



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

March 14, 1990

Docket No. 50-289

Mr. Henry D. Hukill, Vice President
and Director - TMI-1
GPU Nuclear Corporation
P. O. Box 480
Middletown, Pennsylvania 17057

Dear Mr. Hukill:

SUBJECT: THREE MILE ISLAND UNIT 1 - TEMPORARY WAIVER OF COMPLIANCE FROM
TECHNICAL SPECIFICATION 4.19.3.c

Three Mile Island Unit 1 (TMI-1) experienced leakage calculated to be slightly in excess of 1 gallon/minute in the "A" Once Through Steam Generator (OTSG) on March 6, 1990. The unit was promptly shutdown and investigation of the location and failure mechanism was initiated. Leak testing on March 9, 1990 indicated the failed tube to be tube A77-1, which is located in the "lane wedge" area of the OTSG. As part of the investigation of this tube failure GPUN elected to perform eddy current testing (ECT) of all 419 tubes in the lane wedge area. The result of that testing and other testing are discussed below. However, because the leak rate at the time a decision was made to shut down exceeded 1 gallon/minute, Technical Specification (TS) 4.19.3.c requires ECT of approximately 900 additional tubes selected on a random basis.

GPUN requested relief from the additional ECT required by TS 4.19.3.c during a telephone conference with the NRC staff on March 9, 1990. By letter dated March 12, 1990, you formally submitted this relief request along with a request to amend the TMI-1 TS on an exigent basis to provide for alternative ECT requirements following a primary-to-secondary tube leak in the event such leaks occur in the future.

The basis for your request to waive the TS 4.19.3.c requirement is that:

1. OTSG industry experience has shown that the "lane wedge" area has been experiencing corrosion, fatigue, and fretting wear. This area is more susceptible to damage due to the proximity to the open lane which allows higher moisture carryover and highest cross flow since the steam changes direction from vertical to horizontal to exit the steam generators. Performing tube inspections in the area where leaks are found enhances plant safety by identifying potential additional tubes which may be experiencing similar wear and enabling appropriate corrective action to be taken to prevent further tube leakage.

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2. This approach is consistent with the OTSG experience, industry experience as endorsed by EPRI in the PWR Inspection Guidelines, and is similar to a request previously approved by the NRC for the Oconee 1, 2 and 3 plants.
3. The failure of tube A77-1 at TMI-1 on 3/6/90 was identified as a circumferentially oriented approximately 360° crack. This is believed to be the result of environmentally assisted high cycle fatigue (HCF). This belief is based on ECT data and visual examination of tube A77-1 and on a comparison of the A77-1 failure and prior industry experience with environmentally assisted HCF cracking of OTSG tubes. The location of the crack is the point at which tube exits the bottom of the upper tube sheet.
4. ECT inspection techniques do not effectively identify HCF precursor conditions unless performed just prior (e.g. hours) to tube failure. Therefore, the ECT required by TS 4.19.3.c as presently written would not be expected to yield any new safety information and would result in additional radiation exposure to workers and delays in plant operating schedule.
5. An ECT inspection such as that required by TS 4.19.3.c has been performed within the past 2 months as part of the routine 8R refueling outage effort. Five tubes were plugged as the result of that inspection; all other tubes met the inspection criteria. With only 3 days of steaming operation on the OTSG since that inspection, degradation by mechanisms able to be detected by ECT would not be expected. Therefore, additional testing adds negligible safety benefit and provides no significant additional information to minimize the possibility of recurrence of this event.

To assure the integrity of the A OTSG, GPUN has performed drip and bubble tests to identify all possible leaking tubes and completed eddy current testing of all tubes in the "lane wedge" area between the upper tube sheet and the 14th support plate. Except as noted above, all test and inspection results were satisfactory. Tubes A77-1 and A78-28 were plugged.

We have reviewed the specific results of your investigations and random testing following the March 6, 1990 tube leak and agree that additional ECT would yield negligible safety information. We have also reviewed your written request for a waiver of compliance as well as our Safety Evaluation that supported a similar Oconee TS amendment issued on March 30, 1981.

Mr. H. D. Hukill

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March 14, 1990

Accordingly, we grant this temporary waiver of compliance as requested, which shall be effective immediately and shall remain in effect until the proposed license amendment is issued.

Sincerely,



Bruce A. Boger, Assistant Director
for Region I Reactors
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

cc: See next page

Accordingly, we grant this temporary waiver of compliance as requested, which shall be effective immediately and shall remain in effect until the proposed license amendment is issued.

Sincerely,

/s/

Bruce A. Boger, Assistant Director
for Region I Reactors
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

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*See previous concurrence

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*Discussed w/
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3/14/90*

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