

# CATEGORY 1

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SUBJECT: Requests approval to incorporate Code Case N-509, Alternative Rule for Selection & Exam of Class 1, 2 & 3 integrally welded attachments, Section XI, Div 1 for use in Unit 1 & 2 10-Yr ISI programs.

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December 17, 1996

L-96-303  
10 CFR 50.4  
10 CFR 50.55a

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

RE: St. Lucie Units 1 and 2  
Docket Nos. 50-335 and 50-389  
Inservice Inspection Plan  
Second Ten-Year Interval  
ASME Code Case N-509 - Request for Use

Pursuant to 10 CFR 50.55a, (Footnote 6) and 10 CFR 50.55a(a)(3), Florida Power and Light Company (FPL) requests approval to incorporate Code Case N-509, *Alternative Rules for the Selection and Examination of Class 1, 2, and 3 Integrally Welded Attachments, Section XI, Division 1*, for use in the St. Lucie Unit 1 and Unit 2 Ten Year Inservice Inspection Programs. In addition to the elements of the Code Case, upon approval for use at St. Lucie Units 1 and 2 of Code Case N-509, FPL commits to schedule a minimum of ten percent (10%) of all integral attachments in non-exempt Code Class 1, 2, and 3 systems in each interval. Code Case N-509 was approved for use by ASME on November 25, 1992.

This Code Case is an alternative to the selection and examination requirements of ASME Code Sections IWB, IWC, and IWD for integrally welded Class 1, 2, and 3 attachments. Use of this alternative reduces the need for building scaffolding and insulation removal for the Reactor Coolant Pumps (RCP) and Class 1, 2, and 3 piping systems. The preparation for and the performance of the Section XI required examinations involve excessive cost, man-hours, and man-REM exposure with little or no compensating increase in the level of safety. In establishing the basis of the Code Case, ASME conducted a survey of the nuclear industry to determine the extent of the integral welded attachment failures. The data which was collected from the survey (43 plants responded) concluded the following:

Over the past 20 years, a total of five integral attachments failures were reported;

The failures were identified as a result of the connected support member deformation rather than during the scheduled examination of the integral attachment;

Of the five failures, only one resulted in leakage from the pressure boundary. The root cause was determined to be design error.

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St. Lucie Units 1 and 2  
Docket Nos. 50-335 and 50-389  
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There are a total of 88 integral attachments on Unit 1 and 178 on Unit 2. A review of the inspection history at St. Lucie Units 1 and 2 revealed that 54 Unit 1 and 103 Unit 2 integral attachments have been examined since initial start-up. Only 2 of the attachments examined had indications and both were subsequently accepted for use as-is. These examination results are consistent with and support the technical basis established by ASME. A copy of the Code Case is attached for your information.

Code Case approval is requested to support its use in the upcoming St. Lucie Unit 2 refueling outage (SL2-10) currently scheduled to begin April 15, 1997.

If approved, this letter contains a regulatory commitment to inspect a minimum of 10 percent of the integral attachments in non-exempt ASME Code Class 1, 2, and 3 systems in each interval. Please contact us if there are any questions about this submittal.

Very truly yours,



J. A. Stall  
Vice President  
St. Lucie Plant

JAS/GRM

Attachment

cc: Stewart D. Ebnetter, Regional Administrator, Region II, USNRC  
Senior Resident Inspector, USNRC, St. Lucie Plant

CASES OF ASME BOILER AND PRESSURE VESSEL CODE

Approval Date: November 25, 1992

See Numeric Index for expiration  
and any reaffirmation dates.

Case N-509

Alternative Rules for the Selection and Examination of Class 1, 2, and 3 Integrally Welded Attachments Section XI, Division 1

*Inquiry:* What alternative requirements to those of IWB, IWC, and IWD may be used to select and examine integrally welded attachments?

*Reply:* It is the opinion of the Committee that the following rules may be used to select and examine integrally welded attachments:

(a) This Case is limited to Examination Categories B-H, B-K-1, C-C, D-A, D-B, and D-C.

(b) Class 1, 2, and 3 component supports shall be selected for examination in accordance with IWF of the 1989 Edition with the 1990 Addenda.

(c) Except for the selection of component supports for examination, all references to Section XI within this Case shall be from the edition and addenda specified in the Owner's Inservice Inspection Program.

1.0 SCOPE

These requirements apply to examination and sample selection of Class 1, 2, and 3 integrally welded attachments of vessels, piping, pumps, and valves listed in Table 2500-1 as follows:

(a) Table 2500-1, Examination Category B-K shall be used for Class 1 integrally welded attachments in Examination Categories B-H and B-K-1 of IWB.

(b) Table 2500-1, Examination Category C-C shall be used for Class 2 integrally welded attachments in Examination Category C-C of IWC.

(c) Table 2500-1, Examination Category D-A shall be used for Class 3 integrally welded attachments in Examination Categories D-A, D-B, and D-C of IWD.

1.1 Exemption Criteria

(a) The exemption criteria provided in IWB-1220, IWC-1220, and IWD-1220 may be applied to Class 1, 2, and 3 components respectively, with integrally welded attachments, required to be examined in accordance with Table 2500-1.

(b) Class 1, 2, and 3 integrally welded attachment examinations performed as a result of component support deformation cannot be credited under the requirements of IWB-2411 or IWB-2412, IWC-2411 or IWC-2412, and IWD-2411 or IWD-2412; respectively.

1.2 Inspection Schedule

Class 1, 2, or 3 integrally welded attachments selected for examination by sample selection criteria in accordance with Table 2500-1, Examination Categories B-K, C-C, and D-A, shall meet the requirements of IWB-2411 or IWB-2412, IWC-2411 or IWC-2412, or IWD-2411 or IWD-2412, respectively.

1.3 Additional and Successive Examinations

(a) Class 1, 2, and 3 additional and successive examination requirements of IWB-2430 and IWB-2420 for Class 1, IWC-2430 and IWC-2420 for Class 2 and 3 as applicable, shall be applied to integrally welded attachments whose examinations reveal flaws or relevant conditions that exceed the acceptance standards of IWB-3000, IWC-3000, and IWD-3000, respectively.

(b) When integrally welded attachments are examined as a result of identified component support deformation and the results of these examinations exceed the applicable acceptance standards listed above, additional or successive examinations shall be performed when determined necessary based on an evaluation by the Owner.

TABLE 2500-1  
EXAMINATION CATEGORIES

EXAMINATION CATEGORY B-K, INTEGRAL ATTACHMENTS FOR CLASS 1 VESSELS, PIPING, PUMPS, AND VALVES						
Item No.	Parts Examined <sup>1</sup>	Examination Requirements/ Fig. No.	Examination Method	Acceptance Standard	Extent of Examination <sup>2,3</sup>	Frequency of Examination <sup>4</sup>
B10.10	Pressure Vessels Integrally Welded Attachments	IWB-2500-13, -14, and -15	Surface <sup>7</sup>	IWB-3516	100% of required areas of each welded attachment	Each Identified occurrence and each inspection interval <sup>5</sup>
B10.20	Piping Integrally Welded Attachments	IWB-2500-13, -14, and -15	Surface	IWB-3516	100% of required areas of each welded attachment	Each Identified occurrence and each inspection interval <sup>5</sup>
B10.30	Pumps Integrally Welded Attachments	IWB-2500-13, -14, and -15	Surface	IWB-3516	100% of required areas of each welded attachment	Each Identified occurrence and each inspection interval <sup>5</sup>
B10.40	Valves Integrally Welded Attachments	IWB-2500-13, -14, and -15	Surface	IWB-3516	100% of required areas of each welded attachment	Each Identified occurrence and each inspection interval <sup>5</sup>

**NOTES:**

- (1) Examination is limited to those integrally welded attachments that meet the following conditions:
  - (a) the attachment is on the outside surface of the pressure retaining component;
  - (b) the attachment provides component support as defined in NF-1110; and
  - (c) the attachment weld joins the attachment either directly to the surface of the component or to an integrally cast or forged attachment to the component.
- (2) The extent of the examination includes essentially 100% of the length of the attachment weld at each attachment subject to examination.
- (3) Selected samples of integrally welded attachments shall be examined each inspection interval.
- (4) In the case of multiple vessels of similar design, function and service, only one integrally welded attachment of only one of the multiple vessels shall be selected for examination.
- (5) For piping, pumps, and valves, a sample of 10% of the welded attachments associated with the component supports selected for examination under the 1990 Addenda, IWF-2510 shall be examined.
- (6) Examination is required whenever component support member deformation (e.g., broken, bent, or pulled out parts) is identified during operation, refueling, maintenance, examination, inservice inspection, or testing.
- (7) For the configuration shown in Fig. IWB-2500-14, a volumetric examination of volume A-B-C-D from side (B-C) of the circumferential welds may be performed in lieu of the surface examination of surfaces A-D and B-C.

**TABLE 2500-1 (CONT'D)  
EXAMINATION CATEGORIES**

<b>EXAMINATION CATEGORY C-C, INTEGRAL ATTACHMENTS FOR CLASS 2 VESSELS, PIPING, PUMPS, AND VALVES</b>						
<b>Item No.</b>	<b>Parts Examined<sup>1</sup></b>	<b>Examination Requirements/ Fig. No.</b>	<b>Examination Method</b>	<b>Acceptance Standard</b>	<b>Extent of Examination<sup>2,3</sup></b>	<b>Frequency of Examination<sup>4</sup></b>
C3.10	Pressure Vessels Integrally Welded Attachments	IWC-2500-5	Surface	IWC-3512	100% of required areas of each welded attachment	Each identified occurrence and each inspection interval <sup>5</sup>
C3.20	Piping Integrally Welded Attachments	IWC-2500-5	Surface	IWC-3512	100% of required areas of each welded attachment	Each identified occurrence and each inspection interval <sup>5</sup>
C3.30	Pumps Integrally Welded Attachments	IWC-2500-5	Surface	IWC-3512	100% of required areas of each welded attachment	Each identified occurrence and each inspection interval <sup>5</sup>
C3.40	Valves Integrally Welded Attachments	IWC-2500-5	Surface	IWC-3512	100% of required areas of each welded attachment	Each identified occurrence and each inspection interval <sup>5</sup>

**NOTES:**

- (1) Examination is limited to those integrally welded attachments that meet the following conditions:
  - (a) the attachment is on the outside surface of the pressure retaining component;
  - (b) the attachment provides component support as defined in NF-1110; and
  - (c) The attachment weld joins the attachment either directly to the surface of the component or to an integrally cast or forged attachment to the component.
- (2) The extent of the examination includes essentially 100% of the length of the attachment weld at each attachment subject to examination.
- (3) Selected samples of integrally welded attachments shall be examined each inspection interval.
- (4) In the case of multiple vessels of similar design, function and service, only one integrally welded attachment of only one of the multiple vessels shall be selected for examination.
- (5) For piping, pumps, and valves, a sample of 10% of the welded attachments associated with the component supports selected for examination under the 1990 Addenda, IWF-2510 shall be examined.
- (6) Examination is required whenever component support member deformation (e.g., broken, bent, or pulled out parts) is identified during operation, refuelling, maintenance, examination, inservice inspection, or testing.

**TABLE 2500-1 (CONT'D)  
 EXAMINATION CATEGORIES**

<b>EXAMINATION CATEGORY D-A, INTEGRAL ATTACHMENTS FOR CLASS 3 VESSELS, PIPING, PUMPS, AND VALVES</b>						
<b>Item No.</b>	<b>Parts Examined<sup>1</sup></b>	<b>Examination Requirements/ Fig. No.</b>	<b>Examination Method</b>	<b>Acceptance Standard</b>	<b>Extent of Examination<sup>2,3</sup></b>	<b>Frequency of Examination<sup>2,4</sup></b>
D1.10	Pressure Vessels Integrally Welded Attachments	IWD-2500-1	Visual, VT-1	IWD-3000	100% of required areas of each welded attachment	Each identified occurrence and each inspection interval
D1.20	Piping Integrally Welded Attachments	IWD-2500-1	Visual, VT-1	IWD-3000	100% of required areas of each welded attachment	Each identified occurrence and each inspection interval
D1.30	Pumps Integrally Welded Attachments	IWD-2500-1	Visual, VT-1	IWD-3000	100% of required areas of each welded attachment	Each identified occurrence and each inspection interval
D1.40	Valves Integrally Welded Attachments	IWD-2500-1	Visual, VT-1	IWD-3000	100% of required areas of each welded attachment	Each identified occurrence and each inspection interval

**NOTES:**

(1) Examination is limited to those integrally welded attachments that meet the following conditions:  
 (a) the attachment is on the outside surface of the pressure retaining component;  
 (b) the attachment provides component support as defined in NF-1110; and  
 (c) the attachment weld joins the attachment either directly to the surface of the component or to an integrally cast or forged attachment to the component.

(2) The extent of the examination includes essentially 100% of the length of the attachment weld at each attachment subject to examination.

(3) Selected samples of integrally welded attachments shall be examined each inspection interval. All integrally welded attachments selected for examination shall be subject to corrosion, as determined by the Owner, such as the integrally welded attachments of the Service Water or Emergency Service Water systems. In the case of multiple vessels of similar design, function and service, the integrally welded attachments of only one of the multiple vessels shall be selected for examination. For integrally welded attachments of piping, pumps, and valves a 10% sample shall be selected for examination. This percentage sample shall be proportional to the total number of nonexempt integrally welded attachments connected to the piping, pumps, and valves, located within each system subject to these examinations.

(4) Examination is required whenever component support member deformation (e.g., broken, bent, or pulled out parts) is identified during operation, refueling, maintenance, examination, inservice inspection, or testing.