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

February 11, 2000

Docket Nos. 50-352
50-353

License Nos. NPF-39
NPF-85

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

Subject: Limerick Generating Station Units 1 and 2
Response to Request for Additional Information Related to
Technical Specifications Change Request No. 99-05-0

Dear Sir/Madam:

Attached is our response to your Request for Additional Information (RAI) dated January 12, 2000, regarding our request to revise Limerick Generating Station (LGS), Units 1 and 2, Technical Specifications to support the installation of a digital Power Range Neutron Monitoring (PRNM) System and incorporate long-term, thermal-hydraulic stability solution hardware. Attachment 1 to this letter provides a restatement of the RAI followed by our response. Attachment 2 to this letter provides plant-specific responses addressing the required utility actions delineated in the Licensing Topical Report (LTR) NEDC-32410P-A, "Nuclear Measurement Analysis and Control Power Range Neutron Monitor (NUMAC PRNM) Plus Option III Stability Trip Function". Attachment 3 to this letter provides the revised Technical Specification Table 3.3.1-1 as discussed in our response to question 3 of the RAI. This information is being submitted under affirmation, and the required affidavit is enclosed.

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

Very truly yours,

James A. Hutton
Director - Licensing

Enclosures: Attachments; Affidavit

cc: H. J. Miller, Administrator, Region 1, USNRC
A. L. Burritt, USNRC Senior Resident Inspector, LGS

A001

COMMONWEALTH OF PENNSYLVANIA :

: ss.

COUNTY OF CHESTER :

J. W. Langenbach, being first duly sworn, deposes and says:

That he is Vice President-Station Support of PECO Energy Company, the Applicant herein; that he has read the foregoing letter concerning Technical Specifications Change Request No. 99-05-0, for Limerick Generating Station, Units 1 and 2, Facility Operating License Nos. NPF-39 and NPF-85, respectively, 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.

James W Langenbach
Vice President-Station Support

Subscribed and sworn to before
me this 11th day February
of 2000.

Carol A Walton
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 & 2

Docket Nos. 50-352
50-353

License Nos. NPF-39
NPF-85

TECHNICAL SPECIFICATIONS CHANGE REQUEST No. 99-05-0

Response to Request for Additional Information

RAI Question 1:
Current Technical Specification (TS) 3.3.1, "Reactor Protection System Instrumentation", Limiting Condition for Operation (LCO) Actions a. and b. are applicable to all functional units in Table 3.3.1-1 and are proposed to be replaced by new Actions a., b., c., and d. The new Actions a., b., and d. are applicable to the functional units 2a., 2b., 2c., and 2d. of revised Table 3.3.1-1 and found to be in agreement with Topical Report NEDC-3241P-A. Explain and justify that the new Actions a., b., and c. combined are either equivalent or conservative with respect to the current TS actions a. and b. when applied to the rest of the functional units in Table 3.3.1-1.

Response to RAI Question 1:
The new actions a., b., and c. have been developed in accordance with Reference 11 (NEDC-30851P-A,"Technical Specification (TS) Improvement Analysis for BWR Reactor Protection System (RPS))" of the Licensing Topical Report (LTR) NEDC-32410P-A, "Nuclear Measurement Analysis and Control Power Range Neutron Monitor (NUMAC PRNM) Plus Option III Stability Trip Function", Volume 1. The changes identified in NEDC-30851P-A were incorporated under TS amendment numbers 53 and 17, dated December 2, 1991, for Limerick Generating Station, Units 1 and 2, License numbers NPF-39 and NPF-85, respectively.

An NRC and industry review of NEDC-30851P-A identified a concern with the wording of TS Action "a". Specifically, the wording of TS Action "a" would allow the continued operation of a plant for up to 12 hours with a combination of failures that could prevent a reactor scram function from completing its logic when called upon. This concern was identified in a letter dated July 26, 1991, from the NRC (Charles E. Rossi, Director, Division of Operational Events Assessment) to the BWR Owner's Group (G. J. Beck, Chairman). This letter also identifies that the BWR Owner's Group (BWROG) was preparing clarified language to be used as an industry standard in future amendments implementing the RPS topical report and that the NRC staff will review subsequent requests for license amendments using the appropriate clarifying language to be provided by the BWROG. This clarifying language was submitted to the NRC (Brian K. Grimes, Director Division of Operating Reactor Support) in a letter dated November 4, 1992, from C. L. Tully, Chairperson, BWR Owners Group (BWROG-92102). Specifically, this letter included a revised model TS Action to address this concern which could be used as an industry standard in future amendments implementing the RPS topical report.

LTR NEDC-32410P-A makes the assumption that the clarifying language identified in BWROG-92102 has already been incorporated into the licensee's TS. Limerick Generating Station has decided to incorporate the changes described in BWROG-92102 for all of RPS as part of the Power Range Neutron Monitoring System (PRNMS) TS submittal since the change was required to support the PRNM modification. The new RPS Actions a., b., and c. submitted are in agreement with NEDC-30851P-A, BWROG-92102, and NEDC-32410P-A. BWROG-92102 provided justification that the new Actions are conservative with respect to the current TS Actions a. and b. Thus, new Actions a., b., and c. are acceptable for all of RPS.

Reference response to LTR section 6.6 in Attachment 2.

RAI Question 2:
In Table 2.2.1-1, the proposed change removed "flow biased" and "high flow clamped" subsets of the average power range monitor (APRM) functional unit, yet the setpoints and allowable values for those subsets are retained. Explain this inconsistency and why the Topical Report (NEDC-3241P-A) nomenclature, which is similar to the current TS nomenclature, was not followed. Also, some of the proposed changes to the setpoints in Table 2.2.1-1 and 3.3.6-2 are nonconservative with respect to the current TS values (e.g., 116.6% instead of 115%; and 62.8% and 57.8% instead of 62% and 57%, respectively). Explain and justify those changes.

Response to RAI Question 2:
Nomenclature for new APRM Simulated Thermal Power setpoints was selected in accordance with section 3.2.5 of LTR NEDC-32410P-A Volume 1. Section 3.2.5 of the LTR states that "for plants that still use the original APRM Flow-biased Neutron Flux Upscale trip, (i.e., Limerick), the replacement system will delete that function and add an APRM Simulated Thermal Power-High Trip (flow biased setpoint) and an APRM Neutron Flux-High trip (fixed setpoint). Limerick has followed this nomenclature structure except that Upscale was used instead of High to agree with current plant TS nomenclature.

Limerick has chosen to represent the Simulated Thermal Power as a single function in accordance with the description provided in sections 3.2.5 and 8.3.1 of the LTR. Section 8.3.1 of the LTR describes the Simulated Thermal Power function as a single function (i.e., no "flow biased" and "clamped" subsets). Thus, the subsets "flow biased" and "high flow clamped" should not be used since this implies multiple functions which is not in accordance with the LTR. Therefore, Table 3.3.1-1 and Table 2.2.1-1 of the Limerick TS have been revised to treat the Simulated Thermal Power as a single function with one setpoint that has a high limit. In addition, the method used to revise Table 2.2.1-1 for Limerick agrees with the Improved Technical Specification Table 3.3.1.1-1 mark-up shown on page H-9 of the LTR which does not use the subset annotation. This method was used since the LTR mark-ups for Table 2.2.1-1 (page H-41 of the LTR) shows the subsets, thereby making the LTR mark-ups for Table 2.2.1-1 and Table 3.3.1-1 inconsistent.

Allowable values and setpoints for the new APRM system have been recalculated by GE Nuclear Energy (GE), using an NRC approved methodology (GE Nuclear Energy Report NEDC-31336P-A, GE Proprietary Information, September 1996, GE Instrument Setpoint Methodology), and are conservative in regards to the new proposed NUMAC instrumentation. These setpoints were calculated from the original Limerick analytical limits taking advantage of the improved performance characteristics of the replacement NUMAC system, and are documented under PECO setpoint calculation LE-0107. Thus, the new TS setpoints for the APRM system maintain the same margin of safety to the design basis limits.

Reference response to LTR section 8.3.1.4 in Attachment 2.

RAI Question 3:
The Topical Report actions for "APRM-Inoperative" and "2-out-of-4 voter" functional units is a "hot shutdown" in 12 hours. The proposed actions in Table 3.3.1-1 are from operating mode (mode 1) to "start-up" within 6 hours and from mode 2 (start-up) to "hot shutdown" within 12 hours. Justify this deviation from the topical report requirement.

Response to RAI Question 3:
TS Table 3.3.1-1 Actions for Functional units APRM Inoperative and APRM 2-Out-Of-4 Voter have been modified to agree with LTR NEDC-32410P-A. TS Table 3.3.1-1 now shows the Action for both operational conditions 1 and 2 as being Action 1 (Be in at least HOT SHUTDOWN within 12 hours). This change eliminates the identified deviation and places Limerick's proposed TS in conformance with the requirements of LTR NEDC-32410P-A. Reference revised TS Table 3.3.1-1 attached (Attachment 3).

The Plant Operations Review Committee and the Nuclear Review Board have reviewed this proposed change to the previously submitted Limerick Generating Station (LGS), Units 1 and 2, TS. This revision does not change the information supporting the finding of No Significant Hazards Consideration or the information supporting the need not to perform an Environmental Assessment contained in our original submittal dated October 14, 1999.

ATTACHMENT 2

LIMERICK GENERATING STATION
UNITS 1 & 2

Docket Nos. 50-352
50-353

License Nos. NPF-39
NPF-85

TECHNICAL SPECIFICATIONS CHANGE REQUEST No. 99-05-0

Plant Specific Responses To Required Utility Actions
Delineated In LTR NEDC-32410P-A

The section numbers and Utility Actions Required listed below are from the NUMAC PRNM Retrofit Plus Option III Stability Trip Function Topical Report NEDC-32410P-A including Supplement 1.

Section No.	Utility Action Required	Response
2.3.4	Plant Unique or Plant-Specific Aspects Confirm that the actual plant configuration is included in the variations covered in the Power Range Neutron Monitor (PRNM) Licensing Topical Report (LTR) [NEDC-32410P-A, Volumes 1 & 2 and Supplement 1], and the configuration alternative(s) being applied for the replacement PRNM are covered by the PRNM LTR. Document in the *plant-specific licensing submittal* for the PRNM project the actual, current plant configuration of the replacement PRNM, and document confirmation that those are covered by the PRNM LTR. For any changes to the plant operator's panel, document in the submittal the human factors review actions that were taken to confirm compatibility with existing plant commitments and procedures.	Plant Unique or Plant-Specific Aspects The actual, current plant configuration and the proposed replacement PRNM are included in the PRNM LTR as follows: (Applicable LTR sections are listed.) Current / Proposed APRMs 2.3.3.1.1.2 / 2.3.3.1.2.2 RBM 2.3.3.2.1.1 / 2.3.3.2.2.1 Flow Units 2.3.3.3.1.2 / 2.3.3.3.2.2 Rod Control 2.3.3.4.1.2 / 2.3.3.4.2.2 ARTS 2.3.3.5.1.1 / 2.3.3.5.2.1 Panel Inter. 2.3.3.6.1.1 / 2.3.3.6.2.2 The APRM 120 Vac power sources are different from those described in the NUMAC LTR. The LGS currently uses two uninterruptible 120 Vac power busses for APRM power. Those power sources will be retained in the LGS PRNM implementation. Therefore, for LGS, any reference to "RPS A 120 Vac" and "RPS B 120 Vac" in the NUMAC LTR as APRM power sources will be "APRM A 120 Vac" and "APRM B 120 Vac" for LGS. Human Factors Engineering review will be performed as part of the normal design process.
3.4	System Functions As part of the *plant-specific licensing submittal*, the utility should document the following: 1) The pre-modification flow channel configuration, and any changes planned (normally changes will be either adding two channels to reach four or no change planned) NOTE: If transmitters are added, the requirements on the added transmitters should be: · Non-safety related, but qualified environmentally and seismically to operate in the application	System Functions 1) Although the current and post-mod flow channel configuration will be the same (four flow channels, eight transmitters), the eight existing transmitters on Unit 1 will be replaced with the same type of transmitter existing on Unit 2 such that all eight transmitters will meet or exceed requirements of the Note in PRNM LTR Section 3.4.

Section No.	Utility Action Required	Response
	NOTE: If transmitters are added, the requirements on the added transmitters should be: · Non-safety related, but qualified environmentally and seismically to operate in the application environment. · Mounted with structures equivalent or better than those for the currently installed channels. · Cabling routed to achieve separation to the extent feasible using existing cableways and routes. 1) Document the APRM trips currently applied at the plant. If different from those documented in the PRNM LTR, document plans to change to those in the LTR. 2) Document the current status related to ARTS and the planned post modification status as: · ARTS currently implemented, and retained in the PRNM · ARTS will be implemented concurrently with the PRNM (reference ARTS submittal) · ARTS not implemented and will not be implemented with the PRNM · ARTS not applicable	2) APRM trips currently applied at the plant are listed below along with changes planned. The "post-modification" trips will be the same as those identified in the LTR, including the "names" of the trips: ·"Neutron Flux - Upscale, Setdown": Retained with same name "Neutron Flux – Upscale (Setdown)" (same as Neutron Flux - High (Setdown) trip described in LTR) ·"Flow Biased Neutron Flux - Upscale" and "High Flow Clamped Neutron Flux - Upscale": Replaced with flow-biased "Simulated Thermal Power – Upscale" trip and a fixed "Neutron Flux – Upscale" trip (same as described in LTR paragraph 3.2.5 except "Upscale" used instead of "High"). ·"Downscale": Deleted (same as described in LTR paragraph 3.2.6). ·"Inop": Retained, except the logic is modified slightly (same as described in LTR paragraph 3.2.10). ·APRM "Non-coincidence" trip capability: Deleted (same as described in LTR paragraph 3.2.7). 1) ARTS is currently implemented and will be retained in the new PRNM.
4.4.1.11	Regulatory Requirements for the Replacement <u>System - System Design</u> The PRNM LTR identifies requirements that are expected to encompass most specific plant commitments relative to the PRNM replacement project, but may not be complete and some may not apply to all plants. Therefore, the utility must confirm that the requirements identified in the PRNM LTR address all of those identified in plant commitments. The *plant-specific licensing submittal* should identify the specific requirements applicable for the plant, confirm that any clarifications included in the PRNM LTR apply to the plant, and document the specific requirements that the replacement PRNM is intended to meet.	Regulatory Requirements for the Replacement <u>System - System Design</u> A review of the LGS requirements confirms that the regulatory requirements addressed in the LTR encompass the related LGS requirements. Part of the normal design process will also confirm that the detailed PRNM design meets the applicable detailed LGS technical and licensing requirements.

Section No.	Utility Action Required	Response
4.4.2.2.1.4	Regulatory Requirements for the Replacement System -Equipment Qualification - Temperature and Humidity Plant-specific action will confirm that the maximum control room temperatures plus mounting panel temperature rise, allowing for heat load of the PRNM equipment, does not exceed the temperatures presented in the PRNM LTR, and that control room humidity is maintained within the limits stated in the PRNM LTR. This evaluation will normally be accomplished by determining the operating temperature of the current equipment which will be used as a bounding value because the heat load of the replacement system is less than the current system while the panel structure, and thus cooling, remains essentially the same. Documentation of the above action, including the specific method used for the required confirmation should be included in *plant-specific licensing submittals.*	Regulatory Requirements for the Replacement System -Equipment Qualification - Temperature and Humidity The PRNM electronics are qualified for continuous operation under the following temperature conditions: 5 to 50°C [41 to 122°F]. The Aux Equipment Room temperature is 60°F minimum / 82°F maximum for the PRNM panel mounting location and the Main Control Room temperature is 65°F minimum / 78°F maximum for the operator's panel mounting location. The design process includes actions to confirm that the PRNM equipment, as installed in the plant, is qualified for the environmental limits, including temperature. The qualification results will be documented in a plant unique "Qualification Summary". The PRNM electronics is qualified for continuous operation under the following relative humidity conditions: 10 to 90% (non-condensing). The LGS relative humidity requirement for Main Control Room equipment and Aux Equipment Room equipment is 30 - 90%, which is within the range for which the PRNM equipment is qualified.
4.4.2.2.2.4	Regulatory Requirements for the Replacement System -Equipment Qualification - Pressure Plant-specific action will confirm that the maximum control room pressure does not exceed the limits presented in the PRNM LTR. Any pressure differential from inside to outside the mounting panel assumed to be negligible since the panels are not sealed and there is no forced cooling or ventilation. Documentation of this action and the required confirmation should be included in *plant-specific licensing submittals.*	Regulatory Requirements for the Replacement System -Equipment Qualification - Pressure The PRNM electronics are qualified for continuous operation under the following pressure conditions: 13 - 16 psia. There are no LGS pressure requirements for Main Control Room equipment or Aux Equipment Room equipment.
4.4.2.2.3.4	Regulatory Requirements for the Replacement System -Equipment Qualification -Radiation	Regulatory Requirements for the Replacement System -Equipment Qualification -Radiation

Section No.	Utility Action Required	Response
	Plant-specific action will confirm that the maximum control room radiation levels do not exceed the limits presented in the PRNM LTR. Documentation of this action and the required confirmation should be included in *plant-specific licensing submittals.*	The PRNM electronics are qualified for continuous operation under the following conditions: Dose Rate $\leq$ 0.001 Rads (carbon)/hr and Total Integrated Dose (TID) $\leq$ 1000 Rads (carbon). The LGS Main Control Room dose rate is 0.0005 Rads/hr with a TID of 183 Rads. The Aux Equipment Room dose rate is 0.0005 Rads/hr with a TID of 189 Rads. For both locations, the limits are within the qualified ranges for the PRNM equipment.
4.4.2.3.4	Regulatory Requirements for the Replacement System -Seismic Qualification Plant-specific action or analysis will confirm that the maximum seismic accelerations at the mounting locations of the equipment (control room floor acceleration plus panel amplification) for both OBE and SSE spectrums do not exceed the limits stated in the PRNM LTR. Documentation of this action and the required confirmation should be included in *plant-specific licensing submittals.*	Regulatory Requirements for the Replacement System -Seismic Qualification Evaluations to confirm that the maximum seismic accelerations at the mounting locations of the equipment do not exceed qualification limits of the equipment will be completed as part of the normal design change process. The qualification results will be documented in a plant unique "Qualification Summary".
4.4.2.4.4	Regulatory Requirements for the Replacement System -EMI Qualification The utility should establish or document practices to control emission sources, maintain good grounding practices and maintain equipment and cable separation. Controlling Emissions Portable Transceivers (walkie-talkies): Establish practices to prevent operation of portable transceivers in close proximity of equipment sensitive to such emissions. (NOTE: The qualification levels used for the NUMAC PRNM exceed those expected to result from portable transceivers, even if such transceivers are operated immediately adjacent to the NUMAC equipment.) ARC Welding: Establish practices to assure that ARC welding activities do not occur in the vicinity of equipment sensitive to such emissions,	Regulatory Requirements for the Replacement System -EMI Qualification LGS is similar to GE BWRs included in the measurement bases for EPRI TR-102323, so the results of that report apply to LGS. Based on that report, PECO Nuclear has developed procedure NE-CG-926 to define both emissions and susceptibility requirements for new digital equipment. That procedure is applied to the PRNM for confirmation that the PRNM qualification levels adequately encompass the LGS requirements. The conditions and limitations defined in EPRI TR-102323 are met at LGS. 1) Controlling Emissions The modification will comply with PECO Nuclear procedure NE-CG-926, both for emissions and susceptibility. Additionally, NE-CG-926 establishes practices for controlling RFI/EMI emissions from portable transceivers, ARC welding, and newly installed equipment.

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	particularly during times when the potentially sensitive equipment is required to be operational for plant safety. (NOTE: The qualification levels used for NUMAC PRNM minimize the likelihood of detrimental effects due to ARC welding as long as reasonable ARC welding control and shielding practices are used.) Limit Emissions from New Equipment: Establish practices for new equipment and plant modifications to assure that they either do not produce unacceptable levels of emissions, or installation shielding, filters, grounding or other methods prevent such emissions from reaching other potentially sensitive equipment. These practices should address both radiated emissions and conducted emissions, particularly conducted emissions on power lines and power distribution systems. Related to power distribution, both the effects of new equipment injecting noise on the power system and the power system conducting noise to the connected equipment should be addressed. (NOTE: For the qualification of the PRNM equipment includes emissions testing.) Grounding Practices Existing Grounding System: The specific details and effectiveness of the original grounding system in BWRs varied significantly. As part of the modification process, identify any known or likely problem areas based on previous experience and include in the modification program either an evaluation step to determine if problems actually exist, or include corrective action as part of the modification. (NOTE: The PRNM equipment is being installed in place of existing PRM electronics which is generally more sensitive to EMI than the NUMAC equipment. As long as the plant has experienced no significant problems with the PRM,	2) Grounding Practices There have been no problems with current PRM that were traced to or suspected to be caused by EMI susceptibility. Grounding for the modification will be designed to minimize the effects of EMI on the PRNMS. Walkdowns of the LGS grounding system will be performed to identify any conditions that would adversely impact the performance of the new NUMAC equipment. Any identified problems will be corrected as part of the modification process. The modification will comply with PECO Nuclear drawing E-1404, which establishes the requirements and practices for proper grounding at LGS. Additionally, the modification will comply with PECO Nuclear procedure NE-CG-926, which establishes practices for proper grounding at LGS to address RFI/EMI concerns. 3) Equipment and Cable Separation Equipment location, cable routing, and cable shielding will be designed to minimize the effects of EMI on the PRNMS. The modification will comply with PECO Nuclear drawing E-1412, which specifies LGS requirements for cable and wire separation. Additionally, the modification will comply with PECO Nuclear procedures NE-CG-926, which establish practices for proper separation of equipment and cables at LGS to minimize the effects of EMI.

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	no problems are anticipated with the PRNM provided grounding is done in a comparable manner.) Grounding Practices for New Modifications: New plant modifications process should include a specific evaluation of grounding methods to be used to assure both that the new equipment is installed in a way equivalent to the conditions used in the qualification. (NOTE: NUMAC PRNM equipment qualification is performed in a panel assembly comparable to that used in the plant.) Equipment and Cable Separation Cabling: Establish cabling practices to assure that signal cables with the potential to be "receivers" are kept separate from cables that are sources of noise. (NOTE: The original PRM cable installation requirements met this objective. The replacement PRNM uses the same cable routes and paths, so unless some specific problem has been identified in the current system, no special action should be necessary for the PRNM modification.) Equipment: Establish equipment separation and shielding practices for the installation of new equipment to simulate that equipment's qualification condition, both relative to susceptibility and emissions. (NOTE: The original PRM cabinet design met this objective. The replacement PRNM uses the same mounting cabinet, and used an equivalent mounting assembly for qualification. No special action should be necessary for the PRNM modification.) The *plant-specific licensing submittals* should identify the practices that are in place or will be applied for the PRNM modification to address each of the above items.	

Section No.	Utility Action Required	Response
6.6	System Failure Analysis The utility must confirm applicability of the failure analysis conclusions contained in the PRNM LTR by the following actions: 1. Confirm that the events defined in EPRI Report No. NP-2230 or in Appendices F and G of Reference 11 of the PRNM LTR, encompass the events that are analyzed for the plant; 2. Confirm that the configuration implemented by the plant is within the limits described in the LTR; and 3. Prepare a plant-specific 10CFR50.59 evaluation of the modification per the applicable plant procedures. These confirmations and conclusions should be documented in the *plant-specific licensing submittals* for the PRNM modification. [Reference 11 of the LTR is NEDC-30851P-A, "Technical Specification Improvement Analysis for BWR Reactor Protection System", Licensing Topical Report, GE Nuclear Energy, Class III (proprietary), dated March 1988.]	System Failure Analysis 1. Reference 11 in the PRNM LTR, NEDC-30851P-A, has previously been confirmed to apply to LGS and the recommendations therein incorporated into the LGS Technical Specification (Ref. TS Bases 3/4.3.1). Therefore, the PRNM System Failure Analysis conclusions in the PRNM LTR, which are established as an extension of NEDC-30851P-A, apply to LGS. 2. The proposed PRNM configuration is included among the configurations described in the PRNM LTR, as itemized under Section 2.3.4 above. The proposed configuration is being designed by GE and is within the limits described in the LTR. 3. A plant-specific 10CFR50.59 evaluation of the proposed modification will be prepared and approved as part of the normal design process.
7.6	Impact on UFSAR The plant-specific action required for FSAR updates will vary between plants. In all cases, however, existing FSAR documents should be reviewed to identify areas that have descriptions specific to the current PRNM using the general guidance of Sections 7.2 through 7.5 of the PRNM LTR to identify potential areas impacted. The utility should include in the *plant-specific licensing submittal* a statement of the plans for updating the plant FSAR for the PRNM project.	Impact on UFSAR Applicable sections of the UFSAR will be reviewed and appropriate revisions of those sections will be prepared and approved as part of the normal design process in accordance with PECO procedure LR-C-9. Following implementation of the design modification, and closure of the design package, the UFSAR revisions will be submitted to the NRC and included in the updated UFSAR as part of the routine UFSAR update submittal.
8.3.1.4	APRM-Related RPS Trip Functions -	APRM-Related RPS Trip Functions -

Section No.	Utility Action Required	Response
	Functions Covered by Tech Specs 1. Delete the APRM Downscale function, if currently used, from the RPS Instrumentation "function" table, the related surveillance requirements, and, if applicable, the related setpoint, and related descriptions in the bases sections. 2. Delete the APRM Flow-biased Neutron Flux Upscale function, if currently used, from the RPS Instrumentation "function" table, the related surveillance requirements, and, if applicable, the related setpoint, and related descriptions in the bases sections. Replace these with the corresponding entries for the APRM Simulated Thermal Power - High and the APRM Neutron Flux - High functions. Perform analysis necessary to establish setpoints for added trips. 3. Add the APRM Neutron Flux - High (Setdown) function, if not currently used, to the RPS Instrumentation "function" table, add the related surveillance requirements, and, if applicable, the related setpoints, and related descriptions in the bases sections. Perform analysis necessary to establish setpoints for added trips.	Functions Covered by Tech Specs 1. The PRNM modification deletes the RPS APRM Downscale function consistent with the PRNM LTR. The proposed Tech Spec and Bases change deletes all APRM Downscale function entries. 2. Consistent with the PRNM LTR, the PRNM modification replaces the "APRM Neutron Flux - Upscale, Flow Biased" and "APRM Neutron Flux - Upscale, High Flow Clamped" trip functions with the flow-biased "APRM Simulated Thermal Power – Upscale" and fixed "APRM Neutron Flux – Upscale" trip functions. The proposed Tech Spec and Bases change include this replacement. APRM Allowable Values and setpoints have been recalculated by GE and documented in LGS calculation LE-0107. The results of these calculations are reflected in the proposed Tech Spec changes. The Analytical Limit for the "Scram Clamp" is retained as the "APRM Neutron Flux - Upscale" Analytical Limit since those two Functions are equivalent. Based on this Analytical Limit, the Allowable Value for the "APRM Neutron Flux – Upscale" function has been recalculated based on the improved specifications of the PRNM system and increased. The increased value is shown in the Tech Spec markups. There is no specific safety credit for the "APRM Neutron Flux - Upscale, Flow Biased" scram in the original design, nor for the "APRM Simulated Thermal Power - Upscale" scram in the replacement PRNMS. Therefore, the Allowable Value is based on engineering judgment to balance benefits of providing additional margin for transients initiated at reduced flow conditions and the potential for inadvertent trips. Based on engineering judgment, a design bases "analytical limit" of 2% lower than the value for the "APRM Neutron Flux – Upscale" function has been established. The design bases for the STP flow biased scram

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		equation has been established to provide the same "flow intercept" with the "clamp" as the current equation for the "APRM Neutron Flux - Upscale, Flow Biased " scram (approximately 80% rated flow). With those limits, the Allowable Values for the clamp and flow biased portions of the "APRM Simulated Thermal Power - Upscale" scram have been calculated using the improved performance specifications of the PRNM. Those calculated values are documented in LGS calculation LE-0107 and included in the Tech. Spec. markup. 3. The "APRM Neutron Flux - Upscale, Setdown" scram is currently in LGS's Tech Specs. The PRNM modification retains this function unchanged; however, the Allowable Value for this function has been recalculated by GE (and documented in LGS calculation LE-0107) based on the improved PRNM performance specifications with the revised value shown in the Tech. Spec. markup. Setpoints and allowable values will be calculated to take advantage of the improved performance characteristics in the replacement equipment where applicable.
8.3.2.4	APRM-Related RPS Trip Functions - Minimum Number of Operable APRM Channels 1. For the 4-APRM channel replacement configuration, revise the RPS Instrumentation "function" table to show 3 APRM channels, shared by both trip systems for each APRM function shown (after any additions or deletions per PRNM LTR Paragraph 8.3.1.4). Add a "2-out-of-4 Voter" function with two channels under the "minimum operable channels". For plants with Tech Specs that include a footnote calling for removing shorting links, remove the references to the footnote related to APRM (retain references for SRM and IRM) and delete any references to APRM channels in the footnote. For smaller core plants, delete the notes for	APRM-Related RPS Trip Functions - Minimum Number of Operable APRM Channels 1. The minimum number of operable APRM channels, including changes to functions, in the RPS Instrumentation "function" table is changed to 3 for all APRM functions except the new "2-out-of-4" voter function for which the minimum number is 2. References to the footnote in this table calling for removal of the shorting links were removed for the APRMs. These changes are consistent with the PRNM LTR. The PRNM modification and the proposed Tech Spec and Bases changes implement the changes as described the PRNM LTR for a "larger core" plant. Because LGS is a "larger core" plant, no note changes related to "LPRMs from 'other'

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	and references to special conditions related to loss of all LPRMs from the "other" APRM. 2. Review action statements to see if changes are required. If the improvements documented in Reference 11 have not been implemented, then changes will likely be required to implement the 12-hour and 6-hour operation times discussed above for fewer than the minimum required channels. If Improved Tech Specs are applied to the plant, action statements remain unchanged. 3. Revise the Bases section as needed to replace the descriptions of the current 6- or 8-APRM channel systems and bypass capability with a corresponding description of the 4-APRM system, 2-out-of-4 Voter channels (2 per RPS system), and allowed one APRM bypass total.	APRMs" are necessary. The LGS Tech Spec note to the RPS table that defines minimum LPRM numbers for operability will be slightly different from the NUMAC LTR "markup" example. LGS, as discussed generically in NUMAC LTR section 8.3.2.2, includes an administratively controlled operability limit on the maximum number of LPRMs that can be bypassed between APRM calibrations. To facilitate management of that requirement, "note (e)" to TS Table 3.3.1-1 has been revised to include that limit. 2. Action statement changes in the proposed Tech Spec change are consistent with the PRNM LTR described changes for plants that have not applied ISTS but have implemented the "Reference 11" (to the PRNM LTR) changes. The wording of the RPS action statements has been changed somewhat from the example in the LTR Appendix H to improve clarity and assure allowable action times are correctly applied, but the revised statements result in no change from the allowable times documented in the PRNM LTR or "Reference 11". 3. The proposed Tech Spec Bases changes include revisions to the descriptions of the architecture, consistent with the PRNM LTR.
8.3.3.4	APRM-Related RPS Trip Functions - Applicable <u>Modes of Operation</u> 1) <u>APRM Neutron Flux - High (Setdown)</u> Change Tech Spec "applicable modes" entry, if required, to be Mode 2 (startup). Delete references to actions and surveillance requirements associated with other modes. Delete any references to notes associated with "non-coincidence" mode and correct notes as required. Revise Bases descriptions as required. 2) <u>APRM Simulated Thermal Power - High</u>	APRM-Related RPS Trip Functions - Applicable <u>Modes of Operation</u> 1. <u>APRM Neutron Flux - Upscale (Setdown)</u> The applicable mode is changed to Mode 2 only (Modes 3 & 5 deleted) and all references to notes associated with "non-coincidence" mode are deleted. The proposed Tech Spec and Bases changes are consistent with the PRNM LTR. The current LGS Tech Spec includes a requirement via note that APRM Neutron Flux - Upscale (Setdown)

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	Retain as is unless this function is being added to replace the APRM Flow-biased Neutron Flux Trip. In that case, add requirement for operation in Mode 1 (RUN) and add or modify Bases descriptions as required. 3) APRM Neutron Flux - High Retain as is unless this function is being added to replace the APRM Flow-biased Neutron Flux Trip. In that case, add requirement for operation in Mode 1 (RUN) and add or modify Bases descriptions as required. 4) APRM Inop Trip Delete any requirements for operation in modes other than Mode 1 and Mode 2 (RUN and STARTUP). Revise the Bases descriptions as needed.	function be operable during Mode 5 when shutdown margin testing is being performed per Specification 3.10.3. However, Specification 3.10.3 includes requirements only for the SRM to be operable with no APRM operability requirements. The Specification 3.10.3 requirement for SRM operability with shorting links removed, in combination with the Specification 3.3.1 requirement for IRM operability, provides non-coincidence mode scram inputs from both the SRM and IRM functions. These provide a much more sensitive RPS trip input than APRM. Therefore, the note requiring this function's operability during shutdown margin testing per Specification 3.10.3 is also being deleted. 2. APRM Simulated Thermal Power - Upscale Consistent with the PRNM LTR, the LGS PRNM modification replaces the "APRM Neutron Flux - Upscale, Flow Biased" and "APRM Neutron Flux - Upscale, High Flow Clamped" trip functions with the "APRM Simulated Thermal Power - Upscale" and the "APRM Neutron Flux - Upscale" trip functions, both of which apply in Mode 1 (RUN) only. The proposed Tech Spec and Bases changes are consistent with this replacement and with the PRNM LTR. 3. APRM Neutron Flux - Upscale See response for item 2. 4. APRM Inop Trip The applicable modes are changed to Modes 1 & 2 only (Modes 3 & 5 deleted). The current LGS Tech Spec includes a requirement via note that APRM Inop Trip be operable during Mode 5 when shutdown margin testing is being performed per Specification 3.10.3. However, Specification 3.10.3 includes requirements only for the SRM to be operable with no APRM operability requirements. Therefore, the note requiring this function's operability

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		during shutdown margin testing per Specification 3.10.3 is also being deleted. The proposed Tech Spec and Bases changes for the Inop function are consistent with the PRNM LTR.
8.3.4.1.4	APRM-Related RPS Trip Functions - Channel Checks/ Instrument Checks a) For plants without Channel Check requirements, add once per 12 hour or once per day Channel Check or Instrument Check requirement for the three APRM flux based functions. No Channel Check requirements are added for APRM Inop function. Plants with once per 12 hour or once per shift requirements may change them to once per day. b) For plants with 4 full recirculation flow channels and with Tech Specs that call for daily or other channel check requirements for flow comparisons under APRM Flow Biased Simulated Thermal Power Trip, delete those requirements. Move any note reference related to verification of flow signals to Channel Functional Test entry.	APRM-Related RPS Trip Functions - Channel Checks/ Instrument Checks a) The LGS Tech Specs currently include a once-per-12-hour Channel Check requirement for the APRM flux based functions. This Channel Check frequency will be changed to once per day. The new 2-out-of-4 voter function will also have a once-per-day Channel Check requirement. No channel check requirement will be included for the APRM Inop function. The proposed Tech Spec and Bases changes for the Channel Check SR are consistent with the PRNM LTR. b) The LGS currently has 4 full recirculation flow channels and includes a once per 12 hours channel check surveillance requirement. There are no STP trip flow comparison channel check requirements to delete. Verification of flow signals is moved to Channel Functional Test. The proposed Tech Spec and Bases changes for the recirculation flow related SRs are consistent with the PRNM LTR.
8.3.4.2.4	APRM-Related RPS Trip Functions - Channel Functional Tests a) Delete existing channel functional test requirements and replace with a requirement for a Channel Functional Test frequency of each 184 days (6 months) [delete any specific requirement related to startup or shutdown except for the APRM Neutron Flux - High (Setdown) function as noted in Paragraph 8.3.4.2.2(1) of the PRNM LTR]. Add a notation that both the APRM channels	APRM-Related RPS Trip Functions - Channel Functional Tests The current LGS Tech Specs include implementation of the surveillance improvements in Reference 11 to the PRNM LTR and a weekly surveillance, independent of APRM, that includes the scram contactors. a) The proposed Tech Spec and Bases changes include Channel Functional Test frequencies of 6 months ("SA") for the APRM functions, including the 2-out-of-4 Voter channel. Requirements related

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	and the 2-out-of-4 Voter channels are to be included in the Channel Functional Test. b) Add a notation for the APRM Simulated Thermal Power - High function that the test shall include the recirculation flow input processing, excluding the flow transmitters. CAUTION: Plants that have not implemented the APRM surveillance improvements of Reference 11 of the PRNM LTR, or those that have continued to use a weekly surveillance of scram contactors, may need to implement or modify surveillance actions to continue to provide a once per week functional test of scram contactors. (Prior to changes defined in Reference 11, the weekly APRM functional test also provides a weekly test of all automatic scram contactors.)	to startup or shutdown are applied to the Neutron Flux – High (Setdown) only. These changes to Channel Functional Tests are consistent with the PRNM LTR. b) The proposed Tech Spec and Bases changes to Channel Functional Tests for the "APRM Simulated Thermal Power – Upscale" trip function includes a notation, consistent with the PRNM LTR, that the SR includes the recirculation flow input processing, excluding the flow transmitters.
8.3.4.3.4	APRM-Related RPS Trip Functions - Channel Calibrations a) Replace current calibration interval with either 18 or 24 months except for APRM Inop. Retain Inop requirement as is (i.e., no requirement for calibration). b) Delete any requirement for flow calibration and calibration of the 6 second time constant separate from overall calibration of the APRM Simulated Thermal Power Upscale Trip. c) Replace every 3 day frequency for calibration of APRM power against thermal power with a 7 day frequency if applicable. d) Revise Bases text as required.	APRM-Related RPS Trip Functions - Channel Calibrations a) The proposed Tech Spec and Bases changes related to Channel Calibration for the APRM functions include an increase in the interval to once per refueling cycle (24 months), with no calibration required for the Inop function, consistent with the PRNM LTR. b) Prior to the PRNM modification, the LGS Tech Specs included a separate SR for calibration of the recirculation flow transmitters, but included no requirement for calibration of the 6-second time constant for the Simulated Thermal Power (which did not apply to LGS prior to the PRNM modification). Consistent with the PRNM LTR, the proposed Tech Spec and Bases changes delete the separate flow calibration requirement and add notations to the Channel Calibration for the "APRM Simulated Thermal Power – Upscale" trip function to include requirements for calibration of the recirculation flow

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		transmitter and flow processing function. No requirements for calibration of the 6-second time constant are included. c) The current LGS Tech Specs include a "once-per-7-day" frequency for the calibration of APRM power against calculated plant thermal power, so no change in this frequency is required to be consistent with the PRNM LTR. d) The LGS style Tech Spec bases do not include specific discussions of calibration. Consistent with the PRNM LTR Tech Spec "markup" samples, no specific discussion of calibration has been included in the proposed Tech Spec Bases changes.
8.3.4.4.4	APRM-Related RPS Trip Functions - Response Time Testing Delete response time testing requirement from Tech Specs or plant procedures, as applicable, for the APRM functions. Replace it with a response time testing requirement for the 2-out-of-4 Voter "pseudo" function, to include the output solid-state relays of the voter channel through the final RPS trip channel contactors. Frequency of response time testing shall be determined using four 2-out-of-4 Voter channels, but tests may alternate use of 2-out-of-4 Voter outputs provided each APRM/RPS interfacing relay is tested at least once per eight refueling cycles (based on a maximum 24 month cycle), and each RPS scram contactor is tested at least once per four refueling cycles. Each 2-out-of-4 Voter output shall be tested at no less than half the frequency of the tests of the APRM/RPS interface relays. Tests shall alternate such that one logic train for each RPS trip system is tested every two cycles.	APRM-Related RPS Trip Functions - Response Time Testing Response time testing requirements for APRM functions have been deleted from the Tech Spec. Consistent with the PRNM LTR, a response time surveillance requirement has been included for the 2-out-of-4 Voter function. A footnote has been included to define that the measurement starts at the output relay of the voter channel. The frequency of the test is based on "N" channels. However, for simplicity of administration, LGS plans to test both of the redundant outputs from the 2-out-of-4 Voter each time the Voter is tested. This frequency is equal to that described in the PRNM LTR relative to the 2-out-of-4 Voter, i.e., once per 24 months, but at twice the rate required by the PRNM LTR for the Voter output circuits. The proposed Tech Spec and Bases changes related to Response Time Testing are consistent with the PRNM LTR.
8.3.5.4	APRM-Related RPS Trip Functions - Logic System Functional Testing (LSFT) Revise Tech Specs to change the interval for	APRM-Related RPS Trip Functions - Logic System Functional Testing (LSFT) Consistent with the PRNM LTR, the

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	LSFT from 18 months to 24 months unless the utility elects to retain the 18-month interval for plant scheduling purposes. Delete any LSFT requirements associated with the APRM channels and move it to the 2-out-of-4 Voter channel. Include testing of the 2-out-of-4 voting logic and any existing LSFTs covering RPS relays.	proposed Tech Specs change deletes the requirement for LSFT surveillances for all APRM functions except the 2-out-of-4 voter function. The LSFT requirement for that function is included at a 24-month interval.
8.3.6.1	APRM-Related RPS Trip Functions - Setpoints Add to or delete from the appropriate document any changed RPS setpoint information. If ARTS is being implemented concurrently with the PRNM modification, either include the related Tech Spec submittal information with the PRNM information in the plant-specific submittal, or reference the ARTS submittal in the PRNM submittal. In the *plant-specific licensing submittal,* identify what changes, if any, are being implemented and identify the basis or method used for the calculation of setpoints and where the setpoint information or changes will be recorded.	APRM-Related RPS Trip Functions - Setpoints ARTS has already been implemented at LGS and will be retained in the PRNMS. New PRNMS setpoints for flow-biased APRM scrams and rod blocks and for power-biased RBM trips have been calculated by GE using NRC approved setpoint methodology, and documented in LGS calculation LE-0107. The Allowable Values for the APRM RPS functions and some rod block functions will be included in the Tech Specs, equivalent to what is currently in the LGS Tech Specs and consistent with the PRNM LTR. The remainder of the Rod block values will be included in the COLR equivalent to those in the current LGS documents. Setpoints and allowable values will be calculated to take advantage of the improved performance characteristics in the replacement equipment where applicable.
8.4.1.4	OPRM-Related RPS Trip Functions - Functions Covered by Tech Specs Add the OPRM Upscale function as an "APRM function" in the RPS Instrumentation "function" table. Also add the related surveillance requirements and, if applicable, the related setpoint, and the related descriptions in the bases sections. Perform analysis necessary to establish setpoints for the OPRM Upscale trip. Add discussions related to the OPRM function in the Bases for the APRM Inop and 2-out-of-4 Voter functions. NOTE: The markups in Appendix H of Supplement 1 to the PRNM LTR show the OPRM Upscale as an APRM sub-function.	OPRM-Related RPS Trip Functions - Functions Covered by Tech Specs Because the proposed Tech Specs change does not request changes to implement the OPRM trip functions at this time, no confirmations of action are required at this time. This item will be addressed as part of the OPRM Trips Implementation licensing submittal.

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	However, individual plants may determine that for their particular situation, addition of the OPRM to the RPS Instrumentation table separate from the APRM, or as a separate Tech Spec, better meets their needs. In those cases, the basis elements of the Tech Spec as shown in this Supplement would remain, but the specific implementation would be different.	
8.4.2.4	OPRM-Related RPS Trip Functions - Minimum Number of Operable OPRM Channels For the OPRM functions added (Section 8.4.1), include in the OPRM Tech Spec a "minimum operable channels" requirement for three OPRM channels, shared by both trip systems. Add the same action statements as for the APRM Neutron Flux - High function for OPRM Upscale function. In addition, add a new action statement for OPRM Upscale function unavailable per Paragraph 8.4.2.2 of the PRNM LTR. Revise the Bases section as needed to add descriptions of the 4-OPRM system with 2-out-of-4 output Voter channels (2 per RPS Trip System), and allowed one OPRM bypass total.	OPRM-Related RPS Trip Functions - Minimum Number of Operable OPRM Channels Because the proposed Tech Specs change does not request changes to implement the OPRM trip functions at this time, no confirmations of action are required at this time. This item will be addressed as part of the OPRM Trips Implementation licensing submittal.
8.4.3.4	OPRM-Related RPS Trip Functions - Applicable Modes of Operation Add the requirement for operation of the OPRM Upscale function in Mode 1 (RUN) when Thermal Power is $\geq$ 25% RTP, and add Bases descriptions as required.	OPRM-Related RPS Trip Functions - Applicable Modes of Operation Because the proposed Tech Specs change does not request changes to implement the OPRM trip functions at this time, no confirmations of action are required at this time. This item will be addressed as part of the OPRM Trips Implementation licensing submittal.
8.4.4.1.4	OPRM-Related RPS Trip Functions - Channel Check Add once per 12 hour or once per day Channel Check or Instrument Check requirements for the OPRM Upscale	OPRM-Related RPS Trip Functions - Channel Check Because the proposed Tech Specs change does not request changes to implement the OPRM trip functions at this time, no

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	function.	confirmations of action are required at this time. This item will be addressed as part of the OPRM Trips Implementation licensing submittal.
8.4.4.2.4	OPRM-Related RPS Trip Functions - Channel Functional Test Add Channel Functional Test requirements with a requirement for a test frequency of every 184 days (6 months), including the 2-out-of-4 Voter function. Add a "confirm auto-enable region" surveillance on a once per outage basis up to 24 month intervals.	OPRM-Related RPS Trip Functions - Channel Functional Test Because the proposed Tech Specs change does not request changes to implement the OPRM trip functions at this time, no confirmations of action are required at this time. This item will be addressed as part of the OPRM Trips Implementation licensing submittal.
8.4.4.3.4	OPRM-Related RPS Trip Functions - Channel Calibration Add calibration interval requirement of every 24 months for the OPRM Upscale function. Revise Bases text as required.	OPRM-Related RPS Trip Functions - Channel Calibration Because the proposed Tech Specs change does not request changes to implement the OPRM trip functions at this time, no confirmations of action are required at this time. This item will be addressed as part of the OPRM Trips Implementation licensing submittal.
8.4.4.4.4	OPRM-Related RPS Trip Functions - Response Time Testing Modify as necessary the response time testing procedure for the 2-out-of-4 Voter function to include the Voter OPRM output solid-state relays as part of the response time tests, alternating testing of the Voter OPRM output with the Voter APRM output.	OPRM-Related RPS Trip Functions - Response Time Testing Because the proposed Tech Specs change does not request changes to implement the OPRM trip functions at this time, no confirmations of action are required at this time. This item will be addressed as part of the OPRM Trips Implementation licensing submittal.
8.4.5.4	OPRM-Related RPS Trip Functions - Logic System Functional Testing (LSFT) Add requirement for LSFT every refueling cycle, 18 or 24 months at the utility's option based on which best fits plant scheduling.	OPRM-Related RPS Trip Functions - Logic System Functional Testing (LSFT) Because the proposed Tech Specs change does not request changes to implement the OPRM trip functions at this time, no confirmations of action are required at this time. This item will be addressed as part of the OPRM Trips Implementation licensing submittal.

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8.4.6.1	OPRM-Related RPS Trip Functions - Setpoints Add setpoint information to the appropriate document and identify in the plant-specific submittal the basis or method used for the calculation and where the setpoint information will be recorded.	OPRM-Related RPS Trip Functions - Setpoints Because the proposed Tech Specs change does not request changes to implement the OPRM trip functions at this time, no confirmations of action are required at this time. This item will be addressed as part of the OPRM Trips Implementation licensing submittal.
8.5.1.4	APRM-Related Control Rod Block Functions - Functions Covered by Tech Specs If ARTS will be implemented concurrently with the PRNM modification, include or reference those changes in the *plant-specific PRNM submittal.* Implement the applicable portion of the above described changes via modifications to the Tech Specs and related procedures and documents. In the *plant-specific submittal,* identify functions currently in the plant Tech Specs and which, if any, changes are being implemented. For any functions deleted from Tech Specs, identify where setpoint and surveillance requirements will be documented. NOTE: A utility may choose not to delete some or all of the items identified in the PRNM LTR from the plant Tech Specs.	APRM-Related Control Rod Block Functions - Functions Covered by Tech Specs ARTS has already been implemented at LGS and will be retained in the new PRNM System. LGS Tech Specs currently have the following RBM rod block functions: 1. Upscale 2. Inop 3. Downscale The PRNM modification will retain these functions. LGS Tech Specs currently have the following APRM rod block functions: 1. Flow Biased Neutron Flux - Upscale 2. Inop 3. Downscale 4. Neutron Flux - Upscale, Startup The PRNM modification will retain these functions in the Tech Specs with the following changes: 1. The "Flow-Biased Neutron Flux - Upscale" function will be replaced with "Simulated Thermal Power - Upscale" function. 2. No change to the "Inop" function. 3. The "Downscale" function will be renamed as the "Neutron Flux - Downscale" function. 4. The "Neutron Flux - Upscale, Startup" function will be replaced with the "Simulated Thermal Power - Upscale (Setdown)" function. In addition, LGS will add an APRM "LPRM

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		Low Count" function. LGS Tech Specs currently have the following Recirculation Flow rod block functions: 1. Upscale 2. Inoperative 3. Comparator. Consistent with the PRNM LTR, the Inoperative and Comparator rod blocks have been deleted. The Recirculaton Flow -- Upscale rod block will be retained in Tech Specs, but relocated as a sub-function of APRM. These changes are consistent with the PRNM LTR and the changes to the RPS functions to include STP trips except for the addition of the LPRM Low Count rod block function and the retention of the Recirulation Flow – Upscale rod block function. LGS has elected to add/retain these functions in Tech Specs at this time to simplify administration of rod block functions. The PRNM LTR does not commit to include either of these functions in Tech Specs.
8.5.2.4	APRM-Related Control Rod Block Functions - Minimum Number of Operable Control Rod Block Channels Change the minimum number of APRM channels to three, if APRM functions are retained in Tech Specs. No additional action is required relative to minimum operable channels beyond that required by Paragraph 8.5.1.4 of the PRNM LTR.	APRM-Related Control Rod Block Functions - Minimum Number of Operable Control Rod Block Channels Consistent with the PRNM LTR, the proposed Tech Spec change reduces the minimum number of operable channels for APRM functions to three. That minimum number also applies to the added LPRM Low Count and retained Recirculation Flow – Upscale rod block functions since those two functions are accomplished in the same hardware as the other APRM related rod blocks.
8.5.3.4	APRM-Related Control Rod Block Functions - Applicable Modes of Operation No action required relative to modes during which the function must be available beyond that required by Paragraph 8.5.1.4 of the PRNM LTR unless APRM functions are retained in Tech Specs and include	APRM-Related Control Rod Block Functions - Applicable Modes of Operation Consistent with the PRNM LTR, the proposed Tech Spec change deletes the operability requirements for APRM functions in Mode 5. The current LGS Tech Spec includes a requirement via note that the

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	operability requirements for Mode 5. In that case, delete such requirements.	Neutron Flux – Upscale, Setdown and Inoperative functions be operable during Mode 5 when shutdown margin testing is being performed per Specification 3.10.3. However, Specification 3.10.3 includes requirements only for the SRM to be operable with no APRM operability requirements. Therefore, the note requiring this function's operability during shutdown margin testing per Specification 3.10.3 is also being deleted. The added LPRM Low Count function includes an operability requirement for Modes 1 & 2, the same as the APRM Inop function. The retained Recirculation Flow – Upscale rod block function includes an operability requirement for Mode 1, the same as the flow-biased Simulated Thermal Power – Upscale rod block function.
8.5.4.1.4	APRM-Related Control Rod Block Functions - Required Surveillances and Calibration - Channel Check Delete any requirements for instrument or channel checks related to RBM and, where applicable, recirculation flow rod block functions (non-ARTS plants), and APRM functions. Identify in the plant-specific PRNM submittals if any checks are currently included in Tech Specs, and confirm that they are being deleted.	APRM-Related Control Rod Block Functions - Required Surveillances and Calibration - Channel Check The current LGS Tech Specs do not include Channel Check requirements for the APRM or RBM rod block functions. Therefore, no changes are required for the PRNM modification. No Channel Check requirement will be included for the added LPRM Low Count or the retained Recirculation Flow – Upscale rod block functions.
8.5.4.2.4	APRM-Related Control Rod Block Functions - Required Surveillances and Calibration - Channel Functional Test Change Channel Functional Test requirements to identify a frequency of every 184-days (6 months). In the *plant-specific licensing submittal,* identify current Tech Spec test frequencies that will be changed to 184 days (6 months).	APRM-Related Control Rod Block Functions - Required Surveillances and Calibration - Channel Functional Test Consistent with the PRNM LTR, the proposed Tech Spec change decreases the Channel Functional Test frequency for the APRM and RBM rod block functions to once per 6 months ("SA"), including the retained Recirculation Flow – Upscale rod block function. The added LPRM Low Count function will include a Channel Functional Test frequency of every 6 months since the hardware that accomplishes that rod block function is common to that which accomplishes the other APRM related rod

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		block functions.
8.5.4.3.4	APRM-Related Control Rod Block Functions - Required Surveillances and Calibration - Channel Calibrations Change channel calibration requirements to identify a frequency of every 24 months. In the *plant-specific licensing submittal,* identify current Tech Spec test frequencies that will be changed to 24 months.	APRM-Related Control Rod Block Functions - Required Surveillances and Calibration - Channel Calibrations Consistent with the PRNM LTR, the proposed Tech Spec change decreases the Channel Calibration frequency for the APRM and RBM rod block functions to once per refueling cycle (24 months). This change will also apply to the retained Recirculation Flow – Upscale rod block function and the added LPRM Low Count functions which are accomplished by the same hardware that accomplishes the other APRM related rod block functions. However, the only calibration required for the LPRM Low Count rod block function is confirmation that the setpoints are correct.
8.5.4.4.4	APRM-Related Control Rod Block Functions - Required Surveillances and Calibration - Response Time Testing None.	APRM-Related Control Rod Block Functions - Required Surveillances and Calibration - Response Time Testing There currently are no response time testing requirements in Tech Specs for the APRM, RBM or Recirculation Flow functions, and none will be added.
8.5.5.4	APRM-Related Control Rod Block Functions - Required Surveillances and Calibration - Logic System Functional Testing (LSFT) None.	APRM-Related Control Rod Block Functions - Required Surveillances and Calibration - Logic System Functional Testing (LSFT) There are currently no LSFT requirements in the LGS Tech Specs for the APRM or RBM rod block functions, and none will be added.
8.5.6.1	APRM-Related Control Rod Block Functions - Required Surveillances and Calibration - Setpoints Add to or delete from the appropriate document any changed control rod block setpoint information. If ARTS is being implemented concurrently with the PRNM modification, either include the related Tech Spec submittal information with the PRNM information in the *plant-specific submittal,*	APRM-Related Control Rod Block Functions - Required Surveillances and Calibration - Setpoints ARTS has already been implemented at LGS and will be retained by the new PRNM System. RBM and APRM rod block setpoints are based on setpoint calculations performed for LGS by GE using NRC approved setpoint

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	or reference the ARTS submittal in the PRNM submittal. In the *plant-specific submittal,* identify what changes, if any, are being implemented and identify the basis or method used for calculation of setpoints and where the setpoint information or changes will be recorded.	methodology. The actual setpoints defined in the related PECO setpoint calculations will be documented in LGS calculation LE-0107with required additions, deletions or changes to the documents used for the current system. Setpoints and allowable values will be calculated to take advantage of the improved performance characteristics in the replacement equipment where applicable.
8.6.2	Shutdown Margin Testing - Refueling As applicable, revise the Shutdown Margin Testing - Refueling (or equivalent Tech Spec) LCO(s), action statements, surveillance requirements and Bases as required to be consistent with the APRM Tech Spec changes implemented for PRNM.	Shutdown Margin Demonstrations No changes are required to TS 3/4.10.3, Shutdown Margin Demonstrations, to be consistent with the post-modification PRNM architecture and functional identities.
None	Recirculation System No action identified in the PRNM LTR.	Recirculation System Review of TS 3/4.4.1, Recirculation System, identified that the LCO 3.4.1.1 and the associated Bases include references to "Average Power Range Monitor (APRM) Scram". To be consistent with the revised architecture and trip functions in the PRNM, those references need to be changed to "Average Power Range Monitor (APRM) Simulated Thermal Power – Upscale Scram". This change is included in the proposed Tech Spec. change and, although not directly addressed in the PRNM LTR, is consistent with the remainder of the PRNM modification.
None	PRNM Related RPS Technical Specification 3.3.1 Clarifications No action identified in the PRNM LTR.	PRNM Related RPS Technical Specification 3.3.1 Clarifications In the process of preparing the PRNM modification and RPS Technical Specification changes, a need has been identified to clarify or modify some of the associated RPS Technical Specification requirements. These additional changes are in three parts: a) provision for channel surveillance to return channel to operable condition; b) IRM operability requirements

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		in Modes 3, 4 and 5; and, c) NMS shorting link removal requirements. The proposed Technical Specification changes are in addition to those described for the PRNM implementation. Each will be discussed here. Provision for channel surveillance to return channel to operable condition *The change:* A new "Note (n)" will be added to Table 3.3.1-1. Reference to the note is added in the "MINIMUM OPERABLE CHANNELS PER TRIP SYSTEM" column heading in Table 3.3.1-1 (will apply to all RPS functions). The note will allow returning a channel or trip system to the untripped condition under administrative control for up to 2 hours to perform required surveillance tests to confirm operability of an affected channel when such tests cannot be performed with the channel or trip system in the tripped condition. This note will apply to all functions in the Table. *Justification:* In some cases it is not possible to perform all of the necessary surveillance actions to confirm operability of a channel with either the channel or the trip system in the tripped condition. The proposed note allows the return of a channel or trip system to the untripped condition only when necessary to perform the required surveillance tests. It does not allow such action where a loss of trip capability would result. Note: References to TS 3.3.1 Action statements in this discussion refer to those statements as modified in support of the PRNM System modification, not as they are written in the current LGS Technical Specification. Tech Spec LCO 3.0.2 requires that "ACTION requirements" be met without any identified exceptions. Returning a channel or trip system to the untripped condition prior to demonstrating operability of the channel or channels that required the action is interpreted as not meeting the "ACTION requirements" and, therefore, a non-compliance with LCO 3.0.2. Note (a) to

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		Table 3.3.1-1 allows taking a channel out of service for up to 6 hours without the requirement to take the action that would otherwise be required by TS 3.3.1 action statements. However, note (a) does not address the condition where a previously inserted tripped condition must be removed to allow performance of the required surveillance tests. Without the actions allowed by the proposed note (n), rigorous interpretation of the current Tech Spec notes and LCOs can lead to the conclusion, for some conditions, that there is no allowed action that permits performing the surveillance tests required to demonstrate operability of a channel, or that permits performing such tests without causing a scram. The maximum time allowed by the proposed note (n), 2 hours, is intended to be sufficient to allow prudently managed surveillance actions, but not so long as to significantly affect the overall RPS unavailability. If surveillance action is performed under provisions of the proposed note (n), a condition for which Specification 3.3.1 Actions b. or c. are applicable would be created. Those actions allow 12 and 6 hours, respectively, for action from the time when an applicable condition is first discovered. In most cases, all surveillance actions required to confirm operability of a channel can be accomplished without applying the proposed note (n) except for demonstrating that the channel can actually produce a trip in the RPS. The proposed note (n) will only be applied when a failure actually occurs, which is relatively infrequent, and when the failure has not been corrected within the times allowed by the applicable action statements. Based on the relative infrequency of the condition where note (n) would need to be invoked, and the short additional channel-out-of-service time that might result, it is concluded, based on engineering judgment, that the incremental effect of the addition of note (n) on RPS unavailability is negligible compared to the effects already considered in determining the allowable out of service

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		times for Specification 3.3.1 Action b., Action c., and Table 3.3.1-1, Note (a). The addition of note (n) also has a positive effect of eliminating the potential impact of unnecessary plant shutdowns that might otherwise be judged necessary. This change, with respect to the RPS, aligns the LGS Tech Spec with the ISTS LCO 3.0.5, an LCO that has no equivalent in the current LGS Tech Specs. IRM operability requirements in Modes 3, 4 and 5 *The change:* Table 3.3.1-1 and Table 4.3.1-1 IRM operability and surveillance requirements in Modes 3 and 4 will be deleted. IRM operability and surveillance requirements in Mode 5 will be modified by adding a reference to the existing "Note (i)" which will require operability only if a control rod is withdrawn with an exception to this requirement for control rods withdrawn per Specification 3.9.10.1 and 3.9.10.2. Table 3.3.1-1 Action 2 will be deleted. *Justification:* Technical Specification Table 3.3.1-1 currently requires that the IRM be operable in Modes 2, 3, 4 and 5. However, no credit is taken for the IRM in any LGS safety analysis for any event that initiates while the plant is in Modes 3 or 4, or in Mode 5 with no control rods withdrawn. If the IRM functions' LCO requirements are not met while in Mode 2, and operability cannot be restored within the allowed action time, Table 3.3.1-1, Action 1 requires that the plant be placed in at least HOT SHUTDOWN within 12 hours. Placing the plant in HOT SHUTDOWN requires placing the Mode switch in the SHUTDOWN position, which also causes a scram. Normal procedures for confirmation of scram and confirmation that HOT SHUTDOWN has been achieved will assure that rods are actually inserted to the point required to assure shutdown status without the need for Table 3.3.1-1, Action 2. The requirements of Table 1.2 assure that while the plant is in Modes 3 or 4, no more than

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		one control rod will be withdrawn, enforced either by the one-rod-out interlock per Table 1.2, note "***", or in accordance with TS 3.9.10.1. IRM surveillances are required to be current, per Table 4.3.1-1, as a condition of entering Mode 2 from Mode 3 or 4. TS 3.0.4 prohibits entry into Mode 2 if the LCO conditions for the IRM functions are not met. Similarly, if the plant is in Mode 5, but no rods are withdrawn, there is no need for the IRM function. Addition of note (i) for operability requirements in Mode 5 will eliminate unnecessary restrictions on refueling operations. Note (i) also includes an operability-requirement exclusion for control rods removed per Specification 3.9.10.1 or 3.9.10.2. Those specifications include the applicable requirements to assure that removal of such control rods will not create a condition that could lead to local criticality, so a requirement for IRM operability solely as the result of control rod removal per those Specifications is unnecessary. The addition of note (i) aligns the IRM requirements with the Scram Discharge Volume Water Level operability requirements. In summary, there are no conditions under which IRM operability is required in Modes 3 and 4, or in Mode 5 with no control rods withdrawn, so deletion of those operability and the associated surveillance requirements from Tables 3.3.1-1 and 4.3.1-1, respectively, has no safety impact. This change aligns the LGS Tech Specs with the corresponding ISTS requirements. NMS shorting link removal requirements *The change:* Table 3.3.1-1 Note (c) will be deleted along with the "*" footnote referencing Specifications 3.9.10.1 and 3.9.10.2. *Justification:* The result of the removal of shorting links is to connect the SRM upscale trip into the RPS logic, and to put the SRM and IRM in "non-coincident" mode so that a trip in any of the SRM or IRM channels results in a trip input to the RPS. Connection of the circuits

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		in non-coincident mode results in more complete coverage of the core and the capability to detect localized criticality events more quickly. The only localized event that might be of concern during refueling is incorrect withdrawal of a rod without adequate shutdown margin. However, none of the LGS safety analyses take any credit for the IRM "non-coincidence mode" function to protect against such a condition. The Specifications that are intended to prevent a condition of this nature during refueling operations are Specification 3.1.1, Shutdown Margin, and Specification 3.9.1, Refuel Mode One-rod-out Interlock. When Shutdown Margin requirements have not been met or are to be demonstrated by test, applicable Specifications 3.9.2 and 3.10.3 both include a specific requirement to remove the shorting links and to assure that SRM is operable. Specification 3.9.2 is also invoked by Specifications 3.9.10.1 and 3.9.10.2. Together, these specifications, when met, assure that no more than one control rod can be withdrawn at a time, and that either the Shutdown Margin is adequate to assure that no single rod withdrawn can result in local core criticality or that the shorting links are removed. Further, these specifications include action requirements to insert rods if their LCO requirements are not met. In summary, the IRM function operating in non-coincidence mode (shorting links removed) is not required in general, and when such a requirement does exist, it is addressed in the applicable Specification. Deletion of the note (c) eliminates unnecessarily conservative interpretations of the note that might lead to removal of shorting links when not required and the associated risk of unnecessary spurious scrams due to the increased IRM sensitivity in non-coincidence mode. This change aligns the LGS Tech Specs with the corresponding ISTS requirements.
9.1.3	Utility Quality Assurance Program As part of the *plant-specific licensing*	PECO Quality Assurance Program Quality assurance requirements for work

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	submittal, the utility should document the established program that is applicable to the project modification. The submittal should also document for the project what scope is being performed by the utility and what scope is being supplied by others. For scope supplied by others, document the utility actions taken or planned to define or establish requirements for the project, to assure those requirements are compatible with the plant-specific configuration. Actions taken or planned by the utility to assure compatibility of the GE quality program with the utility program should also be documented. Utility planned level of participation in the overall V&V process for the project should be documented, along with utility plans for software configuration management and provision to support any required changes after delivery should be documented.	performed at LGS are defined and described in PECO Nuclear Quality Assurance Plan. For the PRNM modification, PECO Nuclear has contracted with GE to include the following PRNM scope: 1) design, 2) hardware/ software, 3) modification instruction, 4) licensing support, 5) training, 6) O&M manuals and design documentation, 7) stability indicator, 8) seismic qualification of the NMS panel, 9) EMI/RFI qualification, and 10) NMS setpoint calculations. On-site engineering work to incorporate the GE-provided design information into an Engineering Change Request (ECR) or to provide any supporting, interface design changes will be performed per requirements of applicable PECO Nuclear/LGS procedures. Modification work to implement the design change will be performed per PECO Nuclear/LGS procedures. PECO Nuclear has participated and will continue to participate in appropriate reviews of GE's design and V&V program for the PRNM modification. For software delivered in the form of hardware (EPROMs), PECO Nuclear currently intends to have GE maintain post delivery configuration control of the actual source code and handle any changes. PECO Nuclear will then handle any changes in the EPROMs as hardware changes under its applicable hardware modification procedures.

ATTACHMENT 3

LIMERICK GENERATING STATION
UNITS 1 & 2

Docket Nos. 50-352
50-353

License Nos. NPF-39
NPF-85

TECHNICAL SPECIFICATIONS CHANGE REQUEST No. 99-05-0

Revised TS Table 3.3.1-1

TABLE 3.3.1-1

REACTOR PROTECTION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	APPLICABLE OPERATIONAL CONDITIONS	MINIMUM OPERABLE CHANNELS PER TRIP SYSTEM (a)	ACTION
1. Intermediate Range Monitors[b]:			
a. Neutron Flux - High	2	3	1
	5(i)	3(d)	3
b. Inoperative	2	3	1
	5(i)	3(d)	3
2. Average Power Range Monitor[*]:			
a. Neutron Flux - Upscale (Setdown)	2	3(m)	1
b. Simulated Thermal Power - Upscale	1	3(m)	4
c. Neutron Flux - Upscale	1	3(m)	4
d. Inoperative	1, 2	3(m)	1
e. 2-Out-Of-4 Voter	1, 2	2	1
3. Reactor Vessel Steam Dome Pressure - High	1, 2(f)	2	1
4. Reactor Vessel Water Level - Low, Level 3	1, 2	2	1
5. Main Steam Line Isolation Valve-Closure	1(g)	1/valve	4

TABLE 3.3.1-1

REACTOR PROTECTION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	APPLICABLE OPERATIONAL CONDITIONS	MINIMUM OPERABLE CHANNELS PER TRIP SYSTEM (a)	ACTION
1. Intermediate Range Monitors[b]:			
a. Neutron Flux - High	2	3	1
	5(i)	3(d)	3
b. Inoperative	2	3	1
	5(i)	3(d)	3
2. Average Power Range Monitor[•]:			
a. Neutron Flux - Upscale (Setdown)	2	3(m)	1
b. Simulated Thermal Power - Upscale	1	3(m)	4
c. Neutron Flux - Upscale	1	3(m)	4
d. Inoperative	1, 2	3(m)	1
e. 2-Out-Of-4 Voter	1, 2	2	1
3. Reactor Vessel Steam Dome Pressure - High	1, 2(f)	2	1
4. Reactor Vessel Water Level - Low, Level 3	1, 2	2	1
5. Main Steam Line Isolation Valve-Closure	1(g)	1/valve	4