

June 22, 1995

Mr. George A. Hunger, Jr.
Director-Licensing, MC 62A-1
PECO Energy Company
Nuclear Group Headquarters
Correspondence Control Desk
P.O. Box No. 195
Wayne, PA 19087-0195

SUBJECT: ISSUANCE OF AMENDMENTS - LIMERICK GENERATING STATION, UNITS 1 AND 2
(TAC NOS. M90346 AND M90347)

Dear Mr. Hunger:

The Commission has issued the enclosed Amendment No. 94 to Facility Operating License No. NPF-39 and Amendment No. 58 to Facility Operating License No. NPF-85 for the Limerick Generating Station, Units 1 and 2. These amendments consist of changes to the Technical Specifications (TSs) in response to your application dated August 12, 1994, as supplemented by letter dated March 29, 1995.

These amendments permit a revision to the action statements regarding the emergency core cooling systems to allow continued operation in the event that the high pressure coolant injection system and one core spray subsystem and/or one low pressure coolant injection subsystem are inoperable.

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

Sincerely,

/s/

Frank Rinaldi, Project Manager
Project Directorate I-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-352/50-353

- Enclosures: 1. Amendment No. 94 to License No. NPF-39
Amendment No. 58 to License No. NPF-85
- 2. Safety Evaluation

cc w/encls: See next page

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SVarga	OGC	OC/LFDCB
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JStolz	GHill (X)	

OFC	: PDI-2/LA	: PDI-2/PM	: OGC	: PDI-2/D	:
NAME	: MO'Brien	: FRinaldi	: JStolz	:	:
DATE	: 5/16/95	: 6/13/95	: 6/15/95	: 6/20/95	:

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OFC	: PDI-2/LA	: PDI-2/PM	: OGC	: PDI-2/D	:	:
NAME	: MO'Brien	: FRinaldi	: <i>WV</i>	: JStolz	:	:
DATE	: 5/16/95	: 6/13/95	: 6/15/95	: 6/16/95	:	:

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UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

June 22, 1995

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Director-Licensing, MC 62A-1
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These amendments permit a revision to the action statements regarding the emergency core cooling systems to allow continued operation in the event that the high pressure coolant injection system and one core spray subsystem and/or one low pressure coolant injection subsystem are inoperable.

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Sincerely,

A handwritten signature in cursive script that reads "Frank Rinaldi".

Frank Rinaldi, Project Manager
Project Directorate I-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-352/50-353

Enclosures: 1. Amendment No. 94 to
License No. NPF-39
Amendment No. 58 to
License No. NPF-85
2. Safety Evaluation

cc w/encls: See next page

Mr. George A. Hunger, Jr.
PECO Energy Company

Limerick Generating Station,
Units 1 & 2

cc:

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Chairman
Board of Supervisors
of Limerick Township
646 West Ridge Pike
Linfield, PA 19468



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

PHILADELPHIA ELECTRIC COMPANY
DOCKET NO. 50-352
LIMERICK GENERATING STATION, UNIT 1
AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No.94
License No. NPF-39

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Philadelphia Electric Company (the licensee) dated August 12, 1994, as supplemented by letter dated March 29, 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. NPF-39 is hereby amended to read as follows:

Technical Specifications

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 94, are hereby incorporated into this license. Philadelphia Electric Company shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance and shall be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION



John F. Stolz, Director
Project Directorate I-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the
Technical Specifications

Date of Issuance: June 22, 1995

ATTACHMENT TO LICENSE AMENDMENT NO. 94

FACILITY OPERATING LICENSE NO. NPF-39

DOCKET NO. 50-352

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

Remove

3/4 5-2
3/4 5-3
B 3/4 5-2

Insert

3/4 5-2
3/4 5-3
B 3/4 5-2

LIMITING CONDITION FOR OPERATION (Continued)

ACTION:

- a. For the core spray system:
 1. With one CSS subsystem inoperable, provided that at least two LPCI subsystems are OPERABLE, restore the inoperable CSS subsystem to OPERABLE status within 7 days or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours. #
 2. With both CSS subsystems inoperable, be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the next 24 hours.
- b. For the LPCI system:
 1. With one LPCI subsystem inoperable, provided that at least one CSS subsystem is OPERABLE, restore the inoperable LPCI pump to OPERABLE status within 30 days or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
 2. With one RHR cross-tie valve (HV-51-182 A or B) open, or power not removed from one closed RHR cross-tie valve operator, close the open valve and/or remove power from the closed valves operator within 72 hours, or be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the next 24 hours.
 3. With no RHR cross-tie valves (HV-51-182 A, B) closed, or power not removed from both closed RHR cross-tie valve operators, or with one RHR cross-tie valve open and power not removed from the other RHR cross-tie valve operator, be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the next 24 hours.
 4. With two LPCI subsystems inoperable, provided that at least one CSS subsystem is OPERABLE, restore at least three LPCI subsystems to OPERABLE status within 7 days or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours. #
 5. With three LPCI subsystems inoperable, provided that both CSS subsystems are OPERABLE, restore at least two LPCI subsystems to OPERABLE status within 72 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
 6. With all four LPCI subsystems inoperable, be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the next 24 hours. *

*Whenever both shutdown cooling subsystems are inoperable, if unable to attain COLD SHUTDOWN as required by this ACTION, maintain reactor coolant temperature as low as practical by use of alternate heat removal methods.

#The Allowed Outage Times (AOTs) of the 'B' Core Spray subsystem and the 'B' and 'D' LPCI subsystems may be extended up to 14 days to allow for installation of the common ESW and RHR system Modifications P-0166, P-0167, and P-0168 during the Unit 2 third refueling outage (2R03).

LIMITING CONDITION FOR OPERATION (Continued)

ACTION: (Continued)

c. For the HPCI system:

1. With the HPCI system inoperable, provided the CSS, the LPCI system, the ADS and the RCIC system are OPERABLE, restore the HPCI system to OPERABLE status within 14 days or be in at least HOT SHUTDOWN within the next 12 hours and reduce reactor steam dome pressure to ≤ 200 psig within the following 24 hours.
2. With the HPCI system inoperable, and one CSS subsystem, and/or LPCI subsystem inoperable, and provided at least one CSS subsystem, three LPCI subsystems, and ADS are operable, restore the HPCI to OPERABLE within 8 hours, or be in HOT SHUTDOWN in the next 12 hours, and in COLD SHUTDOWN in the next 24 hours.

d. For the ADS:

1. With one of the above required ADS valves inoperable, provided the HPCI system, the CSS and the LPCI system are OPERABLE, restore the inoperable ADS valve to OPERABLE status within 14 days or be in at least HOT SHUTDOWN within the next 12 hours and reduce reactor steam dome pressure to ≤ 100 psig within the next 24 hours.
2. With two or more of the above required ADS valves inoperable, be in at least HOT SHUTDOWN within 12 hours and reduce reactor steam dome pressure to ≤ 100 psig within the next 24 hours.

e. With a CSS and/or LPCI header ΔP instrumentation channel inoperable, restore the inoperable channel to OPERABLE status within 72 hours or determine the ECCS header ΔP locally at least once per 12 hours; otherwise, declare the associated CSS and/or LPCI, as applicable, inoperable.

f. In the event an ECCS system is actuated and injects water into the reactor coolant system, a Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.2 within 90 days describing the circumstances of the actuation and the total accumulated actuation cycles to date. The current value of the usage factor for each affected safety injection nozzle shall be provided in this Special Report whenever its value exceeds 0.70.

ECCS - OPERATING and SHUTDOWN (Continued)

With the HPCI system inoperable, adequate core cooling is assured by the OPERABILITY of the redundant and diversified automatic depressurization system and both the CS and LPCI systems. In addition, the reactor core isolation cooling (RCIC) system, a system for which no credit is taken in the safety analysis, will automatically provide makeup at reactor operating pressures on a reactor low water level condition. The HPCI out-of-service period of 14 days is based on the demonstrated OPERABILITY of redundant and diversified low pressure core cooling systems and the RCIC system. The HPCI system, and one LPCI subsystem, and/or one CSS subsystem out-of-service period of 8 hours ensures that sufficient ECCS, comprised of a minimum of one CSS subsystem, three LPCI subsystems, and all of the ADS will be available to 1) provide for safe shutdown of the facility, and 2) mitigate and control accident conditions within the facility.

The surveillance requirements provide adequate assurance that the HPCI system will be OPERABLE when required. Although all active components are testable and full flow can be demonstrated by recirculation through a test loop during reactor operation, a complete functional test with reactor vessel injection requires reactor shutdown. The pump discharge piping is maintained full to prevent water hammer damage and to provide cooling at the earliest moment.

Upon failure of the HPCI system to function properly after a small break loss-of-coolant accident, the automatic depressurization system (ADS) automatically causes selected safety/relief valves to open, depressurizing the reactor so that flow from the low pressure core cooling systems can enter the core in time to limit fuel cladding temperature to less than 2200°F. ADS is conservatively required to be OPERABLE whenever reactor vessel pressure exceeds 100 psig. This pressure is substantially below that for which the low pressure core cooling systems can provide adequate core cooling for events requiring ADS.

ADS automatically controls five selected safety-relief valves. The safety analysis assumes all five are operable. The allowed out-of-service time for one valve for up to fourteen days is determined in a similar manner to other ECCS sub-system out-of-service time allowances.

3/4.5.3 SUPPRESSION CHAMBER

The suppression chamber is required to be OPERABLE as part of the ECCS to ensure that a sufficient supply of water is available to the HPCI, CS and LPCI systems in the event of a LOCA. This limit on suppression chamber minimum water volume ensures that sufficient water is available to permit recirculation cooling flow to the core. The OPERABILITY of the suppression chamber in OPERATIONAL CONDITION 1, 2, or 3 is also required by Specification 3.6.2.1.

Repair work might require making the suppression chamber inoperable. This specification will permit those repairs to be made and at the same time give assurance that the irradiated fuel has an adequate cooling water supply when the suppression chamber must be made inoperable, including draining, in OPERATIONAL CONDITION 4 or 5.

In OPERATIONAL CONDITION 4 and 5 the suppression chamber minimum required water volume is reduced because the reactor coolant is maintained at or below 200°F. Since pressure suppression is not required below 212°F, the minimum water volume is based on NPSH, recirculation volume and vortex prevention plus a safety margin for conservatism.



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

PHILADELPHIA ELECTRIC COMPANY
DOCKET NO. 50-353
LIMERICK GENERATING STATION, UNIT 2
AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 58
License No. NPF-85

- i. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Philadelphia Electric Company (the licensee) dated August 12, 1994, as supplemented by letter dated March 29, 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. NPF-85 is hereby amended to read as follows:

Technical Specifications

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 58, are hereby incorporated into this license. Philadelphia Electric Company shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance and shall be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION


John F. Stolz, Director
Project Directorate I-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the
Technical Specifications

Date of Issuance: June 22, 1995

ATTACHMENT TO LICENSE AMENDMENT NO. 58

FACILITY OPERATING LICENSE NO. NPF-85

DOCKET NO. 50-353

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

Remove

3/4 5-2
3/4 5-3
B 3/4 5-2

Insert

3/4 5-2
3/4 5-3
B 3/4 5-2

LIMITING CONDITION FOR OPERATION (Continued)

ACTION:

- a. For the core spray system:
 1. With one CSS subsystem inoperable, provided that at least two LPCI subsystems are OPERABLE, restore the inoperable CSS subsystem to OPERABLE status within 7 days or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
 2. With both CSS subsystems inoperable, be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the next 24 hours.

- b. For the LPCI system:
 1. With one LPCI subsystem inoperable, provided that at least one CSS subsystem is OPERABLE, restore the inoperable LPCI pump to OPERABLE status within 30 days or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
 2. With one RHR cross-tie valve (HV-51-282 A or B) open, or power not removed from one closed RHR cross-tie valve operator, close the open valve and/or remove power from the closed valves operator within 72 hours, or be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the next 24 hours.
 3. With no RHR cross-tie valves (HV-51-282 A, B) closed, or power not removed from both closed RHR cross-tie valve operators, or with one RHR cross-tie valve open and power not removed from the other RHR cross-tie valve operator, be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the next 24 hours.
 4. With two LPCI subsystems inoperable, provided that at least one CSS subsystem is OPERABLE, restore at least three LPCI subsystems to OPERABLE status within 7 days or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
 5. With three LPCI subsystems inoperable, provided that both CSS subsystems are OPERABLE, restore at least two LPCI subsystems to OPERABLE status within 72 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
 6. With all four LPCI subsystems inoperable, be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the next 24 hours.*

*Whenever both shutdown cooling subsystems are inoperable, if unable to attain COLD SHUTDOWN as required by this ACTION, maintain reactor coolant temperature as low as practical by use of alternate heat removal methods.

LIMITING CONDITION FOR OPERATION (Continued)

ACTION: (Continued)

c. For the HPCI system:

1. With the HPCI system inoperable, provided the CSS, the LPCI system, the ADS and the RCIC system are OPERABLE, restore the HPCI system to OPERABLE status within 14 days or be in at least HOT SHUTDOWN within the next 12 hours and reduce reactor steam dome pressure to ≤ 200 psig within the following 24 hours.
2. With the HPCI system inoperable, and one CSS subsystem, and/or LPCI subsystem inoperable, and provided at least one CSS subsystem, three LPCI subsystems, and ADS are operable, restore the HPCI to OPERABLE within 8 hours, or be in HOT SHUTDOWN in the next 12 hours, and in COLD SHUTDOWN in the next 24 hours.

d. For the ADS:

1. With one of the above required ADS valves inoperable, provided the HPCI system, the CSS and the LPCI system are OPERABLE, restore the inoperable ADS valve to OPERABLE status within 14 days or be in at least HOT SHUTDOWN within the next 12 hours and reduce reactor steam dome pressure to ≤ 100 psig within the next 24 hours.
2. With two or more of the above required ADS valves inoperable, be in at least HOT SHUTDOWN within 12 hours and reduce reactor steam dome pressure to ≤ 100 psig within the next 24 hours.

e. With a CSS and/or LPCI header ΔP instrumentation channel inoperable, restore the inoperable channel to OPERABLE status within 72 hours or determine the ECCS header ΔP locally at least once per 12 hours; otherwise, declare the associated CSS and/or LPCI, as applicable, inoperable.

f. In the event an ECCS system is actuated and injects water into the reactor coolant system, a Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.2 within 90 days describing the circumstances of the actuation and the total accumulated actuation cycles to date. The current value of the usage factor for each affected safety injection nozzle shall be provided in this Special Report whenever its value exceeds 0.70.

BASES

ECCS - OPERATING and SHUTDOWN (Continued)

With the HPCI system inoperable, adequate core cooling is assured by the OPERABILITY of the redundant and diversified automatic depressurization system and both the CS and LPCI systems. In addition, the reactor core isolation cooling (RCIC) system, a system for which no credit is taken in the safety analysis, will automatically provide makeup at reactor operating pressures on a reactor low water level condition. The HPCI out-of-service period of 14 days is based on the demonstrated OPERABILITY of redundant and diversified low pressure core cooling systems and the RCIC system. The HPCI system, and one LPCI subsystem, and/or one CSS subsystem out-of-service period of 8 hours, ensures that sufficient ECCS, comprised of a minimum of one CSS subsystem, three LPCI subsystems, and all of the ADS will be available to 1) provide for safe shutdown of the facility, and 2) mitigate and control accident conditions within the facility.

The surveillance requirements provide adequate assurance that the HPCI system will be OPERABLE when required. Although all active components are testable and full flow can be demonstrated by recirculation through a test loop during reactor operation, a complete functional test with reactor vessel injection requires reactor shutdown. The pump discharge piping is maintained full to prevent water hammer damage and to provide cooling at the earliest moment.

Upon failure of the HPCI system to function properly after a small break loss-of-coolant accident, the automatic depressurization system (ADS) automatically causes selected safety/relief valves to open, depressurizing the reactor so that flow from the low pressure core cooling systems can enter the core in time to limit fuel cladding temperature to less than 2200°F. ADS is conservatively required to be OPERABLE whenever reactor vessel pressure exceeds 100 psig. This pressure is substantially below that for which the low pressure core cooling systems can provide adequate core cooling for events requiring ADS.

ADS automatically controls five selected safety-relief valves. The safety analysis assumes all five are operable. The allowed out-of-service time for one valve for up to fourteen days is determined in a similar manner to other ECCS sub-system out-of-service time allowances.

3/4.5.3 SUPPRESSION CHAMBER

The suppression chamber is required to be OPERABLE as part of the ECCS to ensure that a sufficient supply of water is available to the HPCI, CS and LPCI systems in the event of a LOCA. This limit on suppression chamber minimum water volume ensures that sufficient water is available to permit recirculation cooling flow to the core. The OPERABILITY of the suppression chamber in OPERATIONAL CONDITION 1, 2, or 3 is also required by Specification 3.6.2.1.

Repair work might require making the suppression chamber inoperable. This specification will permit those repairs to be made and at the same time give assurance that the irradiated fuel has an adequate cooling water supply when the suppression chamber must be made inoperable, including draining, in OPERATIONAL CONDITION 4 or 5.

In OPERATIONAL CONDITION 4 and 5 the suppression chamber minimum required water volume is reduced because the reactor coolant is maintained at or below 200°F. Since pressure suppression is not required below 212°F, the minimum water volume is based on NPSH, recirculation volume and vortex prevention plus a safety margin for conservatism.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NOS. 94 AND 58 TO FACILITY OPERATING
LICENSE NOS. NPF-39 AND NPF-85
PHILADELPHIA ELECTRIC COMPANY
LIMERICK GENERATING STATION, UNITS 1 AND 2
DOCKET NOS. 50-352 AND 50-353

1.0 INTRODUCTION

By letter dated August 12, 1994, as supplemented by letter dated March 29, 1995, the Philadelphia Electric Company (the licensee) submitted a request for changes to the Limerick Generating Station (LGS), Units 1 and 2, Technical Specifications (TS). The requested changes would involve a revision to the action statements regarding the emergency core cooling systems (ECCS) to allow continued operation in the event that the high pressure coolant injection (HPCI) system, one core spray subsystem and/or one low pressure coolant injection (LPCI) subsystem are inoperable. The March 29, 1995, letter provided clarifying information and an updated TS page that did not change the initial proposed no significant hazards consideration determination.

2.0 EVALUATION

The licensee proposed revisions to the limiting conditions for operation of the ECCS Section 3.5.1 and the associated Bases Sections 3/4.5.1 and 3/4.5.2. Specifically, Action statement "c" will be added to TS Section 3.5.1 to allow continued operation in the event that the HPCI system, and one core spray subsystem, and/or one LPCI subsystem are inoperable. The current TS do not address this particular situation. Therefore TS Section 3.0.3 is currently applied, requiring plant shutdown if the HPCI system, and one core spray subsystem and/or one LPCI subsystem are inoperable.

ECCS consists of HPCI, LPCI, the core spray system (CSS), and the automatic depressurization system (ADS). ECCS is designed to furnish core cooling in the case of a postulated loss-of-coolant accident (LOCA) caused by the rupture of primary coolant piping. The LGS, Units 1 and 2, TS allow HPCI to be inoperable for up to 14 days provided that ADS, CS, LPCI, and the reactor core isolation cooling (RCIC) systems are operable. The proposed revision would obviate the need for immediate plant shutdown in the event HPCI, and one of the other ECCS systems or RCIC are inoperable. Under the revision to TS 3.5.1, Action statement "c" will permit HPCI to be inoperable for up to 8 hours with one CSS subsystem and/or one LPCI subsystem also inoperable. Otherwise the plant is required to be in hot shutdown in the following 12 hours and cold shutdown in the next 24 hours.

2.1 ECCS Operating Requirement

ECCS is designed to protect against the effects of a postulated LOCA in compliance with the requirements of 10 CFR 50.46, "Acceptable Criteria for Emergency Core Cooling Systems for Light Water Nuclear Power Reactors." The systems comprising ECCS are described in Section 6.3 of the LGS Updated Final Safety Analysis Report (UFSAR). Normally, the ECCS has built-in redundancy so that adequate core cooling will be available even in the event of the failures specified in the LGS-UFSAR. An operable ECCS requires HPCI, ADS, two CSS subsystems, and four LPCI subsystems, per TS Section 3.5.1. The action statements in TS Section 3.5.1 allow interim operation for a number of situations where ECCS components are inoperable. Action statement "a" covers various cases of CSS inoperability. Action statement "b" addresses the LPCI system, and Action statement "c" addresses HPCI inoperability. Adequate core cooling is assured for the different scenarios associated with the above stated action statements by the operability of the remaining ECCS systems and RCIC, a system for which no credit is taken in the safety analyses.

ECCS is also designed so that a single active or passive component failure, including power supplies and electrical and mechanical components, cannot prevent actuation and successful operation of the minimum complement of equipment. All of the combinations of ECCS equipment remaining after the various postulated failures are identified in Section 6.3.1.1.2 of the LGS-UFSAR. For these combinations, the minimum complement is three LPCI pumps and ADS. The minimum complement could result from an ECCS system pipe break accompanied by another single failure. However, the proposed TS change retains ECCS capabilities in excess of the minimum equipment complement discussed in LGS-UFSAR Section 6.3.1.1.2.

As part of the single failure analysis for ECCS, the effect of the loss of division 2 safeguard DC power has been evaluated and discussed in Section 6.3.2.5 of the LGS-UFSAR and the General Electric (GE) topical report on SAFER/GESTR LOCA analysis (Reference 1). The loss of division 2 safeguard DC power results in the loss of the HPCI system, one CSS subsystem and one LPCI subsystem. The loss of power also prevents manual starting of these systems. The analysis concludes that despite the reduction in ECCS capability presented by this situation, the peak cladding temperature will not reach the licensing basis limit. Although the loss of division 2 DC power specifically impacts the "B" LPCI and "C" CS subsystems, the SAFER/GESTR LOCA analyses addresses the loss of any division or subsystem of LPCI and CSS. Thus, the loss of HPCI, one CS and/or one LPCI is considered an analyzed condition. Therefore, since actions associated with TS Section 3.0.3 are related to circumstances not covered in other Specifications or unanalyzed conditions, the requirements of TS Section 3.0.3 do not apply to this situation.

The current TS action statements related to electrical power systems specify that with any of the safeguard DC batteries or chargers inoperable, component operability will be restored within 8 hours or the plant shall be shut down. The AOT and shutdown requirements of the proposed TS revision correspond with the action statements of TS 3.8.2.1 and 3.8.3.1, which apply to the loss of safeguard DC power.

Certain TS limiting conditions for operation are based on analyses presented in NEDO-24708A (Reference 2), which is incorporated into the LGS, Units 1 and 2, UFSAR by reference. The generic analysis of the design basis accident (DBA) suction line breaks shows that one low pressure ECCS along with ADS is adequate to reflood the vessel and maintain core cooling and preclude fuel damage. The UFSAR discusses the outcome of LOCA studies documented in NEDO-30936P (Reference 3) that were performed to establish success criteria for ECCS injection functions. Table 3-7 of Reference 3 shows the minimum combination of systems required to successfully respond to large, intermediate, and small break LOCAs for BWR4 plants. The most restrictive combination shown is ADS and low pressure injection by either LPCI or CSS. This condition is exceeded by the ECCS capability retained by the proposed change. However, the report stipulates that in the event that only the minimum ECCS equipment is available, an alternate cooling path may be needed for long-term LOCA cooling. For the alternate path condition, LPCI injects directly into the core shroud, and maintains a substantial subcooling margin in the water around the core, thereby quenching any steam cooling effects. Also, the availability of the core spray provides another means of long-term cooling.

2.2 ECCS Shutdown and Decay Heat Removal Impact

TS 3.5.2 requires that when the plant is shut down (Cold Shutdown and Refueling), two ECCS subsystems composed of a combination of CSS and/or LPCI subsystems be operable. Two loops of shutdown cooling are required to be operable in accordance with TS Sections 3.4.9.1 (for hot shutdown) and TS 3.4.9.2 and 3.9.11.2 (for cold shutdown and refueling). Otherwise, an alternate method of decay heat removal is required. In case the plant is shut down after operating under the requirements of this proposed revision, the proposed change provides ECCS equipment sufficient to meet these requirements.

2.3 Conclusion

The staff has evaluated the safety implications of the proposed TS revision for ECCS operability when HPCI, one CSS and/or one LPCI subsystem are inoperable. The proposed change will leave ADS, one CSS subsystem, and three LPCI subsystems available. This complement of equipment exceeds the ECCS complement required by ECCS performance analyses (Reference 1). Further, the proposed change is consistent with the associated TS requirements for electric power system operability. The staff has determined that based on the generic

analyses (Reference 2) and the licensee's evaluation, the minimum required complement of ECCS equipment is sufficient to furnish core cooling in the event of a postulated LOCA, and therefore the staff concludes that the proposed TS change is acceptable.

3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Pennsylvania State official was notified of the proposed issuance of the amendments. The State official had no comments.

4.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendments involve no significant increase in the 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 amendments involve no significant hazards consideration, and there has been no public comment on such finding (59 FR 51623). Accordingly, the amendments meet 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 amendments.

5.0 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 amendments will not be inimical to the common defense and security or to the health and safety of the public.

6.0 REFERENCES

1. NEDC-32170P, "Limerick Generating Station Units 1 and 2 SAFER/GESTR-LOCA Loss-of-Coolant Accident Analysis," General Electric Report, Rev. 1, June 1993, Proprietary Information.
2. NEDO-24708A, "Additional Information Required for NRC Staff Generic Report on Boiling Water Reactors," General Electric Report, Rev. 1, December 1980.
3. NEDC-30936P, "BWR Owners' Group Technical Specification Improvement Methodology (With Demonstration for BWR ECCS Actuation Instrumentation)," Part 1, General Electric Report, November 1985, Proprietary Information.

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Date: June 22, 1995