September 19, 1991

Docket No. 50-289

DISTRIBUTION
Docket file
NRC & L PDRs
PDI-4:Plant
SVarga
JCalvo
RHernan
OGC
EJordan
ACRS (10)
CHehl, DRP

Mr. T. Gary Broughton, Vice President
and Director - TMI-1
GPU Nuclear Corporation
Post Office Box 480
Middletown, Pennsylvania 17057

Dear Mr. Broughton:

SUBJECT: THREE MILE ISLAND UNIT 1 - REQUEST FOR ADDITIONAL INFORMATION REGARDING INSERVICE INSPECTION PROGRAM (TAC NO. 80197)

Your letter dated April 19, 1991, submitted the TMI-1 Inservice Inspection (ISI) Program Plan for the second 10-year interval. Additional information is required for the staff, with assistance from EG&G-Idaho, to complete its review.

The enclosure to this letter lists the information needed by the staff. Your response should be received within 60 days to allow the review to progress in a timely manner. Please send a copy of your response to EG&G at the following address:

Boyd W. Brown
EG&G Idaho, Inc.
INEL Research Center
2151 North Boulevard
P.O. Box 1625
Idaho Falls, Idaho 83415-2209

Please contact me if you have any questions.

The requirements of the letter affect fewer than 10 respondents, and therefore, are not subject to Office of Management and Budget review under P.L. 96-511.

Sincerely

/s/

Ronald W. Hernan, Sr. Project Manager
Project Directorate I-4
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosure:
Request for Additional Information

cc w/enclosure:
See next page

OFC	:PDI-4:LA	:PDI-4:PM	:PDI-4:D	:	:
NAME	:SNorris	:RHernan/Bah	:JStolz	:	:
DATE	:9/18/91	:9/18/91	:9/18/91	:	:

OFFICIAL RECORD COPY
Document Name: PAI 80197

286335

DF01
1/1

Mr. T. Gary Broughton
GPU Nuclear Corporation

Three Mile Island Nuclear Station,
Unit No. 1

cc:

Michael Ross
O&M Director, TMI-1
GPU Nuclear Corporation
Post Office Box 480
Middletown, Pennsylvania 17057

Michael Laggart
Manager, Licensing
GPU Nuclear Corporation
100 Interpace Parkway
Parsippany, New Jersey 07054

C. W. Smyth
TMI-1 Licensing Manager
GPU Nuclear Corporation
Post Office Box 480
Middletown, Pennsylvania 17057

Ernest L. Blake, Jr., Esq.
Shaw, Pittman, Potts & Trowbridge
2300 N Street, N.W.
Washington, D.C. 20037

Sally S. Klein, Chairperson
Dauphin County Commissioner
Dauphin County Courthouse
Front and Market Streets
Harrisburg, Pennsylvania 17120

Kenneth E. Witmer, Chairman
Board of Supervisors
of Londonderry Township
25 Roslyn Road
Elizabethtown, PA 17022

Francis I. Young
Senior Resident Inspector (TMI-1)
U.S.N.R.C.
Post Office Box 311
Middletown, Pennsylvania 17057

Regional Administrator, Region I
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, Pennsylvania 19406

Robert B. Borsum
Babcock & Wilcox
Nuclear Power Generation Division
Suite 525
1700 Rockville Pike
Rockville, Maryland 20852

Governor's Office of State Planning
and Development
ATTN: Coordinator, Pennsylvania
State Clearinghouse
Post Office Box 1323
Harrisburg, Pennsylvania 17120

Thomas M. Gerusky, Director
Bureau of Radiation Protection
Pennsylvania Department of
Environmental Resources
Post Office Box 2063
Harrisburg, Pennsylvania 17120

GPU NUCLEAR CORPORATION
THREE MILE ISLAND NUCLEAR STATION, UNIT 1
DOCKET NUMBER 50-289

Request for Additional Information - Second 10-Year Interval Inservice Inspection Program Plan

1. Scope/Status of Review

Throughout the service life of a water-cooled nuclear power facility, 10 CFR 50.55a(g)(4) requires that components (including supports) that are classified as American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code Class 1, Class 2 and Class 3 meet the requirements, except design and access provisions and preservice examination requirements, set forth in the ASME Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," to the extent practical within the limitations of design, geometry, and materials of construction of the components. This section of the regulations also requires that inservice examinations of components and system pressure tests conducted during the second 120-month inspection interval comply with the requirements in the latest edition and addenda of the Code incorporated by reference in 10 CFR 50.55a(b) on the date 12 months prior to the start of the 120-month inspection interval, subject to the limitations and modifications listed therein. The components (including supports) may meet requirements set forth in subsequent editions and addenda of the Code that are incorporated by reference in 10 CFR 50.55a(b) subject to the limitations and modifications listed therein. The Licensee, GPU Nuclear Corporation, has prepared the Three Mile Island Nuclear Station, Unit 1, Inservice Inspection (ISI) Program Plan to meet the requirements of the 1986 Edition of ASME Code Section XI.

As required by 10 CFR 50.55(g)(5), if the licensee determines that certain Code examination requirements are impractical and relief is requested, the licensee shall submit information to the Nuclear Regulatory Commission (NRC) to support that determination.

The staff has reviewed the available information in the Three Mile Island Nuclear Station, Unit 1, Second 10-Year Interval ISI Program Plan, Revision 0, submitted April 19, 1991 and the requests for relief from the ASME Code Section XI requirements that the Licensee has determined to be impractical.

2. Additional Information Required

Based on the above review, the staff has concluded that the following information and/or clarification is required in order to complete the review of the ISI Program Plan:

A. Paragraph 10 CFR 50.55a(b)(2)(iv) requires that ASME Code Class 2 piping welds in the Residual Heat Removal (RHR), Emergency Core Cooling (ECC), and Containment Heat Removal (CHR) systems shall be examined. These systems should not be completely exempted from inservice volumetric examination based on Section XI exclusion criteria. The staff has previously determined that a 7.5% augmented volumetric sample constitutes an acceptable resolution at similar plants.

It appears that the Reactor Building Spray (RBS) System is completely excluded from Class 2 piping weld volumetric examinations based on pipe wall thickness. The ISI Program Plan should be revised to include volumetric examination of a representative sample of welds for the RBS System. This weld sample should be taken from the discharge of the RBS pumps to the first weld downstream of the last normally closed valve (BS-V1A/B). Verify that at least a 7.5% sampling of the Class 2 piping welds in the RBS System will be performed.

B. Augmented examinations have been established by the NRC when added assurance of structural reliability is deemed necessary. Examples of documents that may require augmented examination are:

(1) Branch Technical Position MEB 3-1, "High Energy Fluid Systems, Protection Against Postulated Piping Failures in Fluid Systems Outside Containment;"

(2) Regulatory Guide 1.150, "Ultrasonic Testing of Reactor Vessel Welds During Preservice and Inservice Examinations;" and

(3) Regulatory Guide 1.14, "Reactor Coolant Pump Flywheel Integrity."

Address these and any other augmented examination requirements that may have been incorporated in the Three Mile Island, Unit 1, Second Ten-Year Interval Inservice Inspection Program Plan.

C. Request for Relief No. 1: Relief is requested from performing the Code-required surface examination of dissimilar metal and terminal end welds CF-0001, CF-0020, RC-0001, RC-0052, RC-0106, RC-0054, RC-0087, RV-0009BM, and RV-0010BM because they are located between the RPV and reactor vessel primary shield wall and are inaccessible from the O.D. surface. The Licensee proposes a volumetric examination from the I.D. surface in lieu of the Code-required surface examination.

This proposal could be considered acceptable if the following conditions were met:

(1) The remote volumetric examination includes the entire weld volume and heat affected zone instead of only the inner one third of the weld as required by the Code.

(2) The ultrasonic testing instrumentation and procedures are demonstrated to be capable of detecting O.D. surface-connected defects in the circumferential orientation in a laboratory test block. The laboratory test blocks should contain crack-like defects and not machined notches.

Please provide a discussion of the above conditions and verify that they will be met.

D. Request for Relief No. 5: Relief is requested from performing the Code-required volumetric examination of welds DH-0395B, DH-0401B and DH-0403B on Decay Heat Removal Coolers DH-C-1A and DH-C-1B because of geometric and material property considerations (304 series stainless steel). Provide an estimate of the percentage of the Code-required examination that can be completed on each of the nozzle-to-vessel welds and nozzle inner radii for which relief is requested along with sketches showing the configuration of the subject areas. Has GPUN considered augmenting the limited ultrasonic examination with an I.D. surface examination if the coolers are disassembled for maintenance? Please confirm that the correct Examination Category is C-B and not C-D as submitted.

E. Request for Relief No. 6: Relief is requested from performing 100% of the Code-required volumetric examination of welds DH-0399 and DH-0404 on Decay Heat Removal Coolers DH-C-1A and DH-C-1B because of restricted access to the weld due to a sliding bolting flange. Provide an estimate of the percentage of the Code-required examination that could be completed on each of the welds for which relief is requested. Discuss the possibility of an ultrasonic examination using multiple V-paths. Please provide a sketch of the relative weld location with the sliding flange bolted into position.

F. Request for Relief No. 16.4: Relief is requested from performing the Code-required hydrostatic pressure test on piping between valves RC-V23 and RC-V4. Discuss the alternative examination to be performed on this section of piping (committed to during a conference call with NRC, INEL and TMI-1 on 6/27/91).

When preparing requests for relief, the staff suggests that the Licensee follow the attached Appendix A, "Inservice Inspection: Guidance for Preparing Requests for Relief from Certain Code Requirements Pursuant to 10 CFR 50.55a(g)(5)."

APPENDIX A

INSERVICE INSPECTION: GUIDANCE FOR PREPARING REQUESTS FOR RELIEF FROM CERTAIN CODE REQUIREMENTS PURSUANT TO 10 CFR 50.55a(g)(5)

A. Description of Requests for Relief

The guidance in this enclosure is intended to illustrate the type and extent of information that is necessary for "request for relief" for items that cannot be fully inspected to the requirements of Section XI of the ASME Code. The inservice inspection program should identify the inspection and pressure testing requirements of the applicable portion of Section XI that are deemed impractical because of the limitations of design, geometry, radiation considerations or materials of construction of the components. The request for relief should provide the information requested in the following section of this appendix for the inspections and pressure tests identified above.

B. Request for Relief From Certain Inspection and Testing Requirements

Many requests for relief from testing requirements submitted by licensees have not been supported by adequate descriptive and detailed technical information. This detailed information is necessary to: (1) document the impracticality of the ASME Code requirements within the limitations of design, geometry and materials of construction of components; and (2) determine whether the use of alternatives will provide an acceptable level of quality and safety.

Relief requests submitted with a justification such as "impractical", "inaccessible", or any other categorical basis, require additional information to permit an evaluation of that relief request. The objective of the guidance provided in this section is to illustrate the extent of the information that is required to make a proper evaluation and to adequately document the basis for granting the relief in the Safety Evaluation Report. Subsequent requests for additional information and delays in completing the review can be considerably reduced if this information is provided initially in the licensee's submittal.

Each relief request should be submitted as a *"stand alone"* document with the following information included:

1. The ASME Code Class, Examination Category, and Item Number(s).

2. Section XI examination or test requirements for the component(s) for which relief is being requested.

3. The number of items associated with the requested relief.

4. An identification of the specific ASME Code requirement that has been determined to be impractical.

5. An itemized list of the specific component(s) for which relief is requested.

6. An estimate of the percentage of the Code-required examination that can be completed for each of the individual components requiring relief.

7. Information to support the determination that the requirement is impractical; i.e., state and explain the basis for requesting relief. If the Code-required examination cannot be performed because of a limitation or obstruction, describe or provide drawings showing the specific limitation or obstruction.

8. An identification of the alternative examinations that are proposed: (a) in lieu of the requirements of Section XI; or (b) to supplement examinations performed partially in compliance with the requirements of Section XI.

9. A description and justification of any changes expected in the overall level of plant safety by performing the proposed alternative examination in lieu of the examination required by Section XI. If it is not possible to perform alternate examinations, discuss the impact on the overall level of plant quality and safety.

10. State when the proposed alternative examinations will be implemented and performed.

11. State when the request for relief would apply during the inspection period or interval (i.e., whether the request is to defer an examination.)

12. State the time period for which the requested relief is needed.

Technical justification or data must be submitted to support the relief request. Opinions without substantiation that a change will not affect the quality level are unsatisfactory. If the relief is requested for inaccessibility, a detailed description or drawing which depicts the inaccessibility must accompany the request.

C. Request for Relief for Radiation Considerations

Exposures of test personnel to radiation to accomplish the examinations prescribed in Section XI of the ASME Code can be an important factor in determining whether, or under what conditions, an examination must be performed. A request for relief must be submitted by the licensee in the manner described above for inaccessibility and must be subsequently approved by the NRC staff.

Some of the radiation considerations will only be known at the time of the test. However, from experience at operating facilities, the licensee generally is aware of those areas where relief will be necessary and should submit as a minimum, the following information with the request for relief:

1. The total estimated man-rem exposure involved in the examination.

2. The radiation levels at the test area.

3. Flushing or shielding capabilities which might reduce radiation levels.

4. A proposal for alternate inspection techniques.

5. A discussion of the considerations involved in remote inspections.

6. Similar welds in redundant systems or similar welds in the same systems which can be inspected.

7. The results of preservice inspection and any inservice results for the welds for which the relief is being requested.

8. A discussion of the failure consequences of the weld which would not receive the Code required examination.