

CATEGORY 1

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SUBJECT: Requests approval to incorporate Code Case N-524,
 "Alternative Exam Requirements for Longitudinal Welds in
 Class 1 & 2 Piping Section XI, Div 1."

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March 5, 1997

L-97-58
10 CFR 50.4
10 CFR 50.55a

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

RE: St. Lucie Unit 1
Docket No. 50-335
Inservice Inspection Plan
Second Ten-Year Interval
ASME Code Case N-524 - 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-524, *Alternative Examination Requirements for Longitudinal Welds in Class 1 and 2 Piping, Section XI, Division 1*, for use in the St. Lucie Unit 1 Inservice Inspection Program for the second ten-year interval. Code Case N-524 was approved for use by ASME on August 9, 1993.

This Code Case is an alternative to the requirements for surface and volumetric examination of longitudinal piping welds presently required by ASME Section XI for Class 1 and 2 piping. The specific requirements are specified in Table IWB-2500-1, Examination Category B-J, Table IWC-2500-1, Examination Categories C-F-1 and C-F-2, and Table IWC-2520, Examination Category C-G. Use of this alternative will reduce the worker radiation exposure while preparing for the inspection and during the examination. In addition, it will reduce the scope for building scaffolding and removal of insulation for this inspection of the reactor coolant, safety injection, shutdown cooling, and other Class 1 and 2 system welds. A copy of the Code Case is attached for your information.

The St. Lucie Unit 1 Inservice Inspection Program for the second ten-year interval uses the 1983 Edition of ASME Section XI with addenda through the Summer 1983. In addition, FPL has adopted Code Case N-408, *Alternative Rules for Examination of Class 2 Piping, Section XI, Division 1*, which was approved by ASME on July 12, 1984, for use during this inservice inspection interval. Therefore, FPL uses the C-F-1 and C-F-2 requirements of Code Case N-408 for determining which longitudinal welds to examine. Code Case N-408 was endorsed by NRC Regulatory Guide (RG) 1.147, *Inservice Inspection Code Case Acceptability ASME Section XI, Division 1*, at the beginning of the second interval. Pursuant to RG 1.147, Revision 11, Position D.2, FPL plans to use this revision of Code Case N-408 for the remainder of the second interval.

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St. Lucie Unit 1
Docket No. 50-335
L-97-58 Page 2

The current requirement for Class 1 systems is to examine longitudinal welds for a distance of one pipe diameter but not more than 12 inches from the intersecting circumferential weld. Often, additional scaffolding must be built and additional insulation removed to accomplish this examination. Much of the reactor coolant system piping is carbon steel with cladding. This material requires increased weld cleaning and preparation time. The additional preparation increases the overall radiation exposure and the potential for personnel contaminations.

For Class 2 systems, the current requirement is to examine the longitudinal welds for a distance of two and one-half times the weld thickness from the intersecting circumferential weld. Essentially the same preparation requirements and radiation concerns discussed above for Class 1 applications apply to Class 2 piping.

Longitudinal welds are not produced in the field or fabrication shops as is the case of a circumferential weld. Longitudinal piping welds for Class 1 and 2 applications were made by the piping manufacturer under controlled conditions that produce higher quality welds and more uniform residual stress patterns. These welds were examined by the appropriate ASTM or ASME specifications. The manufacturing controls specified by the appropriate ASTM or ASME specifications provide assurance of the structural integrity of the longitudinal welds at the time the piping is manufactured.

The preservice examination and initial inservice examinations have provided assurance of the structural integrity of the longitudinal welds during the service life of the plant to date. Based on results of these inservice inspections, St. Lucie Unit 1 has not experienced degradation that would warrant continued examination beyond the intersection area or volume bounded by this Code Case. In addition, experience in the United States has been that ASME Code longitudinal welds have not experienced degradation that would warrant continued examination beyond the boundaries required to meet the circumferential weld examination requirements. No significant loading conditions or known material degradation mechanisms have become evident to date which specifically relate to longitudinal seam welds in nuclear plant piping.

By using this Code Case, FPL will meet the intent of Section XI. FPL will examine those areas of the longitudinal welds within the boundaries of the intersecting circumferential welds. If the longitudinal weld cannot be seen, then FPL will perform the examination around the entire length of the circumferential weld according to the Code Case. If any degradation associated with a longitudinal weld were to occur, it is expected that it would be found at the intersection with a circumferential weld. This intersection will be inspected according to the provisions of Code Case N-524. Since longitudinal welds will be examined within the boundaries of the intersecting circumferential welds, the total costs, examination time, and radiation exposure will be reduced. When this Code Case is applied to the volumetric examination of ferritic welds, the volumetric

St. Lucie Unit 1
Docket No. 50-335
L-97-58 Page 3

examination of the circumferential welds will include scanning for reflectors transverse to the weld.

In addition to the above, there is significant accumulation of personnel radiation exposure associated with the examination of longitudinal welds. The radiation exposure associated with the examination of longitudinal welds is dependent on the time it would take to remove and reinstall the insulation and interferences, prepare the weld for examination, and perform the examinations. Based on the current examination scope for the upcoming Unit 1 refueling outage, exposure savings of approximately 1.5 to 2 man-REM could result from the approval to use Code Case N-524. Therefore, the continued imposition of the ASME Code, Section XI examination requirements for longitudinal welds constitutes a hardship to St. Lucie Plant with no compensating increase in the level of quality or safety.

Code Case approval is requested by July 2, 1997, to support its use during the upcoming Unit 1 refueling/steam generator replacement outage (SL1-15). The outage is currently scheduled to begin in October 1997. If are any questions about this submittal, please contact us.

Very truly yours,



J. A. Stall
Vice President
St. Lucie Plant

JAS/GRM

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

CASES OF ASME BOILER AND PRESSURE VESSEL CODE

Approval Date: August 9, 1993

*See Numerical Index for expiration
and any reaffirmation dates.*

Case N-524

Alternative Examination Requirements for
Longitudinal Welds in Class 1 and 2 Piping
Section XI, Division 1

Inquiry: What alternative requirements may be applied to the surface and volumetric examination of longitudinal piping welds specified in Table IWB-2500-1, Examination Category B-J, Table IWC-2500-1, Examination Categories C-F-1 and C-F-2 (Examination Category C-F prior to Winter 1983 Addenda), and Table IWC-2520, Examination Category C-G (1974 Edition, Summer 1975 Addenda)?

Reply: It is the opinion of the Committee that the following shall apply:

(a) When only a surface examination is required, examination of longitudinal piping welds is not required beyond those portions of the welds within the examination boundaries of intersecting circumferential welds.

(b) When both surface and volumetric examinations are required, examination of longitudinal piping welds is not required beyond those portions of the welds within the examination boundaries of intersecting circumferential welds provided the following requirements are met.

(1) Where longitudinal welds are specified and locations are known, examination requirements shall be met for both transverse and parallel flaws at the intersection of the welds and for that length of longitudinal weld within the circumferential weld examination volume;

(2) Where longitudinal welds are specified but locations are unknown, or the existence of longitudinal welds is uncertain, the examination requirements shall be met for both transverse and parallel flaws within the entire examination volume of intersecting circumferential welds.