GPU Nuclear

GPU Nuclear Corporation
Post Office Box 480
Route 441 South
Middletown, Pennsylvania 17057-0191
717 944-7621
TELEX 84-2386
Writer's Direct Dial Number:

C311-88-2075

June 8, 1988

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

Dear Sir:

Three Mile Island Nuclear Station, Unit 1 (TMI-1)
Operating Licensing No. DPR-50
Docket No. 50-289
GPUN Response to Generic Letter (GL) 88-05
Boric Acid Corrosion of Carbon Steel Reactor Pressure Boundary Components in PWR Plants

The NRC has requested that recipients of GL 88-05 provide assurances that a program has been implemented consisting of systematic measures to ensure that boric acid corrosion does not lead to degradation of the assurance that the Reactor Coolant Pressure Boundary (RCPB) will have an extremely low probability of abnormal leakage, rapidly propagating failure, or gross rupture. The program is intended to monitor small primary coolant leakages and to perform maintenance before the leakages could cause significant corrosion damage.

As discussed below, GPUN believes that the combination of leakage determination procedures in effect at TMI-1 provide adequate assurance that the RCPB will have an extremely low probability of serious damage due to boric acid corrosion.

GL 88-05 identifies four basic elements that should be included in such a systematic program. TMI-1's program relating to each of these elements is discussed as follows:

1) A determination of the principal locations where leaks that are smaller than the allowable technical specification limit can cause degradation of the primary pressure boundary by boric acid corrosion. Particular consideration should be given to identifying those locations where conditions exist that could cause high concentrations of boric acid on pressure boundary surfaces.

As a result of operating experience, a general awareness

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exists of the valves and mechanical joints and connections which could leak and cause degradation of the RCPB by boric acid corrosion. Surveillance Procedure 1303-8.1, "Reactor Coolant System" contains a listing of these components.

In addition, we feel that it would be beneficial to further identify those RCPB locations which may be more vulnerable to concentrated boric acid corrosion so that more attention may be applied in those areas. Therefore, we intend to conduct a technical review and prepare a report which identifies these areas for additional emphasis and provides clarification of the methodology for assessing potential component damage. This report is scheduled to be completed 60 days following the 7R Refueling Outage.

2) Procedures for locating small coolant leaks (i.e., leakage rates at less than technical specification limits). It is important to establish the potential path of the leaking coolant and the RCPB components it is likely to contact. This information is important in determining the interaction between the leaking coolant and RCPB materials.

Surveillance Procedure 1303-8.1, "Reactor Coolant System" is performed during outages in accordance with Technical Specifications (TS) 4.2.1 and 4.3. Surveillance Procedure 1303-1.1, "Leak Rate Surveillance" is performed daily with the Reactor Coolant System temperature above 525°F in accordance with TS 3.1.6 and 4.1-2. These are the principal procedures used at TMI-1 to detect, identify, evaluate and take corrective action in the event of RCPB leakage. These procedures require an assessment and safety evaluation including consideration of the potential effects of boric acid leakage on ferritic steel components.

Although such leakage would be evaluated in accordance with the above procedures, leakage evaluations may also be initiated in response to:

- An increase in Reactor Building Radiation Monitor (RM-A2) activity,
- Operations Surveillance OPS-S98 "Reactor Building Entry Data Requirements And Inspections," performed routinely during power operation, and
- Increases in Reactor Building Sump Level from trend analysis.

Corrective actions to eliminate the leakage or reduce its consequences would be initiated as plant conditions permit.

3) Methods for conducting examinations and performing engineering evaluations to establish the impact on the RCPB when leakage is located. This should include procedures to promptly gather the necessary information for an engineering evaluation before the removal of evidence of leakage, such as boric acid crystal buildup.

The methods for conducting leakage determinations and examinations and the guidelines for performing a safety evaluation of identified leakage are described in Surveillance Procedures 1303-8.1 and 1303-1.1.

Revisions to these procedures will be made to further improve the procedural guidance and provide more formal documentation of the engineering evaluation prior to removal of evidence of the leakage pathway and the extent of the leakage. These procedural improvements will be completed prior to startup from the 7R Refueling Outage.

4) Corrective actions to prevent recurrences of this type of corrosion. This should include any modifications to be introduced in the present design or operating procedures of the plant that (a) reduce the probability of primary coolant leaks at the locations where they may cause corrosion damage and (b) entail the use of suitable corrosion resistant materials or the application of protective coatings/claddings.

The need for appropriate corrective action(s) to prevent recurrence will be addressed on a case by case basis as part of the engineering evaluation. While GPUN believes adequate corrective actions to prevent recurrence have been taken in the past at TMI-1, a requirement to formally document a determination of appropriate corrective actions in the engineering evaluation of identified leakage will be incorporated in the procedural improvements discussed under item 3 above.

GPUN believes that continued implementation of the procedures identified above along with the improvements as discussed will provide continuing assurance of the extremely low probability of significant degradation to the RCPB due to boric acid corrosion.

Additional time for responding to GL 88-05 was granted by the NRC Resident Inspector, Dave Johnson. This response is being submitted in accordance with 10 CFR 50.54(f).

Sincerely,

H. D. Hukill
Vice President and Director, TMI-1

HDH/MRK

cc: J. Stolz
R. Hernan
R. Conte
W. Russell

Sworn and subscribed to
before me this 8th
day of June, 1988.

Sharon P. Brown

[illegible] P. [illegible], Notary Public
[illegible] Boro, Dauphin County
My Commission Expires June 12, 1990
Member, Pennsylvania Association of Notaries