



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATING TO RELIEF REQUEST ISI-011, VESSEL NOZZLE

INNER RADIUS SECTION, EXAMINATION CATEGORY C-B

ITEM C2.22, ASME CODE CLASS 2

LOUISIANA POWER AND LIGHT COMPANY

WATERFORD STEAM ELECTRIC STATION, UNIT 3

DOCKET NO. 50-382

Code Requirement:

A volumetric examination shall be performed on the inside radius section of all nozzles at terminal ends of piping runs. In the case of multiple vessels of similar design, size and service, the required examinations may be limited to one vessel or distributed among the vessels. The examinations shall be performed to the extent and frequency as specified in IWC-2500-1 (Category C-B).

Relief Requested

Relief is requested from performing a volumetric examination on the inside radius section of the Main Steam and Feedwater nozzles.

Proposed Alternative Examination

As an alternative examination the licensee proposes to perform an internal visual examination (VT-1).

Licensee's Basis for Requesting Relief

The geometric configuration of the Steam Generator Main Steam and Feedwater nozzles does not lend itself to a meaningful volumetric examination in the area of the inner radius. Only a small percentage of the area required by Code to be volumetrically examined would actually be examined even when employing several different beam angles. Therefore, LP&L proposes to perform a visual examination of the nozzles (04-063 & 04-064) when the secondary side of the Steam Generator is opened for other inspection/maintenance activities. The nozzles which would normally have received a volumetric examination will be subjected to a VT-1 visual examination, but not more than once per interval. The alternate visual examination which is proposed represents the most reasonable and meaningful examination when considering the extreme limitations on the volumetric examination required by Code.

Staff Evaluation:

The staff has evaluated this request from the licensee's letter dated October 15, 1987. The examination of the steam generator nozzle inner radius section is technically feasible although the Code required volumetric examination may be limited due to available access or the geometric configuration of the nozzle. The licensee has determined that only a small percentage of the area required by the Code can be volumetrically examined even when using several different beam angles. Therefore, the staff would be required to evaluate limitations to examination if the licensee elected to attempt the volumetric examination.

The objective of a VT-1 visual examination is to determine the condition of the part, component or surface examined including such conditions as cracks, wear, corrosion, erosion, or physical damage on the surfaces of the part or components. Service induced defects in a nozzle inner radius section would be expected to occur at the inside surface. Thus, an interior examination would be as effective as a limited volumetric examination. However, the staff has determined that a surface examination of a representative sample of the inner radius region in addition to the proposed VT-1 examination would be equivalent or superior to the Code requirement.

Conclusion:

The staff concludes that relief from the Code required volumetric examination can be granted provided that the following conditions are met:

- 1) The licensee performs the proposed VT-1 visual examination.
- 2) A surface examination is performed at the location of potential flaw indications and/or a segment that consists of at least 10% of the area subject to examination.

The staff finds that the alternative described above will provide an equivalent level of structural integrity, as the Code requirement.

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Dated: June 6, 1989