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U. S. Nuclear Regulatory Commission
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**SUSQUEHANNA STEAM ELECTRIC STATION
RESPONSE TO NRC REQUEST FOR ADDITIONAL
INFORMATION RELATIVE TO SUSQUEHANNA
STEAM ELECTRIC STATION, UNITS 1 AND 2
REVISED MAIN TURBINE BYPASS SYSTEM
REQUIREMENTS (TAC NOS. MC 1596 AND MC 1597)
PLA-5759**

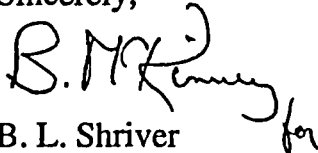
**Docket Nos. 50-387
and 50-388**

Reference: Letter from R. V. Guzman (NRC) to B. L. Shriver (PPL), "Request for Additional Information (RAI) - Susquehanna Steam Electric Station, Units 1 and 2 - Revised Main Turbine Bypass System Requirements (TAC NOS. MC 1596 and MC 1597)," dated May 4, 2004.

Enclosed with this letter is the PPL Susquehanna, LLC response to the NRC Request for Additional Information referenced above.

There are no new commitments made in this letter. If you have any questions, please contact Mr. Duane L. Filchner at (610) 774-7819.

Sincerely,


B. L. Shriver

Enclosure: Response to NRC Request for Additional Information on Revised Main Turbine Bypass System Requirements

copy: NRC Region I
Mr. A. Blamey, NRC Sr. Resident Inspector
Mr. R. V. Guzman, NRC Project Manager
Mr. R. Janati, DEP/BRP

A001

Enclosure to PLA-5759

**Response to NRC Request for Additional
Information Relating to Revised Main Turbine
Bypass System Requirements**

Response to NRC Request for Additional Information Relating to Revised Main Turbine Bypass System Requirements

NRC Question:

In NUREG-1433, Volume 1, Revision 2, "Standard Technical Specifications [STS] General Electric Plants BWR/4, Section 3.7.7," the average planar linear heat generation rate and the minimum critical power ratio are the applicable thermal limits to allow the limiting condition for operation to be met for an inoperable main turbine bypass system. PPL proposes to add a requirement to implement the linear heat generation rate thermal limits for an inoperable main turbine bypass system. Please provide the basis for this deviation from the STS.

PPL Response:

When PPL converted to Revision 1 of the NUREG-1433, new Standard Technical Specifications, the PPL Main Turbine Bypass System LCO 3.7.6 only included Minimum Critical Power Ratio (MCPR) as the appropriate thermal limit to be applied for an inoperable Main Turbine Bypass System. Therefore, the current version of this LCO in the Susquehanna Tech Specs does not contain any reference to heat generation rate limits, average planar linear heat generation rate or linear heat generation rate, (APLHGR or LHGR) as applicable for an inoperable Main Turbine Bypass System.

APLHGR was added to the Standard Technical Specification LCO 3.7.7 "Main Turbine Bypass System" by NRC approval and adoption of Technical Specification Task Force (TSTF) 319-A, Rev. 0. This TSTF was incorporated into the version of LCO 3.7.7 in NUREG-1433, Revision 2.

The basis for approval of TSTF 319-A included reviews of the Turbine Bypass Valve Out of Service analysis for BWR's. These reviews indicated the need to apply an APLHGR penalty when the Main Turbine Bypass System is inoperable, to ensure thermal margins are maintained. TSTF 319-A also identified that plants operating with GE fuel will likely require an APLHGR penalty to be applied. Therefore, the Standard Technical Specification LCO for the Main Turbine Bypass System was modified to require consideration of the application of both APLHGR and MCPR limits when the Main Turbine Bypass System is inoperable. Note that the added LCO statement is bracketed in NUREG-1433, Revision 2. Bracketed information reflects the need for plant specific information to be provided. This is consistent with the NUREG format convention delineated in NEI 01-03 "Writers Guide for the Improved Standard Technical Specifications" paragraph 5.1.2, dated November 2001.

Since Susquehanna utilizes Framatome-ANP fuel, the TSTF discussion of the APLHGR limit does not apply. Framatome-ANP has developed both LHGR and APLHGR limits for Susquehanna using NRC approved methods, documented in Technical Specification References 5.6.5.b.2, 5.6.5.b.3, 5.6.5.b.6, 5.6.5.b.7, 5.6.5.b.12, which are contained in the cycle specific Core Operating Limits Reports (COLR).

As discussed in the Technical Specification Bases, the APLHGR limits are derived from LOCA analyses that are assumed to occur at high power levels. The LOCA analysis results are unaffected by inoperability of the Main Turbine Bypass System because these analyses model a break in the primary coolant system. Therefore, APLHGR limits are not affected.

However, Main Turbine Bypass inoperability does affect the Anticipated Operational Occurrence (AOO) response. The Susquehanna Technical Specification Bases describe the LHGR as a measure of the heat generation rate of a fuel rod in a fuel assembly at any axial location. Limits on LHGR are specified to ensure that fuel design limits are not exceeded anywhere in the core during normal operation. The fuel has been designed to operate at rated core power with sufficient design margin to the LHGR calculated to cause 1% fuel cladding plastic strain (i.e., the acceptance criteria for AOO's). The AOO's become more severe when the Main Turbine Bypass System is inoperable.

Accordingly, the applicable Safety Analyses have determined that LHGR is the appropriate thermal margin limit to be used for Main Turbine Bypass operability since it protects against fuel damage and mechanical and thermal overpowering during a transient. Therefore, PPL proposes adding this plant specific information regarding LHGR rather than APLHGR, as an applicable thermal limit when the Main Turbine Bypass system is inoperable.