Station Support Department

10 CFR 50.90

PECO NUCLEAR
A Unit of PECO Energy

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

June 22, 1999

Docket Nos. 50-352
50-353

License Nos. NPF-39
NPF-85

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

Subject: Limerick Generating Station, Units 1 and 2
Technical Specifications Change Request No. 99-01-0
Removal of Recirculation System MG Set Stop Surveillance Requirement

Dear Sir/Madam:

PECO Energy Company is submitting Technical Specifications (TS) Change Request No. 99-01-0, in accordance with 10CFR50.90, requesting an amendment to the TS (Appendix A) for Facility Operating License Nos. NPF-39 and NPF-85 for Limerick Generating Station (LGS), Units 1 and 2. This proposed TS Change Request involves revising the TS to delete Surveillance Requirement (SR) 4.4.1.1.2, and associated TS Administrative Controls Section 6.9.1.9.h, which requires that each Reactor Recirculation System pump motor generator (MG) set scoop tube mechanical and electrical stop be demonstrated OPERABLE with the overspeed setpoints less than or equal to the setpoints as noted in the Core Operating Limits Report (COLR).

Information supporting this TS Change Request is contained in Attachment 1 to this letter, and the proposed TS pages (including marked-up pages) showing the proposed changes to the LGS, Units 1 and 2, TS are contained in Attachment 2. This information is being submitted under affirmation, and the required affidavit is contained in the enclosure to this letter.

We request that, if approved, the amendments to the LGS, Units 1 and 2, TS be issued by December 20, 1999, and become effective within 30 days following issuance of the amendments.

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ENCLOSURE

PECO Energy Company Affidavit
for Limerick Generating Station, Units 1 and 2
Technical Specifications Change Request
No. 99-01-0

If you have any questions, please do not hesitate to contact us.

Very truly yours,

D. B. Helker /FOR

Garrett D. Edwards
Director - Licensing

Attachments/Enclosure

cc: H. J. Miller, Administrator, Region I, USNRC (w/ attachments/enclosure)
A. L. Burritt, USNRC Senior Resident Inspector, LGS (w/ attachments/enclosure)
R. R. Janati, PA Bureau of Radiological Protection (w/ attachments/enclosure)

COMMONWEALTH OF PENNSYLVANIA :

: ss.

COUNTY OF CHESTER :

J. J. Hagan, being first duly sworn, deposes and says:

That he is Senior Vice President of PECO Energy Company, the Applicant herein; that he has read the foregoing application for amendment to Facility Operating License Nos. NPF-39 and NPF-85 for Limerick Generating Station, Units 1 and 2, concerning Technical Specifications Change Request No. 99-01-0, "Removal of Recirculation System MG Set Stop Surveillance Requirement," 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.

Senior Vice President

Subscribed and sworn to
before me this 22nd day
of June 1999.

Notary Public

Notarial Seal
Carol A. Walton, Notary Public
Tredyffrin Twp., Chester County
My Commission Expires May 28, 2002
Member, Pennsylvania Association of Notaries

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. 99-01-0

"Removal of Recirculation System MG Set Stop Surveillance Requirement"

Supporting Information for Changes - 5 Pages

Limerick Generating Station, Units 1 and 2
Technical Specifications Change Request No. 99-01-0
Removal of Recirculation System MG Set Stop Surveillance Requirement

Subject

PECO Energy Company, licensee under Facility Operating License Nos. NPF-39 and NPF-85 for Limerick Generating Station (LGS), Units 1 and 2, requests that the Technical Specifications (TS) contained in Appendix A to the Operating Licenses be amended as proposed herein to eliminate a surveillance requirement for the Reactor Recirculation System. This proposed TS Change Request involves revising the TS to delete Surveillance Requirement (SR) 4.4.1.1.2, and associated TS Administrative Controls Section 6.9.1.9.h, which requires that each Reactor Recirculation System pump motor generator (MG) set scoop tube mechanical and electrical stop be demonstrated OPERABLE with the overspeed setpoints less than or equal to the setpoints as noted in the Core Operating Limits Report (COLR).

The proposed changes to the LGS, Units 1 and 2, TS are shown by vertical bars in the margins on TS pages 3/4 4-2 and 6-18a, and are contained in Attachment 2. Marked-up pages indicating the changes are also contained in Attachment 2.

We request that, if approved, the TS changes proposed herein be issued by December 20, 1999, and become effective within 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

This proposed TS Change Request involves revising the TS to delete Surveillance Requirement (SR) 4.4.1.1.2, and associated TS Administrative Controls Section 6.9.1.9.h, which requires that each Reactor Recirculation System pump motor generator (MG) set scoop tube mechanical and electrical stop be demonstrated OPERABLE with the overspeed setpoints less than or equal to the setpoints as noted in the Core Operating Limits Report (COLR).

Currently, LGS has MG set stops which are designed to limit runout of the recirculation pumps during a dual pump slow flow runout. LGS is permitted to adjust these MG set stop values during the cycle to optimize off-rated thermal limits. The MG set stops are set at 4% (mechanical) and 2% (electrical) above the elected operating domain. Although analyzed to 110% steady state flow throughout the cycle, the operating domain is normally electively set at 105% at the beginning of cycle. As end of rated conditions approach, the operating domain is then expanded out to the steady state analysis limit of 110% to increase energy output.

The purpose for the MG set stops is to limit runout of the recirculation pumps during a dual pump slow flow runout. The possibility of a common mode recirculation pump failure has been eliminated following the removal of the Master Flow Controller from the LGS Recirculation Systems. Removal of the Master Flow Controller was previously evaluated by PECO Energy and found to acceptable. Therefore, the most limiting recirculation pump runout is now a single pump slow flow runout. Analyses of a one pump slow flow runout event from various initial conditions have been performed without utilizing MG set stops to limit

the transient. These analyses have been documented in NEDC-32847P, *"ARTS Flow-Dependent Limits with TBVOOS for Peach Bottom Atomic Power Station and Limerick Generating Station"* (June 1998). Generic flow biased ARTS thermal limits have been developed for LGS, Units 1 and 2, based on these analyses that do not take credit for MG set stops. Since the flow biased ARTS thermal limits do not take credit for MG set stops, the requirement for using the MG set stops is no longer applicable. Accordingly, TS SR 4.4.1.1.2 for demonstrating operability of the MG set stops, and the associated TS Administrative Control Section 6.9.1.9.h, are no longer needed.

Safety Assessment

Setting of the MG set stops has historically been an operationally challenging task requiring heightened attention to personal safety. While the evolution may be performed safely under approved plant procedures, the resetting of the MG set electrical and mechanical stops at power, and subsequent performance of the surveillance testing, requires one (1) of two (2) methods. The first method requires the manipulation of reactor power from the local MG set positioner, and is highly dependent upon reactor power and recirculation pump speed feedback from the Main Control Room (MCR) via telephone or radio. The second method places a restraint on the scoop tube positioner rod, temporarily converts the recirculation pump into a constant speed pump, and prohibits recirculation pump speed manipulations from both the field and MCR while stop adjustments and surveillance work is being performed. Both methods require the locking of the scoop tube positioner at various times to maintain personnel safety around mechanical equipment, particularly hand and arm safety, while adjusting the stops and restoring equipment to service. In either case, while the scoop tube positioner rod is locked or restrained, the reactor recirculation pump is not readily available to the reactor operator for unit transient response.

Performance of the tasks associated with moving the MG set stops at power are considered potential distractors to operations. As a result, additional administrative controls are applied when moving the MG set stops to prevent possible errors. Furthermore, insertion of revised ARTS curves (based on the revised MG set stop setting) into the process computer could also lead to potential errors. Elimination of potential errors could increase overall plant safety. Therefore, the elimination of any unnecessary adjustments to the stops has the potential to increase overall plant safety.

Previous analyses developed flow dependent ARTS curves based on a dual pump slow flow runout incident (i.e., a common mode failure). With the removal of the Recirculation Master Flow Controller, the pumps are now independent of one another and a common mode failure is no longer possible. Plant evaluations were performed to document the electrical separation of the individual controllers for Units 1 and 2. Additional evaluations also confirmed electrical separation between the recirculation pumps for Units 1 and 2. Individual controllers (XC-M1-2R622A(B), XC-M1-1R622A(B)), scoop tube positioners (XY-M1-2S001A(B), XY-M1-1S001A(B)), and tachometer generators were evaluated for electrical separation for Units 1 and 2. These evaluations concluded that there is no common mode failure that could cause a slow recirculation flow increase of both the A and B recirculation pumps.

There are only limited mechanical interconnections between the individual A and B recirculation subsystems. Three (3) systems (i.e., Drywell Chilled Water, Reactor Enclosure Cooling Water, and Turbine Enclosure HVAC) provide only a cooling function to Recirculation System components. These systems do not interact with recirculation speed control devices in any manner that could increase recirculation pump speed for either pump. The Residual Heat Removal (RHR) system interacts with both recirculation subsystems, but does not have a discharge pressure capacity which would enable changes to reactor recirculation pump speeds at pressures above those appropriate to RHR shutdown cooling.

The Recirculation System MG sets' fluid couplers have independent skid mounted lube oil subsystems. Only the Service Water (SW) system has a common connection to the A and B recirculation lube oil subsystems that may affect pump speed in any manner, and then only to a second order affect of a few RPM per recirculation pump. These common speed affects are related to changes in oil viscosity due to lube oil cooling from the SW system and are not capable of affecting lube oil fluid coupler oil temperatures in such a manner as to cause any recirculation runup transient of the magnitude for which the flow dependent thermal limits were designed.

Given the high degree of mechanical and electrical separation between subsystems, particularly those which could possibly affect pump speed, the possibility of a common mode failure has been eliminated, and the most limiting recirculation runout event is a one pump slow flow runout.

Generic Electric (GE) has performed analyses as documented in NEDC-32847P of a one pump slow flow runout event from various initial conditions. These analyses assume no credit for MG set stops. The recirculation pump goes to its maximum speed (1725 rpm) corresponding to the UFSAR specified generator limit of 57.5 Hz. These analyses also assume that the turbine bypass system could be out-of-service (TBVOOS). Based on the results of the analyses, generic flow biased ARTS thermal limits have been developed to be applied to LGS, Units 1 and 2. The revised flow dependent thermal limits, MCPR(F) and MAPFAC(F), are not dependent on MG set stop position and bound all possible single pump runout scenarios.

Since these analyses assume no credit for MG set stops, TS SR 4.4.1.1.2, and associated TS Administrative Controls Section 6.9.1.9.h, are no longer necessary and can be removed from the LGS, Units 1 and 2, TS. MG set stops will be set to values that satisfy operational requirements, and will be controlled by administrative mechanisms other than the Technical Specifications or Core Operating Limits Report (COLR).

Information Supporting a Finding of No Significant Hazards Consideration

We have concluded that the proposed changes to the Limerick Generating Station (LGS), Units 1 and 2, Technical Specifications (TS) to delete Surveillance Requirement (SR) 4.4.1.1.2, and associated TS Administrative Controls Section 6.9.1.9.h, do 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) changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.*

   The proposed TS changes do not make any physical changes to the fuel, or the way the fuel responds to a transient or accident. The radiological barriers are not compromised. The fuel will continue to be operated to analyzed operating limits. No new failure mode is introduced.

   Prior to the removal of the Recirculation System Master Flow Controller at LGS, the bounding postulated event involving an increase in reactor coolant system flow rate was the dual pump slow flow runout event not terminated by SCRAM. The requirements surrounding the MG set stops were established to mitigate consequences during a dual pump slow flow runout by providing a limit on the maximum core flow. The MG set stop requirements were not established to prevent an accident. The potential common mode failure required for a dual pump slow flow runout event was eliminated with the removal of the Master Flow Controller. The elimination of the Master Flow Controller does not increase the probability of other core flow increase events. Since the possibility of a dual pump slow flow runout no longer exists, the requirement to demonstrate operability of the MG set stops can be eliminated.

Revised generic flow biased ARTS thermal limits that do not take credit for MG set stops have been developed for LGS, Units 1 and 2. Adherence to approved flow biased ARTS thermal limits identified in the LGS, Units 1 and 2, Core Operating Limits Reports (COLRs) ensure that fuel design limits are not exceeded. The current flow biased ARTS thermal limits are conservative and take credit for the use of the MG set stops.

The single pump slow flow runout does not terminate by Main Steam Isolation Valve (MSIV) closure or generator load reject. As a result, the single pump runout event does not result in any significant pressurization and does not represent a challenge to the reactor coolant pressure boundary. MSIV closure with associated SCRAM on high neutron flux, as confirmed in the cycle specific Supplemental Reload Licensing Report (SRLR), remains the bounding reactor pressure vessel overpressurization event for LGS, Units 1 and 2. In addition, there are no other associated impacts to the plant resulting from a single pump runout. Therefore, the integrity of radiological barriers will not be compromised.

Although there is no longer a need to demonstrate operability of the MG set stops, there still is an operational need to have the MG set stops for the Reactor Recirculation System (RS). Damage to the jet pump sensing lines could occur if the resonance frequency of the sensing lines is reached. Jet pump sensing line tests established a conservative pump speed limit (1650 rpm for Unit 1, no limit for Unit 2) to preclude sensing line resonance. The MG set stop setpoint bounded the operationally required setpoint. The operationally required MG set stop setpoint to preclude jet pump sensing line resonance will continue to be controlled administratively via approved plant procedures. The proposed TS changes do not adversely impact the RS, or introduce new or unanalyzed operating conditions for the RS. The MG sets will not exceed their previously analyzed maximum 57.5 Hz with the stops removed.

Therefore, the proposed TS changes do not significantly increase the probability or consequences of an accident previously evaluated.

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

The proposed TS changes do not make any physical changes to the fuel, or the way the fuel responds to a transient or accident. The radiological barriers are not compromised. The fuel will continue to be operated to analyzed operating limits. No new failure mode is introduced.

The proposed TS changes do not create new operating conditions that have not been evaluated. Removal of the Recirculation Master Flow Controller eliminates the possibility of a single failure initiated common mode event. Since the possibility of a common failure has been eliminated, the most limiting recirculation runout event is a one pump slow flow runout. Analyses of a one pump runout event from various initial conditions have been performed as documented inn NEDC-32847P. These analyses assume no credit for MG set stops. These analyses demonstrate that the functional behavior of the reactor systems do not change during this new and (less severe) most limiting event.

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

3. *The proposed TS changes do not involve a significant reduction in a margin of safety.*

The proposed TS changes do not make any physical changes to the fuel, or the way the fuel responds to a transient or accident. The radiological barriers are not compromised. The fuel will continue to be operated to analyzed operating limits. No new failure mode is introduced.

Single pump runout based, generic flow biased ARTS thermal limits that do not take credit for MG set stops have been developed for LGS, Units 1 and 2. Adherence to approved ARTS-based flow biased thermal limits identified in the LGS, Units 1 and 2, COLRs and implemented in the plant process computer are sufficient to maintain the margin of safety as delineated in TS Sections 3/4.2.1, 3/4.2.3, and 3/4.2.4.

The requirement for the MG set stops is to limit runout of the recirculation pumps during a dual pump slow flow runout. Removal of the Recirculation Master Flow controller eliminated the possibility of a dual pump slow flow runout. As a result, the requirement to demonstrate operability of the MG set stops is no longer necessary. In addition, the supporting analyses provided in NEDC-32847P have demonstrated that the functional behavior of the reactor systems does not change during the one pump slow flow runout event.

Therefore, these proposed TS changes do not involve a significant reduction in a margin of safety.

Information Supporting an Environmental Assessment

An environmental assessment is not required for the changes proposed by this TS Change Request because the requested changes to the Limerick Generating Station (LGS), Units 1 and 2, Technical Specifications (TS) conform to the criteria for "actions eligible for categorical exclusion," as specified in 10CFR51.22(c)(9). The proposed 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 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 the proposed changes to the Limerick Generating Station (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.