODE 1 provided the surveillances are performed within 12 hours after such entry.

* The frequency of this calibration has been left as an open item.

BASES

3/4.1.A REACTOR PROTECTION SYSTEM INSTRUMENTATION

The reactor protection system (RPS) automatically initiates a reactor scram to:

a. preserve the integrity of the fuel cladding,

b. preserve the integrity of the primary system, and

c. 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 perform its intended function, even during periods when instrument CHANNEL(s) may be out-of-service because of maintenance. When necessary, one CHANNEL may be made inoperable for brief intervals to conduct required surveillance.

The reactor protection system is made up of two independent TRIP SYSTEM(s), each having a minimum of two CHANNEL(s) of tripping devices. Each CHANNEL has an input from at least one instrument CHANNEL which monitors a critical parameter. The outputs of the CHANNEL(s) are combined in a one-out- of-two-logic, i.e., an input signal on either one or both of the CHANNEL(s) will cause a TRIP SYSTEM trip. The outputs of the TRIP SYSTEM(s) are arranged so that a trip on both systems is required to produce a reactor scram. This system meets the intent of the proposed IEEE 279, "Standard for Nuclear Power Plant Protection Systems" issued September 13, 1966. The system has a reliability greater than that of a two-out-of-three system and somewhat less than that of a one-out-of-two system (reference APED 5179). The bases for the trip settings of the RPS are discussed in the Bases for Specification 2.2.A.

The IRM system provides protection against excessive power levels and short reactor periods in the startup and intermediate power ranges (reference SAR Sections 7.4.4.2 and 7.4.4.3). During refueling, the primary Neutron Monitoring System (NMS) indication of neutron flux levels is provided by the Source Range Monitors (SRM). The SRMs provide input to the RPS, but shorting links are installed across the normally closed contacts such that tripping an SRM CHANNEL does not result in the trip of the RPS CHANNEL. To activate the SRM scram function, these shorting links must be removed from the RPS. The SRM control rod scram provides backup protection to refueling interlocks and SHUTDOWN MARGIN should a prompt reactivity excursion occur. Although the IRM and APRM functions are required to be OPERABLE during refueling, the SRMs provide the only on-scale monitoring of neutron flux levels during refueling and therefore the shorting links must be removed to enable the scram function of the SRMs. The non-coincident NMS reactor trip function logic is such that all channels go to both trip systems (1 out of n). However, 3 IRM CHANNELs and 2 APRM CHANNELs per TRIP SYSTEM are still required, i.e. a minimum of 6 IRMs and 4 APRMs.

The RPS (and therefore removal of the RPS shorting links) is required to be OPERABLE in Refuel only with any control rod withdrawn from a core cell containing one or more fuel assemblies. Control rods withdrawn from a core cell containing no fuel assemblies do not affect the reactivity

of the core and therefore are not required to have the capability to scram. If all control rods are inserted, the RPS function is not required. In this condition, the required SHUTDOWN MARGIN and the one-rod-out interlock provide assurance that the reactor will not become critical. If the SHUTDOWN MARGIN has been demonstrated, the RPS shorting links are not required to be removed. Under these conditions, the capability of the one-rod-out interlock to prevent criticality has been demonstrated and the scram protection provided by the IRMs is sufficient to ensure a highly reliable scram if required.

In the power range, the APRM system provides required protection (reference SAR Section 7.4.5.2). Thus, the IRM system is not required (and is automatically bypassed) in OPERATIONAL MODE 1, the APRMs cover only the intermediate and power range; and the IRMs provide adequate coverage in the startup and intermediate range. The IRM inoperative function ensures that the instrument CHANNEL fails in the tripped condition upon loss of detector voltage.

Three APRM instrument CHANNEL(s) are provided for each TRIP SYSTEM. APRM CHANNEL(s) #1 and #3 operate contacts in one logic path and APRM CHANNEL(s) #2 and #3 operate contacts in the other logic path of the TRIP SYSTEM. APRM CHANNEL(s) #4, #5 and #6 are arranged similarly in the other TRIP SYSTEM's dual logic paths. Each TRIP SYSTEM has one more APRM than is necessary to meet the minimum number required per CHANNEL. This allows the bypassing of one APRM per TRIP SYSTEM for maintenance, testing, or calibration. Additional IRM CHANNEL(s) have also been provided to allow for bypassing of one such CHANNEL.
A reactor mode switch is provided which actuates or bypasses the various scram functions appropriate to the particular plant operating status (reference SAR Section 7.7.1.2). A bypass in the Refuel or Startup/Hot Standby operational modes is provided for the turbine condenser low vacuum scram and main steam line isolation valve closure scrams for flexibility during startup and to allow repairs to be made to the turbine condenser. While this bypass is in effect, protection is provided against pressure or flux increases by the high-pressure scram and APRM 15% scram, respectively, which are effective in Startup/Hot Standby.

The manual scram function is available in OPERATIONAL MODE(s) 1 through 5, thus providing for a manual means of rapidly inserting control rods whenever fuel is in the reactor.

The turbine stop valve closure scram, the turbine EHC control oil low pressure scram, and the turbine control valve fast closure scram occur by design on turbine first stage pressure which is normally equivalent to ~45% RATED THERMAL POWER. However, since this is dependent on bypass valve position, the conservative reactor power is used to determine applicability.

Surveillance requirements for the reactor protection system are selected in order to demonstrate proper function and operability. The surveillance intervals are determined in many different ways, such as, 1) operating experience, 2) good engineering judgement, 3) reliability analyses, or 4) other analyses that are found acceptable to the NRC. The performance of the specified surveillances at the specified frequencies provides assurance that the protective functions associated with each CHANNEL can be completed as assumed in the safety analyses. A surveillance interval of "prior to startup" assures that these functions are available to perform their safety functions during control

rod withdrawal, and hence these surveillances must be completed prior to initiating control rod withdrawal for the purpose of "approach to criticality".