

**PECO ENERGY**

PECO Energy Company
Nuclear Group Headquarters
965 Chesterbrook Boulevard
Wayne, PA 19087-5691

August 12, 1993

Docket Nos. 50-352
50-353

License Nos. NPF-39
NPF-85

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

Subject: Limerick Generating Station, Units 1 and 2
Technical Specifications Change Request No. 93-23-0

Gentlemen:

PECO Energy Company is submitting Technical Specifications (TS) Change Request No. 93-23-0, in accordance with 10 CFR 50.90, requesting an amendment to the TS (Appendix A) of Operating License Nos. NPF-39 and NPF-85 for Limerick Generating Station (LGS), Units 1 and 2, respectively. This proposed TS change involves revising the Limiting Condition for Operation (LCO) for the Emergency Core Cooling System (ECCS) specified in TS Section 3.5.1 and associated Bases Section 3/4.5.1 and 3/4.5.2. Specifically, the proposed TS change will revise ACTION "c" of TS Section 3.5.1 to include a new ACTION statement in the event that the High Pressure Coolant Injection (HPCI) system, and one (1) Core Spray (CS) subsystem, and/or one (1) Low Pressure Coolant Injection (LPCI) subsystem, are inoperable. Presently, there is no ACTION specified in the LCO of this TS section to address the condition when HPCI and one (1) subsystem of CS, and/or one (1) subsystem of LPCI are inoperable. Therefore, the requirements of TS Section 3.0.3 would apply which requires a plant shutdown. Information supporting this TS Change Request is contained in Attachment 1 to this letter, and the proposed replacement pages for the LGS, Units 1 and 2, TS are contained in Attachment 2. This TS Change Request is being submitted under affirmation, and the required affidavit is enclosed.

We request that, if approved, the amendments to the LGS, Units 1 and 2, TS be effective 30 days following issuance of the amendments.

If you have any questions or require additional information, please do not hesitate to contact us.

Very truly yours,

100101

G. A. Hunger, Jr.
Director - Licensing

Attachments
Enclosure

9408180270 940812
PDR ADDEK 05000352
P PDR

cc: T. T. Martin, Administrator, Region I, USNRC (w/ attachments, enclosure)
N. S. Perry, USNRC Senior Resident Inspector, LGS (w/ attachments, enclosure)
R. R. Janati, Director, PA Bureau of Radiological Protection (w/ attachments, enclosure)

ACD

COMMONWEALTH OF PENNSYLVANIA

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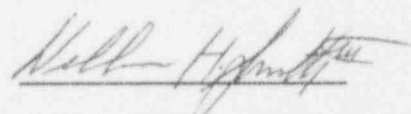
ss.

COUNTY OF CHESTER

:

W. H. Smith, III, being first duly sworn, deposes and says:

That he is Vice President of PECO Energy Company; the Applicant herein; that he has read the foregoing Technical Specifications Change Request No. 93-23-0 for Limerick Generating Station, Units 1 and 2, Facility Operating License Nos. NPF-39 and NPF-85, to revise the Limiting Condition for Operation for the Emergency Core Cooling Systems (ECCS) to include a new ACTION statement in the event that the High Pressure Coolant Injection (HPCI) system, and one (1) Core Spray (CS) subsystem, and/or one (1) Low Pressure Coolant Injection (LPCI) subsystem are inoperable, and knows the contents thereof; and that the statements and matters set forth therein are true and correct to the best of his knowledge, information, and belief.

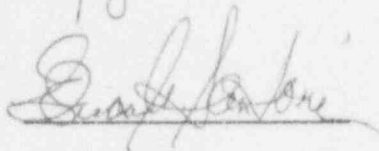


Vice President

Subscribed and sworn to

before me this 17th day

of August 1994.



Notary Public

Notary Seal
Eric A. Santon, Notary Public
Trustee Two, Chester County
My Commission Expires: Jul 10, 1995

ATTACHMENT 1

LIMERICK GENERATING STATION

UNITS 1 AND 2

Docket Nos. 50-352
50-353

License Nos. NPF-39
NPF-85

TECHNICAL SPECIFICATIONS CHANGE REQUEST

No. 93-23-0

"Revise the Limiting Condition for Operation
for the Emergency Core Cooling System Specified in
Technical Specifications Section 3.5.1"

Supporting Information for Changes - 7 pages

PECO Energy Company, Licensee under Facility Operating License Nos. NPF 39 and NPF-85 for Limerick Generating Station (LGS), Units 1 and 2, respectively, requests that the Technical Specifications (TS) contained in Appendix A to the Operating Licenses be amended as proposed herein to revise the Limiting Condition for Operation (LCO) for the Emergency Core Cooling System (ECCS) specified in TS Section 3.5.1 and associated Bases Section 3/4.5.1 and 3/4.5.2. Specifically, the proposed TS change will revise ACTION "c" of TS Section 3.5.1 to include a new ACTION statement in the event that the High Pressure Coolant Injection (HPCI) system, and one (1) Core Spray (CS) subsystem, and/or one (1) Low Pressure Coolant Injection (LPCI) subsystem, are inoperable. Presently, there is no ACTION specified in the LCO of this TS section to address the condition when HPCI and one (1) subsystem of CS, and/or one (1) subsystem of LPCI are inoperable. Therefore, the requirements of TS Section 3.0.3 would apply which requires a plant shutdown. The proposed changes to the TS are indicated by a vertical bar in the margin of affected TS pages. The TS pages showing the proposed changes are contained in Attachment 2.

We request that, if approved, the TS changes proposed herein be effective 30 days following issuance of the amendments.

This TS Change Request provides a discussion and description of the proposed TS changes, a safety assessment of the proposed TS changes, information supporting a finding of No Significant Hazards Consideration, and information supporting an Environmental Assessment.

Discussion and Description of the Proposed Changes

The Emergency Core Cooling System (ECCS) network consists of the High Pressure Coolant Injection (HPCI) system, the Low Pressure Coolant Injection (LPCI) system, the Core Spray (CS) system, and the Automatic Depressurization System (ADS). The ECCS is designed to provide protection against postulated Loss-of-Coolant-Accidents (LOCAs) caused by ruptures in the primary coolant system piping. Currently, the Limerick Generating Station (LGS), Units 1 and 2, Technical Specifications (TS) allows the HPCI system to be inoperable for up to 14 days provided that the CS system, LPCI system, the ADS, and the Reactor Core Isolation Cooling (RCIC) system are all operable. In the event that the HPCI system and one (1) of the other ECCS or RCIC system are inoperable, the requirements of TS Section 3.0.3 would apply, which requires a plant shutdown. This proposed TS change will revise ACTION "c" of TS Section 3.5.1 to include a new ACTION statement permitting the HPCI system to be inoperable for up to eight (8) hours with one (1) CS subsystem, and/or one (1) LPCI subsystem also inoperable, or the unit must be in HOT SHUTDOWN in the next 12 hours, and in COLD SHUTDOWN in the next 24 hours. Allowing the HPCI system and one (1) CS subsystem, and/or one (1) LPCI subsystem, to be inoperable for a period of eight (8) hours will continue to ensure that sufficient ECCS will be available to mitigate accident conditions by providing adequate core cooling, thereby ensuring a safe plant shutdown.

Safety Assessment

The Emergency Core Cooling System (ECCS) is designed to provide protection against postulated Loss-of-Coolant-Accidents (LOCAs) caused by ruptures in the primary coolant system piping. The ECCS is comprised of a network of systems which include the High Pressure Coolant Injection (HPCI) system, the Low Pressure Coolant Injection (LPCI) system, the Core Spray (CS) system, and the Automatic Depressurization System (ADS). The ECCS network has built-in redundancy to ensure that adequate core cooling is provided under all postulated LOCA conditions in order to satisfy the requirements of 10CFR50.46, "Acceptance Criteria for Emergency Core Cooling System for Light-Water-Cooled Nuclear Power Reactors." The following provides a description of systems that comprise the ECCS.

HPCI System

The HPCI system is provided to ensure that the reactor core is adequately cooled in the event of a small break in the reactor coolant pressure boundary piping which does not result in a rapid depressurization of the reactor pressure vessel. The primary purpose of the HPCI system is to maintain the reactor vessel water level inventory after small breaks that do not depressurize the reactor pressure vessel. This permits the plant to be shut down, while maintaining sufficient reactor pressure vessel water inventory until the reactor pressure vessel is depressurized. The HPCI system continues to operate until the reactor pressure is below the pressure at which the low pressure ECCS (i.e., LPCI and CS) can initiate to provide the required reactor core cooling.

The HPCI system is designed to pump water into the reactor vessel for a wide range of pressures in the reactor pressure vessel. Water from the HPCI system is injected into the reactor pressure vessel through a CS sparger and a Feedwater sparger. The HPCI system initially injects water from the Condensate Storage Tank (CST) to the reactor pressure vessel rather than water from the Suppression Pool. This ensures that, at least initially, reactor grade water is being supplied to the reactor pressure vessel. When water level in the CST falls below a predetermined level, or when Suppression Pool level is high, the suction for the HPCI pump is automatically transferred to the Suppression Pool. The HPCI pump and piping are designed and located to avoid damage from the physical effects of Design Basis Accidents (DBAs).

LPCI System

The LPCI system is designed to provide reactor core cooling only when the pressure in the reactor pressure vessel is low, which would be the case for large size breaks in the reactor coolant pressure boundary piping. The primary purpose of the LPCI system is to provide water inventory makeup to the reactor pressure vessel following large pipe breaks in the reactor coolant pressure boundary piping. However, when the LPCI system operates in conjunction with the ADS, the effective core cooling capability of the LPCI system is extended to all break sizes since the ADS rapidly reduces the pressure in the reactor pressure vessel to the LPCI operating range.

The LPCI system is an operating mode of the Residual Heat Removal (RHR) system. The LPCI system pumps water from the Suppression Pool to separate nozzles on the reactor pressure vessel for injection into the reactor core inside the core shroud region. Using the Suppression Pool as the source of water for the LPCI system establishes a closed-loop for recirculation of water escaping from the break.

CS System

The CS system is designed to provide cooling to the reactor pressure vessel core only when the pressure in the reactor pressure vessel is low, which is the case for large size breaks in the reactor coolant pressure boundary piping. However, when the CS operates in conjunction with the ADS, the effective core cooling capability of the CS system is extended to all break sizes since the ADS rapidly reduces the pressure in the reactor pressure vessel to the CS system operating range.

The CS system consists of two (2) redundant loops which pump water into peripheral ring spray spargers, mounted above the reactor pressure vessel core. This enables the CS system to inject water into the reactor pressure vessel core to provide inventory makeup and spray cooling during large breaks which could potentially uncover the reactor core.

ADS

The ADS utilizes a number of the Safety Relief Valves (SRVs) to reduce reactor pressure during small breaks or after containment isolation, in the event of a HPCI system failure. When the pressure in the reactor pressure vessel is reduced to within the capability of the low pressure ECCS (i.e., LPCI and CS), these systems provide water inventory makeup to the reactor pressure vessel in order to ensure adequate reactor core cooling.

If the Reactor Core Isolation Cooling (RCIC) system or the HPCI system cannot maintain the reactor pressure vessel water level, the ADS, which is independent of the other systems comprising the ECCS, reduces the reactor pressure so that the LPCI and/or CS systems can inject into the reactor pressure vessel in time to cool the reactor core and limit fuel cladding temperature.

Electric power for operating the ECCS (except the dc powered HPCI and ADS systems) is from the preferred offsite ac power supply. Upon loss of the preferred ac power source, operation of the ECCS is supported from the onsite standby Emergency Diesel Generators (EDGs).

The starting signal for the ECCS comes from at least two (2) independent and redundant sensors of high drywell pressure and low reactor pressure vessel water level. The ECCS is initiated automatically, and is designed to require no operator action during the first 10 minutes following an accident.

A single failure analysis indicates that no single failure prevents the starting of the ECCS and/or the delivery of coolant to the reactor pressure vessel. The most severe effects of single failures with respect to loss of equipment occur if a LOCA occurs in an ECCS pipe coincident with a Loss-of-Offsite-Power (LOOP). The consequences of the most severe single failures are shown in Table 6.3-3 of the LGS Updated Final Safety Analysis Report (UFSAR).

This proposed TS change requests that TS Section 3.5.1, ACTION c, be revised to include a new ACTION statement in the event that the HPCI system, and one (1) CS subsystem, and/or one (1) LPCI subsystem, are inoperable. In addition, the associated TS Bases Sections 3/4.5.1 and 3/4.5.2 will be revised in support of this proposed TS change. Currently, the LGS TS contain no ACTION for the scenario when the HPCI system and other ECCS are inoperable; therefore, the requirements of TS 3.0.3 apply. TS 3.0.3 requires that when an LCO is not met, except as provided by associated ACTION statements, within one (1) hour action shall be initiated to place the unit in an OPERATIONAL CONDITION where the LCO does not apply by placing the affected unit in 1) at least STARTUP within the next 6 hours, 2) at least HOT SHUTDOWN within the following 6 hours, and 3) at least COLD SHUTDOWN within the subsequent 24 hours.

TS Section 3.5.1 for LGS, Units 1 and 2, was written based on the criteria established in Standard TS (i.e., NUREG-0123, "Standard Technical Specifications for General Electric Boiling Water Reactors"). The Standard TS were developed for nuclear power plant facilities with two (2) independent divisions of safeguard electrical power supplying the ECCS. LGS, Units 1 and 2, have four (4) independent divisions of safeguard electrical power for increased ECCS reliability.

As part of the single failure analysis for the ECCS, the effect of the loss of Division 2 of Safeguard dc power has been evaluated as discussed in Section 6.3.2.5 of the LGS UFSAR, and Section 6.3.2 of the NRC's Safety Evaluation Report (SER), i.e., NUREG-0991, "Safety Evaluation Report Related to the Operation of Limerick Generating Station, Units 1 and 2," dated August 1983. In addition, in General Electric (GE) Topical Report NEDC-32170P, Revision 1, "Limerick Generating Station, Units 1 and 2, SAFER/GESTR-LOCA, Loss-of-Coolant Accident Analysis," dated June 1993, also evaluates the effects of a loss of Division 2 of Safeguard dc power. This evaluation concludes that a loss of Division 2 of dc power results in the inoperability of the HPCI system, one (1) CS subsystem, and one (1) LPCI subsystem. Furthermore, the loss of this dc power supply also causes these systems to be incapable of being manually started. Since inoperability of Division 2 dc power results in the inoperability of the HPCI system, one (1) CS subsystem, and one (1) LPCI subsystem, the loss of these systems is bounded by the analysis in support of the loss of Division 2 of Safeguard dc power.

The current ACTION statements associated with TS Sections 3.8.2.1 and 3.8.3.1, relative to electrical power systems, specify that with any of the Safeguard dc batteries or chargers inoperable or deenergized, the component shall be restored to an operable status within 8 hours, or place the affected unit in HOT SHUTDOWN within the next 12 hours, and COLD SHUTDOWN within the following 24 hours.

This proposed TS change involves revising TS Section 3.5.1, and the associated Bases Sections 3/4.5.1 and 3/4.5.2, to include an ACTION statement for the condition when the HPCI system, one (1) CS subsystem, and/or one (1) LPCI subsystem, are inoperable. This proposed action is identical to the ACTION which applies to the loss of Division 2 of Safeguard dc power, which bounds the above condition.

Information Supporting a Finding of No Significant Hazards Consideration

We have concluded that the proposed change to the Limerick Generating Station (LGS), Units 1 and 2, Technical Specifications (TS) that revise TS Section 3.5.1 to include a new ACTION statement to cover the condition when the HPCI system, one (1) CS subsystem, and/or one (1) LPCI subsystem, are inoperable, does not involve a Significant Hazards Consideration. In support of this determination, an evaluation of each of the three (3) standards set forth in 10 CFR 50.92 is provided below.

1. The proposed Technical Specifications (TS) change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

The proposed TS change does not involve any physical changes to plant systems or components, nor does it affect the ability of the Low Pressure Coolant Injection (LPCI), Core Spray (CS), and High Pressure Coolant Injection (HPCI) systems to respond to an accident. These systems are not accident initiators, since their design function is accident mitigation.

This proposed TS change, which only addresses equipment status, will not significantly increase the probability of occurrence of an accident previously evaluated. The addition of the proposed ACTION statement enables the plant not to implement TS Section 3.0.3, which requires a plant shutdown, when the HPCI system is inoperable in conjunction with one (1) CS subsystem, and/or one (1) LPCI subsystem. The proposed TS change does not impact the operation of any equipment important to safety. This proposed TS change does not make physical modifications to the plant or

to equipment, nor does it impact any design requirements of the HPCI, CS, and LPCI systems. The proposed TS change does not introduce any failure mechanisms of a different type than those previously evaluated, since no physical changes are being made to the facility. This proposed change will not create any new failure modes which would cause plant equipment to malfunction more frequently than previously evaluated.

The basis for TS Sections 3.8.2.1 and 3.8.3.1, which specify that four (4) independent divisions of Safeguard dc electrical power shall be operable, or shall be restored to operability within 8 hours, is to ensure that sufficient power is available to supply safety-related equipment required to safely shut down the plant, and to provide for mitigation and control of accident conditions at the plant. As discussed in Section 6.3.2 of the NRC Safety Evaluation Report (SER), i.e., NUREG-0991, "Safety Evaluation Report Related to the Operation of Limerick Generating Station, Units 1 and 2," dated August 1983, the most limiting single failure for the Emergency Core Cooling System (ECCS), which includes all break sizes, is the failure of the dc power system common to the HPCI system, one (1) CS subsystem, and one (1) LPCI subsystem. Only one (1) single failure is assumed to occur in the event of a Design Basis Accident (DBA). Therefore, three (3) LPCI pumps, one (1) CS subsystem, and the Automatic Depressurization (ADS) system would be operable and available, for use in the event of a DBA, to provide sufficient core cooling to safely shut down the plant. Although the loss of Division 2 dc power specifically impacts the "B" LPCI and "B" CS, the analysis performed in the NRC SER evaluates the number of ECCS available for use in a DBA. Since the amount of available core cooling is independent of which loop of LPCI or CS is assumed to fail, this analysis is applicable to the loss of any division/loop of LPCI or CS. Therefore, the loss of the HPCI system, one (1) CS subsystem, and/or one (1) LPCI subsystem is bounded by the existing analysis. Since the loss of HPCI, one (1) CS subsystem, and/or one (1) LPCI subsystem is an analyzed condition, and actions associated with TS Section 3.0.3 are related to unanalyzed conditions, the requirements of TS Section 3.0.3 are not applicable to this scenario. Adding an ACTION statement, as proposed, identical to the ACTION statement which currently applies to the loss of Division 2 of Safeguard dc electrical power causes no change in the consequences of any accidents previously evaluated. This proposed TS change does not impact systems, structures, and components designed to mitigate the consequences of an accident. In the event of an accident, the plant configuration following the event will be within the bounds of the existing analysis, and there will be no change in the radiological consequences due to an accident.

Therefore, the proposed TS change does not involve an increase in the probability or consequences of an accident previously evaluated.

2. The proposed TS change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

The proposed TS change does not require any physical changes to plant systems or equipment, nor will it affect the ability of the HPCI, CS, and LPCI systems from performing their design functions, which is to mitigate the consequences of an accident. These systems do not contribute to the initiation of an accident, since their function is accident mitigation. This proposed TS change will not introduce new equipment malfunction or failure modes. The proposed TS change will not introduce any failure mechanisms of a different type than those previously evaluated. The existing design basis for the plant, as described in Section 6.3.2.5 of the LGS Updated Safety Analysis Report (UFSAR) and Section 6.3.2 of the NRC SER, bounds the condition proposed by

this TS Change Request. Section 6.3.2 of the NRC SER indicates that the most limiting single failure for the ECCS is the loss of the dc system powering the HPCI, CS, and LPCI systems. Assuming this failure, three (3) LPCI pumps, one (1) CS subsystem, and the ADS would still be operable and available, for use in the event of a DBA, to ensure adequate core cooling to safely shut down the plant. Although the loss of Division 2 dc power specifically affects "B" LPCI and "B" CS, the analysis performed in the NRC SER evaluates the number of ECCS available for use in a DBA. Since the amount of available core cooling is independent of which loop of LPCI or CS is assumed to fail, this analysis is applicable to the loss of any division/loop of LPCI or CS. Since the loss of HPCI, one (1) CS subsystem, and/or one (1) LPCI subsystem, is an analyzed condition, and the actions associated with TS Section 3.0.3 pertain to unanalyzed conditions, the requirements of TS Section 3.0.3 do not apply to the condition proposed by this TS Change Request.

Therefore, the proposed TS change does not create the possibility of a new or different kind of accident from any previously evaluated.

3. The proposed TS change does not involve a significant reduction in a margin of safety.

The proposed TS change does not involve any physical changes to the design or functional requirements of the LPCI, CS, or HPCI systems. These systems will continue to function as designed to mitigate the consequences of an accident.

This proposed TS change involves adding an additional ACTION statement, and revising the associated supporting Bases section, to specifically address the inoperability of the HPCI system in conjunction with the inoperability of one (1) CS subsystem, and/or one (1) LPCI subsystem. These systems would be inoperable in the event of the loss of Division 2 of the Safeguard dc electrical power supply. The Bases associated with Safeguard electrical power systems, which provide power to equipment required to safely shutdown the plant and to mitigate consequences of an accident, are unchanged. The proposed TS change involves adding an ACTION statement which is identical to the ACTION statement which addresses the inoperability of Division 2 of Safeguard dc power, which is a condition analyzed in the LGS UFSAR and NRC SER. Therefore, the proposed TS change to include an additional ACTION statement does not involve a reduction in a margin of safety.

Information Supporting an Environmental Assessment

An Environmental Assessment is not required for the changes proposed by this Change Request because the requested changes to the LGS, Units 1 and 2, TS conform to the criteria for "actions eligible for categorical exclusion," as specified in 10 CFR 51.22(c)(9). The requested changes will have no impact on the environment. The proposed changes do not involve a significant hazards consideration as discussed in the preceding section. The proposed changes do not involve a significant change in the types or significant increase in the amounts of any effluents that may be released offsite. In addition, the proposed changes do not involve a significant increase in individual or cumulative occupational radiation exposure.

Conclusion

The Plant Operations Review Committee and the Nuclear Review Board have reviewed these proposed changes to the LGS, Units 1 and 2, TS and have concluded that they do not involve an unreviewed safety question, and will not endanger the health and safety of the public.