

**ATTACHMENT 3**

**GENE SPECIFICATION 25A5717, REVISION 1  
SHROUD STABILIZERS  
CODE DESIGN SPECIFICATION  
HATCH UNIT 2  
JUNE 1995**



GE Nuclear Energy

25A5717 SH NO. 1  
REV. 1

REVISION STATUS SHEET

DOCUMENT TITLE SHROUD STABILIZERS

LEGEND OR DESCRIPTION OF GROUPS

TYPE: CODE DESIGN SPEC.

FMF: HATCH UNIT 2

MPL NO: PRODUCT SUMMARY SECTION 7

THIS ITEM IS OR CONTAINS A SAFETY-RELATED ITEM  YES  NO EQUIP CLASS CODE P

| REVISION              |               |                      |                        | P                         | C |
|-----------------------|---------------|----------------------|------------------------|---------------------------|---|
| 0                     | RM-02123      | 5/17/95              |                        |                           |   |
| 1                     | J. L. TROVATO | JUN 06 1995          | RJA                    |                           |   |
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| PRINTS TO             |               |                      |                        |                           |   |
| MADE BY               |               | APPROVALS            |                        | GENERAL ELECTRIC COMPANY  |   |
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1. SCOPE

1.1 This document defines the ASME Code design requirements for the shroud stabilizers for welds H1 through H8.

2. APPLICABLE DOCUMENTS

2.1 General Electric Documents. The following documents form a part of this specification to the extent specified herein.

2.1.1 Supporting Documents

- |  |                    |
|--|--------------------|
| a. Purchase Specification, Reactor Vessel                    | 21A9340, Rev. 1    |
| b. Purchase Specification Data Sheet, Reactor Vessel         | 21A9340AC, Rev. 10 |
| c. Purchased Part Drawing, Reactor Vessel                    | 922D167, Rev. 9    |
| d. Interface Control Drawing, Reactor Vessel Loadings        | 761E380, Rev. 3    |
| e. Information Drawing, Reactor Cycles                       | 761E246, Rev. 1    |
| f. Information Drawing, Reactor Vessel Nozzle Thermal Cycles | 158B8369P3, Rev. 2 |
| g. Purchased Part Drawing, Nozzle Safe End Requirements      | 921D562, Rev. 0    |
| h. Purchased Part Drawing, Vessel Flange Bolting             | 921D706, Rev. 0    |
| i. Standard Requirements for Core Structure                  | 21A3319, Rev. 5    |

2.1.2 Supplemental Documents. Documents under the following identities are to be used with this specification:

- |  |         |
|--|---------|
| a. Shroud Repair Hardware Design Specification | 25A5718 |
|--|---------|

2.2 Codes and Standards. The following documents of the specified issue form a part of this specification to the extent specified herein.

2.2.1 American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code

- |  |
|--|
| a. Section III, 1968 Edition and Addenda through Summer 1970 |
| b. Section XI, 1980 Edition and Addenda through Winter 1981  |



### 2.2.2 Other Documents

- a. FSAR, Hatch Unit 2
- b. Combustion Engineering Drawing 11570-844-001 Rev. 3, Shroud Support Details and Assembly

## 3. GENERAL DEFINITION

3.1 The purpose of the shroud stabilizers is to structurally replace all of the horizontal girth welds in the shroud and shroud support. These welds were required to both horizontally and vertically support the core top guide, core support plate, and shroud head, and to prevent core bypass flow to the downcomer region. The core top guide and core support plate horizontally support the fuel assemblies and maintain the correct fuel channel spacing to permit control rod insertion.

3.2 All of the non ASME Code requirements for the shroud stabilizers are defined in the Document in Paragraph 2.1.2.a. The ASME Code requirements are defined herein.

## 4. REQUIREMENTS

4.1 The shroud stabilizer construction shall be performed per a Section XI Replacement Program per Article IWA-7000. The core shroud was not supplied per the ASME Code Section III. However, Section XI requires ISI of Core Support Structures. The required Replacement Program is different than most Replacement Programs, because the stabilizers are not a direct replacement. Instead the structural functions of the shroud and shroud support horizontal welds are replaced by new components. Any defects found in the shroud horizontal welds are structurally acceptable after the installation of the stabilizers.

4.2 The shroud stabilizers shall be constructed to the original Owner's Requirements (Paragraph 2.1.1.i) for the shroud as there was no Code of Construction, because Section III, Subsection NG did not exist.

4.3 The shroud stabilizers change the points of application of the forces applied to the reactor pressure vessel from the core shroud. These new forces shall be analyzed per the original Code of Construction (document in Paragraph 2.2.1.a).

4.4 The new forces and their points of application are defined in Figure 1 and Table 1. The values given in Figure 1 and Table 1 shall be combined with the forces defined in the original Design Specification (Paragraph 2.1.1.a. through h.). The seismic loads include consideration of the 1/2 SME (Seismic Margin Earthquake) as a design basis earthquake (DBE) in addition to the DBE identified in the document in Paragraph 2.2.2.a.



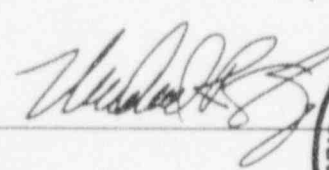
4.5 The Document in Paragraph 2.1.1.a through h (original Design Specification) conservatively defined the Boundary of Code Jurisdiction as including the shroud support (Figure 2). The Document in Paragraph 2.2.1.a (original Code for RPV Construction) did not require the Boundary of Jurisdiction to be inboard of the weld of the shroud support plate to the reactor pressure vessel. Paragraphs N-110, N-145, N-150, N-152, N-310, N-474, and N-518 of the original Code of Construction do not require any internal attachments to be part of the Class A Vessel. However, GE conservatively classified the internal shroud support plate and the shroud support cylinder as part of the Class A Vessel per N-150.

4.5.1 Weld H8 was not required to be classified as part of the Class A Vessel. Therefore, for the purposes of this replacement, it shall not be considered as a Section III, Subsection NB weld. Thus, this weld can be replaced in the same manner as the remainder of the shroud welds. For the purpose of the shroud stabilizer, the boundary of ASME Code Section III, Subsection NB jurisdiction shall be redefined to terminate at the weld between the shroud support plate to the structural weld deposits on the low alloy steel shell (Figure 2).

4.6 The analysis of additional loads required by this Design Specification shall be Certified per Paragraph N-142 of Section III.

5.0 PROFESSIONAL ENGINEER CERTIFICATION

To the best of my knowledge and belief, this Design specification satisfies the requirements of the ASME Boiler and Pressure Vessel Code, Section III, 1968 Edition with Addenda through Winter 1970.

Signature:  Date: 6/6/95

License Number M24556 CA





| Force          | Upset        | Emergency    | Faulted      |
|----------------|--------------|--------------|--------------|
| F <sub>1</sub> | 236,000. Lbs | 367,000. Lbs | 367,000. Lbs |
| F <sub>2</sub> | 347,000. Lbs | 582,000. Lbs | 882,000. Lbs |
| F <sub>3</sub> | 161,000. Lbs | 179,000. Lbs | 476,000. Lbs |

F<sub>1</sub>, F<sub>2</sub>, and F<sub>3</sub> are discrete loads applied over a small area. At any one point in time, 1 F<sub>1</sub> and 1 F<sub>2</sub> are applied to one circumferential location, and F<sub>3</sub> is applied to 1 location 180° from the F<sub>1</sub>, F<sub>2</sub> circumferential location.

The above loads are bounding for all load conditions including recirculation line LOCA.

The primary stress intensities shall meet the code allowables.

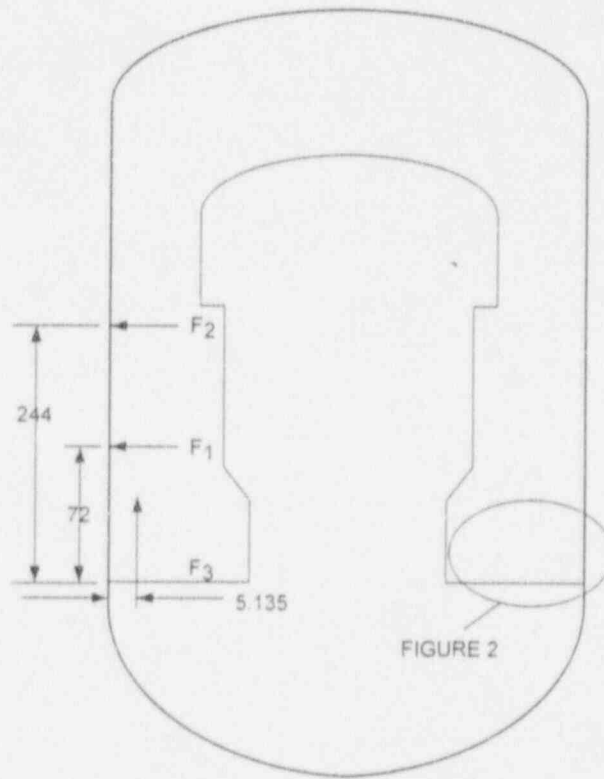


Figure 1. Location of Design Mechanical Loads

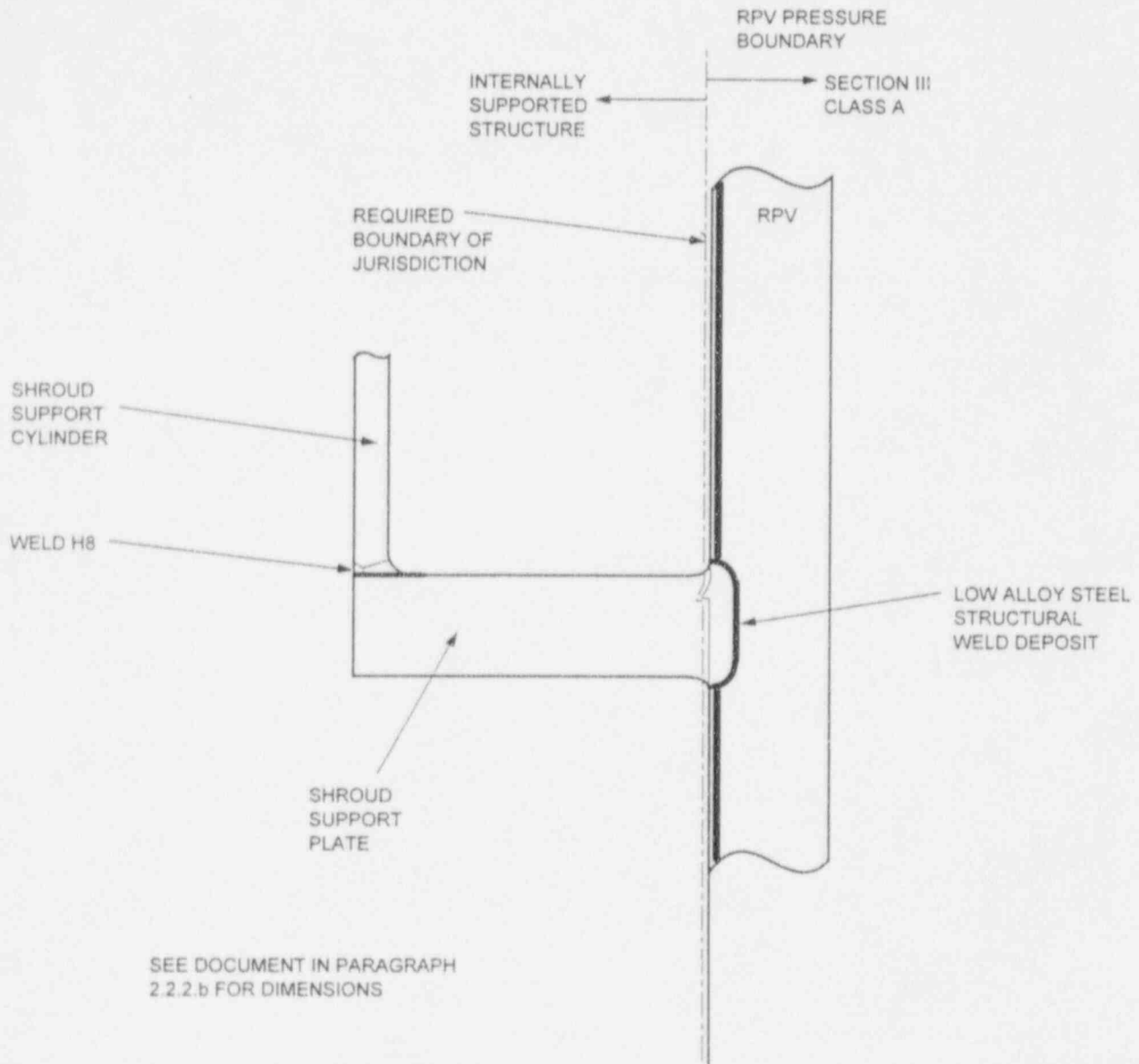


Figure 2. ASME Boundary of Code Jurisdiction