July 9, 2007

MEMORANDUM TO: Harold K. Chernoff, Chief
Plant Licensing Branch I-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

FROM: Peter Bamford, Project Manager ***/ra/***
Plant Licensing Branch I-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

SUBJECT: THREE MILE ISLAND UNIT NO. 1 - ELECTRONIC TRANSMISSION, DRAFT REQUEST FOR ADDITIONAL INFORMATION REGARDING THE STEAM GENERATOR TUBE INTEGRITY TECHNICAL SPECIFICATION AMENDMENT (TAC NO. MD1807)

The attached draft request for additional information (RAI) was transmitted by electronic transmission on July 6, 2007, to Mr. David Distel, at AmerGen Energy Company, LLC (AmerGen). This draft RAI was transmitted to facilitate the technical review being conducted by the Nuclear Regulatory Commission (NRC) staff and to support a conference call with AmerGen in order to clarify certain items in the licensee's submittal. The draft RAI is related to AmerGen's submittal dated March 22, 2007, regarding Three Mile Island, Unit 1 steam generator (SG) tube integrity Technical Specifications (TSs). The draft questions were sent to ensure that the questions were understandable, the regulatory basis for the questions was clear, and to determine if the information was previously docketed. Additionally, review of the draft RAI would allow AmerGen to determine and agree upon a schedule to respond to the RAI. During the follow-up conference call, AmerGen is expected to outline their planned approach for responding to questions 1 and 2. This memorandum and the attachment do not represent an NRC staff position.

Docket No. 50-289

Enclosure: As stated

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NAME	PBamford	AHiser*
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DRAFT

REQUEST FOR ADDITIONAL INFORMATION
THREE MILE ISLAND UNIT 1 STEAM GENERATOR TUBE INTEGRITY
TECHNICAL SPECIFICATION AMENDMENT
TAC NO. MD1807
DOCKET NO. 50-289

By letter dated May 15, 2006 (ML061420294), AmerGen Energy Company, LLC (the licensee) submitted a license amendment request (LAR) regarding Three Mile Island Unit 1 steam generator (SG) tube integrity technical specifications (TS). The proposed amendment would revise the SG tube integrity TSs to be consistent with the U.S. Nuclear Regulatory Commission approved Technical Specification Task Force (TSTF) Standard Technical Specification Change Traveler, TSTF-449, "Steam Generator Tube Integrity," Revision 4 (ML0510902003).
The licensee provided additional information regarding their SG tube integrity TSs in letters dated October 6, 2006 (ML062830331), December 12, 2006 (ML063480459), and May 31, 2007 (ML071520233). Based on the review of the information provided by the licensee, the staff has the following additional questions.

1. In your letter dated May 31, 2007, you provided references to support your assumption that you only need to determine the amount of leakage during a main steam line break (MSLB) and compare this to the assumptions in your accident analyses. In reviewing these references, the staff did make some conclusions regarding the leakage from certain types of flaws from certain locations (e.g., the leak rate determined under MSLB conditions for flaws within the kinetic expansion region bounds the actual leakage which would occur under feed line break conditions provided the methodology discussed in the staff's safety evaluation is used); however, the staff did not see any reference to a conclusion that only the leakage under a MSLB condition needs to be assessed and compared to its limit. Assuming the MSLB accident always results in the most leakage (for all flaw types and all flaw locations), it would be conservative to calculate the leakage for only a MSLB accident and to compare the calculated leakage to the amount of primary-to-secondary leakage assumed in each of the design basis accidents (DBAs) (to ensure the facility is operated within its design and licensing basis). Alternatively, other methodologies could be developed for assessing the amount of leakage during each of the other DBAs. In light of the above, either (1) indicate that you will confirm (e.g., as part of the requirement to ensure tube integrity) that the amount of leakage for each DBA will be within the limits assumed in the accident analyses or (2) demonstrate the acceptability of just determining the leak rate under MSLB conditions and comparing this value to the value assumed in the MSLB accident analyses by demonstrating (a) that this leak rate is conservative for all other accidents and all flaw types and (b) by demonstrating that comparing this calculated leakage (rate or volume) to the value of leakage assumed in the MSLB accident analyses is the most limiting scenario (for all DBAs) from a dose assessment standpoint.

2. You provided references to support your position that you do not need to propose inspection and repair criteria for the parent tube behind the upper sleeve joints. The staff reviewed these references and they do not appear to support your conclusion that the staff accepted this position when we reviewed the engineering report addressing the criteria for kinetic expansion indications. As a result, discuss your plans for performing inspections of the upper sleeve joint area (including the parent tube) to confirm that you are operating the sleeve in accordance with its original design criteria (in terms of the state of the parent tube). In addition, provide the technical basis for this design criteria.

3. In your May 31, 2007, letter you indicated that "No degradation meeting the proposed sleeve inspection repair criteria was identified in the sleeve or the adjacent parent tube above the lower sleeve end." Given that indications existed in some of the parent tubes prior to sleeve installation, please discuss why this degradation has not been found. In addition, confirm that inspection methods and probes capable of detecting all flaw types are being utilized to inspect the parent tube (consistent with your proposed request).

4. In letter dated May 31, 2007, you deleted TS Section 6.9.6.i. The staff is aware that TMI-1 does not have approved repair methods, however, the number and percentage of inservice tubes repaired by each method existing in the SGs should be reported. Please discuss your plans to include this as a reporting requirement in TS Section 6.9.6.

5. In Table 4.1-2, the test frequency for primary-to-secondary leakage was relaxed from every 24 hours to every 72 hours. Please provide justification for this test frequency relaxation, or remove this relaxation to the test frequency from your proposal.

6. Regarding Table 4.1-2, a note is needed (consistent with TSTF-449) to Item 7 (Reactor Coolant System Leakage) that this requirement is not applicable to primary-to-secondary leakage.

7. The wording of proposed TS Sections 6.19.b.2 and 6.19.c.1 as it pertains to the exceptions of the 1 gpm accident induced leakage performance criteria does not appear to reflect your assumptions in your accident analysis. The 1 gpm limit is a risk-informed limit. In the case of TMI-1, the NRC staff has approved an exception to the 1 gpm limit for the leakage associated with indications attributed to flaws (or postulated flaws) within the kinetic expansion region (excluding sleeved areas); however, the leakage from inside diameter intergranular attack (ID IGA) indications must be compared to the 1 gpm limit. As currently proposed, the leakage from ID IGA indications could be just below the 1 gpm limit with no consideration given to other leakage sources (plugs, sleeves, other flaws). As a result, please discuss your plans to modify the proposed accident induced leakage performance criteria contained within TS Section 6.19.b.2 and 6.19.c to accurately reflect the exception to the risk informed 1 gpm limit. For example the second sentence of TS Section 6.19.b.2 could be modified to state, "Leakage from all sources excluding the leakage attributed to the degradation described in TS Section 6.19.c.2 is also not to exceed 1 gpm per SG." The corresponding change in TS Section 6.19.c.1.a would be to delete the sentence containing reference to 1 gpm and the corresponding change in TS Section 6.19.c.1.b would be to delete the sentence regarding MSLB accident induced leakage. Additionally, to be more representative of your design and licensing basis, discuss your plans to modify the first sentence of TS Section 6.19.b.2 to read as follows, "... The primary to secondary accident induced leakage volume or rate for any design basis accident, other than a SG tube rupture, shall not exceed the leakage rate or volume in the accident analysis in terms of total leakage rate or volume of leakage for all SGs and leakage rate or volume for an individual SG."

8. In your May 31, 2007, letter you indicated that ECR NO. TM 02-01121 is required by the TSTF since it provides examination and flaw dispositioning criteria for kinetically expanded tubing in the upper tubesheets. Given the information provided by ECR NO.

TM 02-01121 does not clarify the repair criteria for sleeves as stated in TS Section 6.19.c.2, discuss your plans to remove reference to this document in TS Section 6.19.c.2.

9. In proposed TS Section 6.19.d.4, you indicated that "Implementation of the repair criteria for ID IGA requires 100% bobbin coil inspection of all non-plugged tubes in accordance with AmerGen Engineering Report, ECR NO. TM 01-00328 during all subsequent SG inspections." While the staff agrees that the eddy current testing methods and probes utilized should be in accordance with the referenced engineering report, there is a concern regarding the inspection sample. The engineering report requires that effort should be taken to schedule 100% bobbin coil inspection for ID IGA repair criteria implementation. Since this wording does not specify what inspection will be performed, please discuss your plans to modify this TS Section to further clarify reference to the engineering report. For example, "Implementation of the repair criteria for ID IGA requires 100% bobbin coil inspection of all non-plugged tubes using inspection methods and probes in accordance with ECR No. TM 01-00328." A similar comment applies for proposed TS Section 6.19.d.5.

10. In proposed TS Section 6.19.d, the purpose for the clarification that the portion of the original tube wall above the sleeve's lower sleeve-to-tube rolled joints is not an area requiring re-inspection is not clear in light of the proposal in TS Section 6.19.c.2 to repair flaws in the parent tube between the lower sleeve end and the parent tube kinetic expansion. Please clarify the requirements. If the exception to the inspection requirements is retained, please discuss your plans to clarify that the inspection is exempted from the top of the middle sleeve roll to the bottom of the upper most sleeve roll (or as appropriate per Item 2 above).

The questions listed above represent information the NRC staff needs to make a regulatory decision on the merits of the proposed LAR. The TS Bases are a licensee controlled document. Changes to the Bases are evaluated in accordance with the TMI-1 TS Bases Control Program described in TS Section 6.18. This program is subject to inspection by NRC staff. The following observations on the TS Bases sections that were submitted along with the LAR are provided for your consideration. Modification to these Bases is strongly suggested to ensure that TSs are not inadvertently modified by a discussion in the Bases.

1. In the letter dated May 31, 2007, you indicated that you did not include a TSTF-449 Bases statement regarding the definition of steady state since several of the events listed in the TSTF-449 Bases do not affect the primary-to-secondary leakage determination. It is recommended that the bases include the definition of steady state for your primary-to-secondary leakage determination method.

2. Regarding the proposed insert to TS Page 3-15a, the staff notes that there is no leakage "rate" greater than 1 gpm in proposed TS Section 6.19.c.1 (i.e., there is a leakage volume and there is reference to 1 gpm in proposed TS Section 6.19.c.1). The staff notes that the sentence in TSTF-449 is trying to convey the accident analyses assumptions and that the leakage may increase as a result of accident induced conditions. An appropriate modification to this insert may be to indicate: "The safety analysis for an event resulting in steam discharge to the atmosphere assumes a

leakage volume or rate of primary-to-secondary leakage from all SGs depending on the specific accident analyses. The leakage rate may increase (over that observed during normal operation) as a result of accident induced conditions."

Since 144 gallons per day (gpd) is less than the 150 gpd primary-to-secondary leakage assumed in TSTF-449, you may consider replacing the term "bounds" (which is potentially confusing) with "is less than."