

May 11, 1994

Docket No. 50-414

Mr. David L. Rehn
Vice President - Catawba Site
Duke Power Company
4800 Concord Road
York, South Carolina 29745

Dear Mr. Rehn:

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION ON RELIEF REQUEST NO. 93-01 -
CATAWBA NUCLEAR STATION, UNIT NO. 2 (TAC NO. M86811)

We have continued our review of your June 17, 1993, request for relief on various components of the reactor coolant system and the supplementary response of December 8, 1993. As discussed with members of your staff on April 20, 1994 (Mr. Z. Taylor, et al.), we request that additional information be provided to enable us to complete our review. The requested information is provided as Enclosure A.

Also, as we discussed on April 20, 1994, several recent Duke Power Company requests for relief have been deficient in content and format and, thus, did not facilitate an expeditious review by the NRC staff. Accordingly, we are providing some generalized guidance as Enclosure B for preparing requests for relief pursuant to 10 CFR 50.55a.

This requirement affects fewer than ten respondents, and therefore, it is not subject to the Office of Management and Budget review under P.L. 96-511.

Sincerely,

/s/

Robert E. Martin, Senior Project Manager
Project Directorate II-3
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosures:

- Request for Additional Information
- Guidance for Preparing Relief Requests

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UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

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Sincerely,

A handwritten signature in cursive script that reads "Robert E. Martin".

Robert E. Martin, Senior Project Manager
Project Directorate II-3
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosures:

1. Request for Additional Information
2. Guidance on Preparing Relief Requests

cc w/enclosures:
See next page

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REQUEST FOR ADDITIONAL INFORMATION

RELIEF REQUEST 93-01
AND DECEMBER 8, 1993, RESPONSE

I.	Item Nos.	Identity	Sketch
	B03.140.001	2SGA IN	3 of 18
	B03.140.002	2SGA ON	4 of 18
	B03.140.007	2SGD IN	5 of 18
	B03.140.008	2SGD ON	6 of 18

Table-2500-7, Category B-D

- A. To visualize the orientation, position, dimensions, and material information for each item number, locate the cross-section sketches on plant drawings. Drawings should show the item numbers.
- 1) A drawing like page 2 of 18, Attachment 2, SER. No. 93-01 would adequately show dimensions and material information.
 - 2) A piping isometric may show orientation and position.
 - 3) Weld shape and material should be identified.
- B. Explain what Catawba would have to do to comply with the Code requirements for each nozzle inside radius section.
- C. Explain where or what limitations/obstructions are encountered during the examination that prevent 100% volumetric examination of each nozzle inside radius section.
- D. What alternatives are available that would provide reasonable assurance that inservice flaws have not developed in the nozzle inside radius section?
- 1) Explain Catawba's "best effort" for testing and identifying the capabilities and limitations (transducers, minimum detectable surface flaw size, etc) of the UT equipment and procedures (are mockups used?).
 - 2) Explain what visual examinations can be performed and describe the detection and recording capabilities including the scanning limitations (if any), minimum detectable flaw size, and the use of the state-of-the-art enhancements. Will the examinations be viewed and recorded in color.
- E. In the event that an undetected crack were to grow through-wall, explain what protection, if any, is available and why the protection would be adequate.

2. Item Nos.	Sketch	Axial		Circumferential Skewed from Side 2
		Side 1,	Side 2	
B05.070.001	7 of 18	0	95%	100%
B05.070.002	8 of 18	0	97%	100%
B05.070.007	9 of 18	0	100%	100%
B05.070.008	10 of 18	0	100%	100%
B05.130.002	7 of 18			100%
B05.130.003	8 of 18			100%
B05.130.014	9 of 18			100%
B05.130.015	10 of 18			100%

Table-2500-8, Category B-F.

- A. To visualize the orientation, position, dimensions, and material information for each item number, locate the cross-section sketches on plant drawings. Drawings should show the item numbers.
- 1) A drawing like page 2 of 18, Attachment 2, SER. No. 93-01 would adequately show dimensions and material information.
 - 2) A piping isometric may show orientation and position.
 - 3) Weld shape and material should be identified.
- B. Explain what Catawba would have to do to comply with the Code requirements for each nozzle-to-safe end of safe end-to-pipe section.
- C. Explain where or what limitations/obstructions are encountered during the examination that prevent 100% volumetric examination of each nozzle-to-safe end of safe end-to-pipe section.
- D. On B05.07.008, sketch 10 of 18; how was the circumferential examination accomplished.
- E. What alternatives are available that would provide reasonable assurance that inservice flaws have not developed in the nozzle-to-safe end or pipe-to-safe end sections?
- 1) Explain Catawba's "best effort" for testing and identifying the capabilities and limitations (transducers, minimum detectable surface flaw size, etc) of the UT equipment and procedures (are mockups used?).
- F. In the event that an undetected crack were to grow through-wall, explain what protection, if any, is available and why the protection would be adequate.

3. Item Nos.	Part	Sketch
B09.031.005	1	15 of 18
	2	16 of 18
B09.031.006	1	17 of 18
	2	18 of 18

Table-2500-11, Category B-J.

- A. To visualize the orientation, position, dimensions, and material information for each item number, locate the cross-section sketches on plant drawings. Drawings should show the item numbers.
 - 1) A drawing like page 2 of 18, Attachment 2, SER. No. 93-01 would adequately show dimensions and material information.
 - 2) A piping isometric may show orientation and position.
 - 3) Weld shape and material should be identified.
- B. Explain what Catawba would have to do to comply with the Code requirements for each nozzle section.
- C. Explain where or what limitations/obstructions are encountered during the examination that prevent 100% volumetric examination of each nozzle section.
- D. What alternatives are available that would provide reasonable assurance that inservice flaws have not developed in the nozzle sections?
 - 1) Explain Catawba's "best effort" for testing and identifying the capabilities and limitations (transducers, minimum detectable surface flaw size, etc.) of the UT equipment and procedures (are mockups used).
- E. In the event that an undetected crack were to grow through-wall, explain what protection, if any, is available and why the protection would be adequate.

ENCLOSURE B

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

The guidance in this Appendix is intended to illustrate the type and extent of information that is necessary in a "request for relief" submittal for those items that cannot be fully inspected to the requirements of ASME Code Section XI.

A. Description of Requests for Relief

The inservice inspection program should contain requests for relief that 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. Each request for relief should provide the information identified in the following sections of this Appendix for the inspections and pressure tests considered impractical.

B. Request for Relief From Certain Inspection and Testing Requirements

Many requests for relief from inservice inspection 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 because of 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 required to make a proper evaluation and to adequately document the basis for the granting of relief in the Safety Evaluation Report. Requests for additional information and delays in completing the review can be considerably reduced if this information is provided in the licensee's initial submittal.

Each relief request should contain adequate information to act as a "*stand alone*" document and should include the following:

1. The ASME Code Class, Examination Category, and Item Number(s) or the specific Code paragraph number from which relief is being requested.
2. ASME Code Section XI examination or test requirements for the weld(s) and/or component(s) for which relief is being requested.
3. The number of items associated with the requested relief.
4. Identification of the specific ASME Code requirement that has been determined to be impractical.
5. An itemized list of the specific welds(s) and/or 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 welds(s) and/or component(s) 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. Identification of the alternative examinations that are proposed: (a) in lieu of the requirements of Section XI; or (b) to supplement partial Section XI examinations performed.
9. A discussion of the failure consequences of the weld(s) and/or component(s) that would not receive the Code required examination. Discuss 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 alternative 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. Stating without substantiation that a change will not affect the quality level is unsatisfactory (i.e., because a licensee does not agree with a Code requirement is not considered justification for the granting of relief). If the relief is requested for inaccessibility, a detailed description or drawing that depicts the inaccessibility must accompany the request.

C. Request for Relief for Radiation Considerations

Radiation exposures of test personnel to accomplish the examinations prescribed in ASME Code Section XI 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 (in addition to the previous general requirements in Section B) the following additional information regarding 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 that might reduce radiation levels.
4. A discussion of the considerations involved in remote inspections.
5. The results of any previous inservice inspections regarding ALARA for the welds for which the relief is being requested.

Suggested Format For Relief Requests

LICENSEE/UTILITY NAME
PLANT NAME, UNIT ____
____ 10-YEAR INTERVAL
REQUEST FOR RELIEF NO. ____

- I. *Provide an itemized list of the specific weld(s) and/or component(s) for which relief is requested. Include the ASME Code Class, Examination Category, and Item Number(s). Relief cannot be granted for generic Requests for Relief.*

NOTE: Each Relief Request should contain only one Examination Category.

EXAMPLE:

System/Component(s) for Which Relief is Requested: Six RPV Nozzle-to-Pipe Welds

Examination Category B-J, Item B9.10

36" Outlet Reactor Nozzel (A)-to-Pipe Weld (WELD-1)
36" Outlet Reactor Nozzel (B)-to-Pipe Weld (WELD-2)
28" Inlet Reactor Nozzel (C)-to-Pipe Weld (WELD-3)
28" Inlet Reactor Nozzel (D)-to-Pipe Weld (WELD-4)
28" Inlet Reactor Nozzel (E)-to-Pipe Weld (WELD-5)
28" Inlet Reactor Nozzel (F)-to-Pipe Weld (WELD-6)

- II. *Report the Code-requirement(s) for the specific weld(s) and/or component(s) for which relief is being requested.*

EXAMPLE:

Code Requirement: Section XI, Table IWB-2500-1, Examination Category B-J, Item B9.11 requires an OD surface examination of the weld and adjacent base metal and a volumetric examination of the weld and adjacent base metal (interior one-third volume) on all dissimilar metal piping welds and terminal end piping welds at vessels as defined by Figure IWB-2500-8.

- III. *Identify the specific Section XI examination or test requirements for the weld(s) and/or component(s) for which relief is being requested.*

EXAMPLE

Code Requirement from Which Relief is Requested: Relief is requested from performing the Code-required surface examination on above identified Reactor Pressure Vessel inlet and outlet nozzle-to-pipe welds.

- IV. *Provide technical justification to support the determination that the Code 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.*

-If a partial Code-required examination can be performed, provide an estimate of the percentage of the Code-required examination that can be completed for each of the individual weld(s) and/or component(s) covered by the Request for Relief.

-If justification for the request for relief is based on radiation considerations (ALARA), address the following:

- a. *The total estimated man-rem exposure involved in the examination;*
- b. *the radiation levels at the test area;*
- c. *flushing or shielding capabilities that might reduce radiation levels;*
- d. *proposed alternative inspection techniques;*
- e. *the considerations involved in remote inspections;*
- f. *similar components in redundant systems or similar welds in the same systems that can be inspected;*
- g. *the results of previous inservice inspections that may help provide technical justification for the granting of relief; and*
- h. *the failure consequences of the component(s) that would not receive the Code required examination(s).*

EXAMPLE

Basis for Relief: The subject welds are located inside the reactor vessel primary shield wall (see attached Drawing No. NLU-RPV-XX.xx) and the Code-required examination would necessitate removal of sand plugs and insulation to gain access into the high radiation environment. NLU (Name

Licensee/Utility) estimates the radiation level would be in excess of 10 R/hr at the examination area and that a cumulative exposure of 87 Person-Rem would be necessary to complete the Code-required surface examination of these welds.

V. *Identify proposed alternative examinations:*

- (a) *in lieu of the requirements of Section XI; or*
- (b) *to supplement partial examinations performed per ASME Code Section XI requirements.*

NOTE: *-Code required examinations are not considered alternatives.*

EXAMPLE

Alternate Examinations: NLU proposes that, in lieu of the Code-required OD surface examination, the subject reactor vessel nozzle-to-pipe butt weld OD surfaces will receive an ultrasonic examination from the nozzle bore using the automated reactor vessel tool. This volumetric examination will include the entire weld volume and heat affected zone instead of only the inner one-third of the weld.

VI. *Address the following regarding why the Licensee feels relief should be granted:*

- (a) *How the proposed alternatives or partial examination provide a reasonable assurance of the continued structural integrity;*
- (b) *the burden upon the Licensee should the Request for Relief be denied; and*
- (c) *why public health and safety will not be jeopardized by the granting of relief.*

EXAMPLE

Justification for the Granting of Relief: NLU has contracted with NIA (Name Inspection Agency) to perform the alternative volumetric examinations. The remote volumetric examinations will include the entire weld volume and the heat affected zone instead of only the inner one-third of the weld as required by the Code. NIA will be utilizing state-of-the-art techniques and equipment that has been demonstrated to NLU and the NRC to be capable of detecting OD surface connected defects in the circumferential orientation in a laboratory test block. The laboratory test block contained cracks and not machined

notches.

The proposed alternative volumetric examination will provide reasonable assurance that unallowable inservice flaws have not developed in the subject welds or that they will be detected and repaired prior to return of the reactor vessel to service. Thus an acceptable level of quality and safety will have been achieved and public health and safety will not be endangered by allowing the proposed alternative examination in lieu of the Code requirement.

VII. *Discuss the period of time for which relief is required.*

NOTE: Requests for relief are only applicable for the 10-year inspection interval during which relief was requested and approval does not apply for subsequent inspection intervals.

EXAMPLE

Implementation Schedule: Four of the subject examinations will be performed during the first period, and the remaining examinations will be performed during the third period of the _____ 10-year interval.