Station Support Department

10 CFR 50.90

PECO NUCLEAR
A UNIT OF PECO ENERGY

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

August 8, 1996

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. 96-09-0

Gentlemen:

PECO Energy Company is submitting Technical Specifications (TS) Change Request No. 96-09-0, 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 TS Sections 3/4.3.1, "Reactor Protection System Instrumentation," 3/4.3.2, "Isolation Actuation Instrumentation," 3/4.3.3, "Emergency Core Cooling System Actuation Instrumentation," and the associated TS Bases Sections 3/4.3.1 and 3/4.3.2 to eliminate selected response time testing requirements. These proposed TS changes are supported by analyses performed by the Boiling Water Reactor Owners' Group (BWROG) and documented in NEDO-32291, "System Analyses for the Elimination of Selected Response Time Testing Requirements," dated January 1994.

NEDO-32291 demonstrates that other periodic tests required by TS, such as channel calibrations, channel checks, channel functional tests, and logic system functional tests, in conjunction with actions taken in response to NRC Bulletin (NRCB) 90-01, "Loss of Fill-Oil in Transmitters Manufactured by Rosemount," and NRCB 90-01, Supplement 1, are adequate to ensure that instrument response times are within acceptable limits.

By letter dated December 28, 1994, the NRC indicated that response time testing requirements can be eliminated from the TS for the selected instrumentation identified in NEDO-32291, and that this report is acceptable for reference in license amendment requests, provided licensees comply with the provisions specified in the December 28, 1994 letter, and supporting Safety Evaluation Report (SER).

We request that, if approved, the amendments to the LGS, Units 1 and 2, TS be issued prior to January 24, 1997, and become effective within 30 days following issuance.

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

Very truly yours,

D. B. Helker/FOR

G. A. Hunger, Jr.
Director - Licensing

Attachments
Enclosure

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)

COMMONWEALTH OF PENNSYLVANIA :

: ss.

COUNTY OF CHESTER :

D. B. Fetters, 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. 96-09-0 for Limerick Generating Station, Units 1 and 2, Facility Operating License Nos. NPF-39 and NPF-85, to eliminate selected response time testing requirements for Reactor Protection System Instrumentation, Isolation Actuation Instrumentation, and Emergency Core Cooling System Actuation Instrumentation, 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 7th day
of August 1996.

Notary Public

Notarial Seal
Mary Lou Skrocki, Notary Public
Tredyffrin Twp., Chester County
My Commission Expires May 17, 1999
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. 96-09-0

"Elimination of Selected Response Time Testing for Reactor Protection System, Isolation Actuation, and Emergency Core Cooling System Actuation Instrumentation"

Supporting Information for Changes - 13 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 TS to eliminate selected response time testing requirements for the Reactor Protection System (RPS), Emergency Core Cooling System (ECCS), and Isolation Actuation instrumentation. The proposed TS changes are supported by analyses performed by the Boiling Water Reactor Owners' Group (BWROG) and documented in NEDO-32291, "System Analyses for the Elimination of Selected Response Time Testing Requirements." The NRC indicated in a letter dated December 28, 1994, that response time requirements can be eliminated from the TS for the selected instrumentation identified in NEDO-32291, and that this report is acceptable for reference in license amendment requests, provided licensees satisfy the provisions specified by the NRC's Safety Evaluation Report (SER) issued for NEDO-32291. The proposed changes to the TS are shown on the attached mark-up of TS pages for Units 1 and 2, and are contained in Attachment 2.

PECO Energy is requesting that, if approved, the amendments to the TS be issued by January 24, 1997, and become effective within 30 days of issuance.

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

Background

The proposed Limerick Generating Station (LGS), Units 1 and 2, Technical Specifications (TS) changes involve revising the TS, and TS Bases sections, to eliminate response time testing requirements for selected plant components. The TS sections affected by these proposed TS changes are: 1) TS 3/4.3.1, "Reactor Protection System (RPS) Instrumentation"; 2) TS 3/4.3.2, "Isolation Actuation Instrumentation"; 3) TS 3/4.3.3, "Emergency Core Cooling System Actuation Instrumentation"; and associated TS Bases Sections 3/4.3.1 and 3/4.3.2. The proposed TS changes are supported by analyses performed by the Boiling Water Reactor Owner's Group (BWROG) and documented in NEDO-32291, "System Analyses for Elimination of Selected Response Time Testing Requirements," dated January, 1994. NEDO-32291 demonstrates that most of the failure modes identified by response time testing can be detected by personnel performing other periodic tests required by TS, such as channel calibrations, channel functional tests, and logic system functional tests. The analysis concludes that these tests, in conjunction with the actions taken in support of NRC Bulletin (NRCB) 90-01, "Loss of Fill-Oil in Transmitters Manufactured by Rosemount," and NRCB 90-01, Supplement 1, are adequate to ensure that instrumentation response times are within acceptable limits.

The analyses documented in NEDO-32291 assert that the response time tests proposed for elimination are of little safety significance and result in unnecessary personnel radiation exposure, reduced availability of systems during plant shutdown, increased potential for inadvertent actuations of safety systems, and a significant burden to utility resources. The basis for these analyses is consistent with Regulatory Guide 1.118, Revision 2, "Periodic Testing of Electric Power and Protection Systems," which endorses IEEE 338-1977 which states:

> "Response time testing of all safety related equipment, per se, is not required if, in lieu of response time testing, the response time of safety related equipment is verified by functional testing, calibration checks, or other test, or both. This is acceptable if it can be demonstrated that changes in response time beyond acceptable limits are accompanied by changes in performance characteristics which are detectable during routine tests."

The evaluations documented in NEDO-32291 demonstrate that response time testing can be eliminated for the following system components:

1) All ECCS actuation instrumentation,
2) Sensors for selected RPS actuation instrumentation, and
3) Sensors for selected Main Steam Line Isolation Valve (MSIV) closure actuation instrumentation.

NEDO-32291 identifies the potential failure modes of components in the affected instrumentation loops which could potentially impact the instrument loop response time. The primary basis is based on plant personnel detecting response time degradation in functional tests and/or calibrations. In addition, industry operating experience was reviewed to identify failures that affect response times and how they were detected. The failure modes identified were then evaluated to determine if the affect on response time would be detected by other testing requirements contained in the TS. The results of this analysis demonstrate that other TS testing requirements (i.e., channel calibration, channel checks, channel functional tests, and logic system functional tests), and actions taken in response to NRC Bulletin (NRCB) 90-01, "Loss of Fill-Oil in Transmitters Manufactured by Rosemount," and NRCB 90-01, Supplement 1, are sufficient to identify failure modes or degradations in instrument response times and assure operation of the analyzed instrument loops within acceptable limits. Furthermore, there were no failure modes identified that can be detected by response time testing than cannot also be detected by other TS required tests.

NEDO-32291 contains an evaluation of a delayed instrumentation response on the order of five (5) seconds for the trip functions selected for response time testing elimination. The five (5) second delay was chosen based on a survey of instrument and control (I&C) technicians from participating boiling water reactor (BWR) and selected pressurized water reactor (PWR) plants. Technicians were questioned about the maximum time it would take to identify sluggish component performance, no matter what individual component is sticking, sluggish, or broken. Fifty percent (50%) of the technicians surveyed estimated three (3) seconds, with eighty-five percent (85%) of the total technicians' estimates within five (5) seconds. A five (5) second delay provides reasonable assurance that changes in response time are detectable during functional testing and calibration checks. This five (5) second delay provides additional assurance that the consequences of this delay are not significant.

By letter dated December 28, 1994, the NRC provided its acceptance of NEDO-32291, subject to the following conditions, and indicated that this report is acceptable for reference in license amendment requests.

> When submitting plant-specific license amendment requests (i.e., TS changes), licensees must confirm the applicability of the generic analysis of NEDO-32291 to their plant, and in addition to the request as shown in Appendix I of the topical report, the TS markup tables as shown in Appendix H, and a list of affected instrument loop components as shown in Appendix C.1, licensees must state that they are following the recommendations from EPRI NP-7243, "Investigation of Response Time Testing Requirements," and therefore, are requiring the following actions:
>
> a. Prior to installation of a new transmitter/switch or following refurbishment of a transmitter/switch (e.g., sensor cell or variable damping components), a hydraulic response time test shall be performed to determine an initial sensor-specific response time value, and
>
> b. For transmitters and switches that use capillary tubes, capillary tube testing shall be performed after initial installation and after any maintenance or modification activity that could damage the lines.

Licensees must also state the following in their requests:

a. That calibration is being done with equipment designed to provide a step function or fast ramp in the process variable,

b. That provisions have been made to ensure that operators and technicians are aware of the consequences of instrument response time degradation, and that applicable procedures have been reviewed and revised as necessary to assure that technicians monitor for response time degradation during the performance of calibrations and functional tests,

c. That surveillance testing procedures have been reviewed and revised if necessary to ensure calibrations and functional tests are being performed in a manner that allows simultaneous monitoring of both the input and output response of units under test,

d. That for any request involving the elimination of response time testing for Rosemount pressure transmitters, the licensee is in full compliance with the guidelines of Supplement 1 to NRCB 90-01, "Loss of Fill-Oil in Transmitters manufactured by Rosemount," and

e. That for those instruments where the manufacturer recommends periodic response time testing as well as calibration to ensure correct function, the licensee has ensured that elimination of response time testing is nevertheless acceptable for the particular application involved.

Description of Changes

The following changes to the TS are proposed:

1) TS Section 3/4.3.1, "Reactor Protection System Instrumentation," Table 3.3.1-2, will be revised to eliminate response time testing for applicable sensors for Reactor Vessel Water Level - Low, Level 3.

2) TS Bases Section 3/4.3.1, "Reactor Protection System Instrumentation," will be revised to make reference to NEDO-32291, as applicable.

3) TS Section 3/4.3.2, "Isolation Actuation Instrumentation," Table 3.3.2-3, will be revised to eliminate response time testing for applicable sensors for Reactor Vessel Water Level - Low, Level 1, and Level 2; Main Steam Line Pressure - Low; and Main Steam Line Flow - High. Instrumentation response time requirements for the Residual Heat Removal (RHR) Shutdown Cooling Mode Isolation, Reactor Water Cleanup (RWCU) System Isolation, High Pressure Coolant Injection (HPCI) System Isolation, Reactor Core Isolation Cooling (RCIC) System Isolation, and Primary Containment Isolation will be eliminated as a result of the proposed TS changes. Further, table notations "a" and "**" will be deleted and "###" will be added to reflect these changes.

4) TS Bases Section 3/4.3.2, "Isolation Actuation Instrumentation," will be revised to make reference to NEDO-32291, as applicable.

5) TS Section 3/4.3.1, "Emergency Core Cooling System Actuation Instrumentation," Table 3.3.3-3, will be revised to include an annotation indicating that ECCS actuation instrumentation is eliminated from response time testing for Core Spray (CS), Low Pressure Coolant Injection (LPCI) system, and HPCI system.

Safety Assessment

The elimination of response time testing requirements is based on the analysis provided in NEDO-32291, "System Analyses for Elimination of Selected Response Time Testing Requirements." The failure modes analysis documented in NEDO-32291 concludes that response time degradation of specific components can be detected by other TS required testing. The primary basis for this conclusion is based on plant personnel detecting response time degradation in functional tests and/or calibrations. The five (5) second delay evaluation discussed in NEDO-32291 provides additional assurance that the consequences of this delay are not significant. Analyses have been performed demonstrating that other periodic tests required by TS, such as channel calibrations, channel checks, channel functional tests, and logic system functional tests, in conjunction with actions taken in response to NRC Bulletin 90-01, "Loss of Fill-Oil in Transmitters manufactured by Rosemount," and Supplement 1, provide adequate assurance that instrument responses are within acceptable limits.

The proposed TS changes involve eliminating response time testing requirements associated with the following TS equipment.

1. Affected Equipment: RPS Level Low-Level 3, Sensors LT-042-*N080A-D

   Safety Function(s): Reactor Water Level Low-Level 3

   The proposed TS changes do not affect the capability of the associated systems to perform their intended functions, nor do the proposed changes affect the operation of any plant equipment. As described in LGS Updated Final Safety Analysis Report (UFSAR) Section 15.2.7, the low level trip indicates that the reactor water level has dropped, which is generally indicative of a problem with level control, or reactor feedwater system. A reactor scram is initiated on this condition by RPS to substantially reduce steam production. If the Residual Heat Removal (RHR) system is operating in the shutdown cooling mode, the isolation valves on the RHR suction piping are closed to prevent further loss of vessel inventory via that path. The Automatic Depressurization System (ADS) receives a permissive signal for initiation to avoid inadvertent activation of the low pressure ECCS on a spurious high drywell pressure signal. The TS requirements for this function is 1.05 seconds. If this trip initiation time is increased by five (5) seconds, there would be no significant impact on plant safety. The design basis for the Level 3 scram is the Loss of Feedwater (LOFW) event. The Level 3 scram may occur during other events, but it would be a back-up function after other scram signals have occurred. The LOFW is a non-limiting event for determination of the core thermal limits. Therefore, a five (5) second delay in the scram actuation function would not affect plant thermal limits or fuel integrity. The core cooling function for the LOFW event is provided by the HPCI and RCIC systems which will initiate on Level 2. A five (5) second delay in scramming would neither affect the capability of these systems to initiate nor prevent adequate core cooling.

2. Affected Equipment: MSIVs, Reactor Water Level Low-Level 1 Sensors LT-042-*N091A-H

   Safety Function(s): Reactor Water Level Low-Level 1

   The proposed changes do not affect the capability of the associated systems to perform their intended functions, nor do the proposed changes affect the operation of any equipment. Abnormally low reactor water level is used to generate initiation signals for several functions, one of which is closure of the Main Steam isolation Valves (MSIVs) on Level 1. Fuel cladding integrity must be assured by the initiation of the ECCS systems. To limit the possibility of off-site release, the MSIVs will be closed at the low water level signal. TS required response time for this trip is 1.0 seconds. If this trip initiation time is increased by 5 seconds, there would be no significant impact on plant safety. MSIV closure at low reactor water level would occur during

events which involve loss of reactor water inventory, such LOFW or Loss of Coolant Accident (LOCA) events. Immediate valve closure is not required for core or plant safety. The reactor would have been scrammed at Level 3 and MSIV closure does not affect core cooling. However, at these reactor water levels, there is no fuel damage and the radioactivity is limited to the inventory in the steam lines. No fuel damage or increase in off-site releases would occur even if there is a 5 second time delay in the MSIV closure under these conditions. Therefore, the 5 second delay in the MSIV closure on low reactor water level does not affect plant safety.

3. Affected Equipment: Reactor Water Level Low-Level 1,2 Sensors LT-042-*N091A-H

Safety Function(s): Reactor Water Level Low-Level 1,2

The proposed changes do not affect the capability of the associated systems to perform their intended functions, nor do the proposed changes affect the operation of any equipment. Level 1 isolations, i.e., Containment Instrument Gas line outboard valves, Main Steam Line Drain line valves, Reactor Enclosure Cooling Water (RECW) supply and drain line valves, Drywell Chilled Water Supply and Return line valves, Suppression Pool spray, Containment Instrument Gas Suction line valves, Core Spray test and flush line valves, RHR relief valve discharge line valves, and Main Steam Line pressure instrument line valves; and Level 2 isolations, i.e., Reactor Water Cleanup suction valves, Drywell purge supply and exhaust line valves, Hydrogen Recombiner inlet valves, Recirculation Loop sample line valves, Drywell H_2/O_2 sample line valves, Tip purge and drive line valves, Main Steam Sample line valves, Drywell H_2/O_2 sample return and N_2 Make-Up line valves, Drywell Radiation Monitoring supply and return line valves, Suppression Pool Purge supply and exhaust line valves, Hydrogen recombiner exhaust line valves, HPCI test and flush line valves, H_2/O_2 sample return line valves, Wetwell H_2/O_2 sample line valves, Drywell Floor Drain Sump discharge line valve, Drywell Equipment Drain Tank Discharge line valves, Suppression Pool Cleanup pump suction valves, and Suppression Pool level instrumentation line valves, have a 13 second response time requirement. In accordance with TS Section 3/4.3.2, the design basis evaluation for the reactor inventory release for these lines is based on the assumption that any DC powered valves have failed and that the plant has lost off-site power. In this case, the AC powered isolation valve cannot close until the on-site emergency diesel generator provides power to the valve. The TS response time is 13 seconds based on the delay for the emergency diesel generator which is longer than the five (5) second delay for the instrumentation. The emergency diesel generator is initiated upon loss of off-site power and is independent of the instrumentation. The safety analysis considers an allowable inventory loss in each case which in turn determines the valve speed in conjunction with the 13 second delay. It follows that checking the valve speeds and the 13 second time for emergency power establishment will establish the response time for the isolation functions.

4. Affected Equipment: MSIVs, Reactor Low Pressure Sensors PT-042-*N090A-H

Safety Function(s): Main Steam Line Low Pressure

The proposed changes do not affect the capability of the associated systems to perform their intended functions, nor do the proposed changes affect the operation of any equipment. As described in UFSAR Section 15.1.3, MSIV closure on low steam line pressure is provided to protect the reactor system during normal power generation against transients that could cause uncontrolled depressurization. Protection is provided primarily for a pressure regulator malfunction which results in turbine control and/or bypass valve opening. The Main Steam Line (MSL) low pressure trip set-point is specified to limit the duration and severity of the depressurization so that vessel thermal stresses, resulting from vessel cool-down rate, remain below the appropriate safety limit and reactor water inventory loss is limited to prevent uncovering the core. The set-point is chosen to be low enough that unnecessary isolation is avoided. TS required response time for this trip is 1.0 seconds. If this trip initiation time is increased by 5 seconds, there would be no significant impact on plant safety. The MSL low

pressure trip signal (i.e., setpoint 756 psig) is used primarily to protect the reactor system in case of a pressure regulator malfunction event. The event is not a limiting event for the core thermal limits. The primary concern is the reactor water inventory loss and the thermal cyclic effect on the reactor vessel. During the event, the rapid depressurization causes an increase in reactor water level which results in the high water level trip. This in turn initiates a turbine trip and reactor scram. After reactor scram, reactor water level can be maintained by the HPCI or RCIC systems which are initiated at Level 2. The reactor vessel is designed to accommodate more rapid depressurization than this event. Therefore, a five (5) second delay would reduce this pressure margin by approximately five (5) to ten (10) psig, but not affect vessel integrity or plant safety (TS allowable value is 736 psig).

5. Affected Equipment: Reactor Low Pressure Sensors PT-042-*N090A-H

Safety Functions(s): Main Steam Line Low Pressure

The proposed changes do not affect the capability of the associated systems to perform their intended functions, nor do the proposed changes affect the operation of any equipment. Reactor low pressure isolation for MSL drain valves and MSL pressure instrument line valves have a 13 second response time requirement. In accordance with TS Section 3/4.3.2, the design basis evaluation for the reactor water inventory release for these lines is based on the assumption that any DC powered valves have failed and that the plant has lost offsite power. In this case, the AC powered valves cannot close until the on-site emergency diesel generator provides power to the valve. The TS response time is 13 seconds based on the delay for the emergency diesel generator which is longer than the five (5) seconds delay for the instrumentation. The emergency diesel generator is initiated upon loss of off-site power and is independent of the instrumentation. The safety analysis considers an allowable inventory loss in each case which in turn determines the valve speed in conjunction with the 13 second delay. It follows that checking the valve speeds and the 13 second time for emergency power establishment will establish the response time for the isolation functions.

6. Affected Equipment: MSIVs, Main Steam Line Flow High Sensors PDT-041-*N086A-D, PDT-041-*N087A-D, PDT-041-*N088A-D, PDT-041-*N089A-D

Safety Function(s): Main Steam Line Flow High

The proposed changes do not affect the capability of the associated systems to perform their intended functions, nor do the proposed changes affect the operation of any equipment. As described in UFSAR Section 15.6.4, MSIV closure on high steam line flow is provided to protect the reactor system against accidents or transients that could cause unexpected increases in steam line flow. Protection is provided primarily for a break in the steam line outside the primary containment. Flow restrictors are provided to limit the maximum steam line flow to 140% of rated steam flow. The MSL high flow trip setpoint is specified to limit the duration and severity of the high steam flow condition so that any off-site release will remain below the appropriate limit and inventory loss is limited to prevent uncovering the core. The setpoint is chosen to be high enough that unnecessary isolations are avoided. TS required response time for this trip is 0.5 seconds. If this trip initiation time is increased by five (5) seconds, there would be no significant impact on plant safety. The MSL high flow is designed primarily to protect against a MSL break outside containment. The high steam flow from the postulated double end break would result in releasing a large amount of steam and water outside the primary containment. However, fuel failure would not result from this event as the break would be isolated long before the reactor water level has any significant drop. Even with conservative MSIV closure times, the offsite release for this event is only a small fraction of the allowable 10CFR100 limits. A five (5) second delay in the MSIV closure on high steam flow would still meet the requirments of 10CFR100. Therefore, a five (5) second delay would not affect plant safety.

7. Affected Equipment: Main Steam Line Flow High Sensors PDT-041-*N086A-D, PDT-041-*N087A-D, PDT-041-*N088A-D, PDT-041-*N089A-D

Safety Function(s): Main Steam Line Flow High

The proposed changes do not affect the capability of the associated systems to perform their intended functions, nor do the proposed changes affect the operation of any equipment. Reactor low pressure isolation for Main Steam Line Drain valves and Main Steam Line pressure instrument line valves have a 13 second response time requirement. In accordance with TS Section 3/4.3.2, the design basis evaluation for the reactor water inventory release for these lines is based on the assumption that any DC powered valves have failed and that the plant has lost off-site power. In this case, the AC powered isolation valve cannot close until the on-site emergency diesel generator provides power to the valves. The TS response time is 13 seconds based on the delay for the emergency diesel generator which is longer than the five (5) second delay for the instrumentation. The emergency diesel generator is initiated upon loss of off-site power and is independent of the instrumentation. The safety analysis considers an allowable reactor water inventory loss in each case which in turn determines the valve speeds in conjunction with the 13 second delay. It follows that checking the valve speed in conjunction with the 13 second time for emergency power establishment will establish the response time for the isolation functions.

8. Affected Equipment: RHR Shutdown Cooling Supply and Return Isolation Valves, and the associated Reactor Water Level Low-Level 3 Sensors LT-042-*N080A

Safety Function: Reactor Water Level Low-Level 3

The proposed changes do not affect the capability of the associated systems from performing their intended functions, nor do the changes affect the operation of any plant equipment. The instrumentation is provided to protect the reactor against an accident that could cause unexpected loss of reactor water inventory caused primarily by a break or a leak in the process lines outside the primary containment. In accordance with TS 3/4.3.2, the design evaluation for the reactor water inventory release for these lines is based on the assumption that any DC powered valves have failed and that the plant has lost offsite power. In this case, the AC powered isolation valves cannot close until the onsite emergency diesel generators (EDGs) provide electrical power to the valves. The TS response time is 13 seconds based on the delay for the EDGs which is longer than the five (5) second delay for the instrumentation. The EDGs are initiated upon loss of offsite power and is independent of the instrumentation. The safety analysis considers an allowable reactor water inventory loss in each case which in turn determines the valve speed in conjunction with the 13 second delay. It follows that checking the valve speeds and the 13 second time for emergency power establishment will establish the response time for the isolation functions.

9. Affected Equipment: Reactor Water Cleanup (RWCU) Suction Valves, the associated RWCU Delta Flow-High instrumentation sensors, trip units and relays

Safety Function(s): RWCU Delta Flow-High

The proposed changes do not affect the capability of the associated systems to perform their intended functions, nor do the proposed changes affect the operation of any equipment. The instrumentation is provided to protect the reactor against an accident that could cause unexpected loss of reactor coolant inventory caused primarily by a break or a leak in the process lines outside the primary containment. In accordance with TS Section 3/4.3.2, the design basis evaluation for the reactor water inventory release for these lines are based on the assumption that any DC powered valves have failed and that the plant has lost off-site power. In this case, the AC powered isolation valves cannot close until the on-site emergency diesel generator (EDG) provides electrical power to the valves. The TS response time is 13 seconds

based on the delay for the EDG which is longer than the five (5) second delay for the instrumentation. The EDG is initiated upon loss of off-site power and is independent of the instrumentation. The safety analysis considers an allowable reactor water inventory loss in each case which in turn determines the valve speed in conjunction with the 13 second delay. It follows that checking the valve speeds and the 13 second time for emergency power establishment will establish the response time for the isolation function.

10. Affected Equipment: HPCI Steam Supply, Pump Suction and Vacuum Relief Valves; the associated HPCI Steam Line Delta Pressure-High instrumentation sensors, trip units and relays; and the HPCI Steam Supply Pressure-Low instrumentation sensors, trip units and relays in Table 3

Safety Function(s): HPCI Steam Line Delta Pressure-High, HPCI Steam Supply Pressure-Low

The proposed changes do not affect the capability of the associated systems to perform their intended functions, nor do the proposed changes affect the operation of any equipment. The instrumentation is provided to protect the reactor against an accident that could cause unexpected loss of reactor coolant inventory caused primarily by a break or a leak in the process lines outside the primary containment. In accordance with TS Section 3/4.3.2, the design basis evaluation for the reactor water inventory release for these lines is based on the assumption that any DC powered valves have failed and that the plant has lost off-site power. In this case, the AC powered isolation valves cannot close until the on-site emergency diesel generator provides power to the valves. The TS response time is 13 seconds based on the delay for the emergency diesel generator which is longer than the 5 second delay for the instrumentation. The emergency diesel generator is initiated upon loss of off-site power and is independent of the instrumentation. The safety analysis considers an allowable reactor water inventory loss in each case which in turn determines the valve speed in conjunction with the 13 second delay. It follows that checking the valve speeds and the 13-second time for emergency power establishment will establish the response time for the isolation functions.

11. Affected Equipment: RCIC Supply and Vacuum Relief Valves; the associated RCIC Steam Line Delta Pressure-High instrumentation sensors, trip units and relays; and the RCIC Steam Supply Pressure-Low instrumentation sensors, trip units and relays

Safety Function(s): RCIC Steam Delta Pressure-High, RCIC Steam Supply Pressure-Low

The proposed changes do not affect the capability of the associated systems to perform their intended functions, nor do the proposed changes affect the operation of any equipment. The instrumentation is provided to protect the reactor against an accident that could cause unexpected loss of reactor coolant inventory caused primarily by a break or a leak in the process lines outside the primary containment. In accordance with TS Section 3/4.3.2, the design basis evaluation for the reactor water inventory release for these lines is based on the assumption that any DC powered valves have failed and that the plant has lost off-site power. In this case, the AC powered isolation valves cannot close until the on-site emergency diesel generator provides power to the valves. The TS response time is 13 seconds based on the delay for the emergency diesel generator which is longer than the five (5) second delay for the instrumentation. The emergency diesel generator is initiated upon loss of off-site power and is independent of the instrumentation. The safety analysis considers an allowable reactor water inventory loss in each case which in turn determines the valve speed in conjunction with the 13 second delay. It follows that checking the valve speeds and the 13 second time for emergency power establishment will establish the response time for the isolation functions.

12. Affected Equipment: Primary Containment, the associated Drywell Pressure-High instrumentation sensors, trip units and relays

Safety Function(s): Drywell Pressure-High

The proposed changes do not affect the capability of the associated systems to perform their intended functions, nor do the proposed changes affect the operation of any equipment. Drywell high pressure isolation (i.e., Containment Instrument Gas Supply header valves, RECW supply and return valves from the Recirculation pumps, Drywell purge supply and exhaust valves, Hydrogen Recombiner inlet valves, Drywell H_2/O_2 sample line valves, Tip purge and drive line valves, Containment Instrument Gas suction line valves, Drywell Chilled Water supply and return line valves, Drywell H_2/O_2 sample return and N_2 Make-Up line valves, Drywell Radiation Monitoring supply and return line valves, Suppression Pool Purge supply and exhaust line valves, Hydrogen Recombiner exhaust line valves, HPCI test and flush line valves, H2/O2 sample return line valves, Instrument Gas to Vacuum Relief line valves, Wetwell H_2/O_2 sample line valves, HPCI Vacuum Relief line valves, Drywell Floor Drain Sump discharge line valves, Drywell Equipment Drain Tank Discharge line valves, Suppression Pool Cleanup pump suction valves, Suppression Pool level instrumentation line valves, and RCIC Vacuum Relief line valves) is provided to protect the reactor against an accident that could cause unexpected loss of reactor coolant inventory caused primarily by a break or a leak in the process lines outside the primary containment. In accordance with TS Section 3/4.3.2, the design basis evaluation for the reactor water inventory release for these lines is based on the assumption that any DC powered valves have failed and that the plant has lost off-site power. In this case, the AC powered isolation valves cannot close until the on-site emergency diesel generator provides power to the valves. The TS response time is 13 seconds based on the delay for the emergency diesel generator which is longer than the 5 second delay for the instrumentation. The emergency diesel generator is initiated upon loss of off-site power and is independent of the instrumentation. The safety analysis considers an allowable inventory loss in each case which in turn determines the valve speed in conjunction with the 13 second delay. It follows that checking the valve speeds and the 13 second time for emergency power establishment will establish the response time for the isolation functions.

13. Affected Equipment: HPCI, LPCI mode of RHR, Core Spray; the associated ECCS Reactor Vessel Pressure-Low instrumentation sensors, trip units and relays, the associated ECCS Reactor Vessel Water Level-Low Level 1,2 instrumentation sensors, trip units and relays, and the associated ECCS Drywell Pressure-High instrumentation sensors, trip units and relays

Safety Function(s): Reactor Emergency Core Cooling Systems (ECCS)

The proposed changes do not affect the capability of the associated systems to perform their intended functions, nor do the proposed changes affect the operation of any equipment. ECCS is provided to assure adequate core cooling following loss of normal reactor cooling capability. HPCI provides core cooling at high reactor pressure conditions. In case of a LOCA or when reactor pressure is sufficiently low, the Core Spray (CS) and LPCI systems provide core cooling. In the event of a small leak in the primary coolant system in which HPCI cannot provide adequate core cooling, the ADS would initiate to depressurize the reactor vessel to allow the low pressure ECCS systems to provide the necessary core cooling. The TS required response time for HPCI is 60 seconds, CS is 27 seconds, and LPCI is 40 seconds. The ECCS systems are required to mitigate LOCAs. The application of the GE SAFER/GESTR code for BWRs has demonstrated that there is significant safety margin for LOCA events. The realistic peak cladding temperature for the design basis LOCA is 1000°F which is significantly below the

2200°F Peak Cladding Temperature (PCT) limit. The delay in HPCI response time does not have any significant impact on the design basis because the system is not used as the primary cooling source due to the rapid reactor depressurization. For isolation and small breaks, a 5 second delay in the system response has minimal impact since the release of the reactor coolant inventory from the break is significantly reduced. The design basis LOCA analysis in EPRI, NSAC-131, "Basis for Relaxing ECCS Performance Requirements for BWR/4s," has demonstrated that an 11 second increase in the response time for the Core Spray system would increase the PCT by approximately 84°F. A 15 second increase in the LPCI response time would increase the PCT by 131°F. The combined effect of a ten (10) second delay for Core Spray and nine (9) second delay for LPCI is an increase in the PCT by 137°F, still considerably below the PCT limits.

Additional Information

PECO Energy has confirmed the generic applicability of NEDO-32291 to LGS, Units 1 and 2. As indicated in Appendix A of NEDO-32291, PECO Energy was a participating utility in this evaluation. PECO Energy has also confirmed that the components discussed within the scope of this TS Change Request have been evaluated in NEDO-32291. The components included in the scope of NEDO-32291 are described in Appendix G of the report, and in Table 1 of the NRC's SER. The LGS, Units 1 and 2, components specifically reviewed for this TS Change Request were Rosemount transmitter Models 1151 and 1153, Rosemount trip unit Models 510DU and 710DU, Amerace (Agastat) EGP and ETR relays, Bailey Model 745 transmitters, Bailey Model 750 square root extractors, Bailey Model 752 summers, and Eagle HP5 timers all of which are bounded by the failure modes and effects analysis performed for the study as documented in NEDO-32291. A review of the bases for excluding components from response time testing was performed, and all applied with one (1) exception. The bases for eliminating response time testing for RPS High Steam Dome Pressure could not be applied, since the Average Power Range Monitor-Rod Block Monitor (APRM-RBM) TS implementation utilizes the high steam dome pressure as a possible primary reactor scram signal at low reactor power. In all other cases the analyses provided in NEDO-32291 are applicable to LGS, Units 1 and 2. The BWROG evaluation provided in NEDO-32291 confirms that the selected response time tests are of no safety significance and cause unnecessary personnel exposure, and can reduce availability of safety systems and are a significant burden to utility resources.

PECO Energy confirms that LGS, Units 1 and 2, will conform with the following recommendations from EPRI NP-7243, "Investigation of Response Time Testing Requirements."

1) Prior to installation of a new transmitter/switch or following refurbishment of a transmitter/switch (e.g., sensor cell or variable damping components), a hydraulic response time test will be performed to determine an initial sensor-specific response time value. If this TS Change Request is approved, the applicable LGS, Units 1 and 2, procedures will be revised, as appropriate, to incorporate this recommendation in conjunction with implementing the proposed TS changes.

2) For transmitters and switches that use capillary tubes, capillary tube testing shall be performed after initial installation and after any maintenance or modification activity that could damage the capillary tubes. For those transmitters and switches within the scope of this proposed TS change that utilize capillary tubes, capillary tube testing will be performed after installation and after any maintenance or modification activity, as appropriate.

Applicable station calibration procedures will be revised, as appropriate, to include guidance to input a fast ramp or step change to system components during calibration. This new guidance will ensure that the response of the transmitter(s) to an input signal (i.e., fast ramp or step input change) is prompt, and in all cases occurs within less than five (5) seconds. The applicable procedures will be revised in conjunction with implementing the proposed TS changes, if approved.

PECO Energy conducted training for operators and technicians in response to the Requested Actions identified in NRCB 90-01, "Loss of Fill-Oil in Transmitters Manufactured by Rosemount," as documented in our letter dated July 13, 1990, responding to NRC3 90-01. PECO Energy also provided additional information regarding the loss of fill-oil in Rosemount transmitters in our response to NRCB 90-01, Supplement 1, by letter dated March 5, 1993. However, the applicable station calibration procedures will be revised, as appropriate, to assure that technicians monitor for response degradation during the performance of calibrations and functional tests. Any necessary procedure revisions will be completed in conjunction with implementing the proposed TS changes.

Surveillance testing procedures will be revised, as appropriate, to ensure that calibrations and functional tests are being performed in a manner that allows simultaneous monitoring of both the input and output response of components being tested. As indicated above, the applicable calibration procedures will be revised, as necessary, to ensure that the response of a transmitter(s) to input signals (i.e., step change or fast ramp) occurs within less than five (5) seconds. The applicable surveillance testing procedures will be revised in conjunction with implementing the proposed TS changes, if approved.

PECO Energy's compliance with the guidance stipulated in NRCB 90-01, Supplement 1, was reviewed by the NRC as documented in a letter dated November 19, 1993. The NRC's evaluation of our response to NRCB 90-01, Supplement 1, concluded that PECO Energy's actions satisfied the Requested Actions specified in Supplement 1.

As indicated above, the components affected by this proposed TS change are limited to Rosemount transmitter Models 1151 and 1153, Rosemount trip unit Models 510DU and 710DU, Amerace (Agastat) EGP and ETR relays, Bailey Model 745 transmitters, Bailey Model 750 square root extractors, Bailey Model 752 summers, and Eagle HP5 timers. PECO Energy reviewed the vendor recommendations for these devices and confirmed that they do not contain recommendations for periodic response time testing.

Although not explicitly evaluated, the proposed TS changes will provide an improvement to plant safety and operation by reducing the time safety systems are unavailable, reducing the potential for safety system actuations, reducing plant operating and shutdown risk, limiting radiation exposure to plant personnel, and eliminating the diversion of key personnel to conduct unnecessary testing. Therefore, PECO Energy considers that the proposed TS changes will result in an overall increase in the margin of safety and that the changes do not constitute an unreviewed safety question.

Furthermore, a similar TS change request requesting elimination of response time testing for selected instrumentation in accordance with NEDO-32291 was submitted for Clinton Power Station by letter dated January 27, 1995. The NRC subsequently approved Clinton's TS change request as documented in a letter dated March 9, 1995.

Information Supporting a Finding of No Significant Hazards Consideration

We have concluded that the proposed changes to Limerick Generating Station (LGS), Units 1 and 2, Technical Specifications (TS) to eliminate selected response time testing requirements in accordance with the supporting analysis provided in NEDO-32291 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 alterations or modifications to the plant systems or equipment. The proposed changes do not affect the capability of the associated systems to perform their intended functions within their required response times, nor do the proposed changes adversely impact the operation of any plant equipment. The affected plant systems will continue to function as designed. Elimination of the response time testing

requirements as proposed by this TS change for selected components in RPS Instrumentation, Isolation Actuation System Instrumentation, and ECCS Actuation Instrumentation will not adversely affect the operation of these components.

The supporting analysis provided in NEDO-32291, demonstrates that response time testing is redundant to other TS required testing. NEDO-32291 demonstrated that these other required tests (i.e., channel checks, channel calibrations, channel functional tests, and logic system functional tests), in conjunction with actions taken in response to NRC Bulletin 90-01 and NRCB 90-01, Supplement 1, are sufficient to identify failure modes or degradation in instrument response times, and ensure operation of the associated systems within acceptable limits. There are no known failure modes that can be detected by response time testing that cannot also be detected by other TS required testing. The continued application of other existing TS required testing such as channel checks, channel calibrations, channel functional tests, and logic system functional tests, ensures that the response times for these systems will be maintained within the acceptance limits. The capability of these systems to perform their intended functions within their required response times is not adversely impacted by this proposed TS change. NEDO-32291 evaluated the potential failure modes of the affected instrumentation loops which could impact the instrument loop response times. Industry operating experience was also reviewed to identify failures that affect response times and how they are detected. The failure modes identified were evaluated to determine if other TS required surveillances and actions taken in response to NRC Bulletin 90-01, and NRCB 90-01, Supplement 1, would detect any effects on response time. There are no failures modes identified that can be detected by response time testing that cannot also be detected by other TS required testing.

PECO Energy has confirmed the applicability of the generic evaluation provided in NEDO-32291 to LGS, Units 1 and 2. By letter dated December 28, 1994, the NRC concluded that response time testing can be eliminated from the TS for the selected instrumentation identified in NEDO-32291, with certain provisions, and that NEDO-32291 can be referenced in license amendment requests.

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

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

The proposed TS changes do not involve any physical changes to plant systems or equipment. The proposed changes apply only to the testing requirements for the selected components involved and do not result in any physical modifications to these components, or to other plant system components. Elimination of the response time testing requirements as proposed by this TS change for selected components in RPS Instrumentation, Isolation Actuation System Instrumentation, and ECCS Actuation Instrumentation will not adversely affect the operation of these components. These components will continue to function as designed. Consequently, no new failure modes are introduced as a result of the proposed TS changes.

Eliminating the response time testing requirements as proposed, does not create a new or different type of accident than any previously evaluated. No new or different type of accident will be created as a result of this proposed TS change.

NEDO-32291 demonstrates that other required tests (i.e., channel checks, channel calibrations, channel functional tests, and logic system functional tests), in conjunction with actions taken in response to NRC Bulletin 90-01 and NRCB 90-01, Supplement 1, are sufficient to identify failure modes or degradation in instrument response times, and ensure operation of the associated

systems within acceptable limits. There are no known failure modes that can be detected by response time testing that cannot also be detected by other TS required testing, and therefore, response time testing for the selected components is redundant to the other TS required testing.

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 involve any physical changes to plant systems or equipment. The proposed TS changes do not affect the capability of the associated systems or equipment from performing their intended functions. The systems involved will continue to respond within their allowed response times. Elimination of the response time testing requirements are based on the evaluation provided in NEDO-32291 which demonstrates that response time degradation can be detected by other TS required testing. The evaluation concluded that other TS required tests (i.e., channel checks, channel calibrations, channel functional tests, and logic system functional tests), in conjunction with actions taken in response to NRC Bulletin 90-01 and NRCB 90-01, Supplement 1, are sufficient to identify failure modes or degradation in instrument response times, and ensure operation of the associated systems within acceptable limits.

In addition, although not specifically evaluated, the proposed TS changes will provide an improvement to plant safety and operation by reducing the time safety systems are unavailable, reducing the potential for safety system actuations, reducing plant operating and shutdown risk, limiting radiation exposure to plant personnel, and eliminating the diversion of key personnel to conduct unnecessary testing. Therefore, PECO Energy considers that the proposed TS changes will result in an overall increase in the margin of safety and that the changes do not constitute an unreviewed safety question.

Therefore, the 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 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 effluent 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 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.