



March 1, 2000

L-2000-23
10 CFR 50.4
10 CFR 50.55a

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

Re: St. Lucie Unit 1
Docket No. 50-335
Inservice Inspection Plan
Third Ten-Year Interval
Relief Requests 17 and 18

Pursuant to 10 CFR 50.55a(a)(3)(i), Florida Power and Light Company (FPL) requests approval of St. Lucie Unit 1 Relief Requests (R/R) 17 and 18 for the third ten-year inservice inspection (ISI) interval. FPL has determined pursuant to 10 CFR 50.55a(a)(3)(i) that the proposed alternatives would provide an acceptable level of quality and safety.

R/R 17 requests approval to use the requirements of ASME Code Case N-623, *Deferral of Inspections of Shell-to-Flange and Head-to-Flange Welds of a Reactor Vessel, Section XI, Division I* for the shell-to-flange weld only. FPL is not requesting authorization to apply ASME Code Case N-623 for the head-to-flange weld. ASME Code Case N-623 was approved by the ASME Boiler and Pressure Vessel Committee on February 26, 1999. A copy of Code Case N-623 is included for your information.

R/R 18 requests approval to implement an alternative sequence of reactor vessel thread examinations different from that established during the first ISI interval. The examination requirements are specified in IWB-2420 and the scheduling requirements are contained within Table IWB-2412-1.

Approval is requested by October 2000 to support planning and scheduling for the spring 2001 St. Lucie Unit 1 refueling outage (SL1-17) that is currently scheduled to start in early April 2001. Please contact us if there are any questions about this submittal.

Very truly yours,

Rajiv S. Kundalkar
Vice President
St. Lucie Plant

RSK/GRM

Attachments

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

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**St. Lucie Unit 1
THIRD INSPECTION INTERVAL
RELIEF REQUEST NUMBER 17**

A. COMPONENT IDENTIFICATION:

Class: 1 Reactor Pressure Vessel

Pressure retaining welds in reactor vessel

B. EXAMINATION REQUIREMENT:

Rules for Inservice Inspection of Nuclear Power Plant Components, Section XI, 1989 Edition, Examination Category B-A Pressure Retaining Welds In Reactor Vessel. Code Item B1.30, Shell-to-Flange Weld.

Section XI of the ASME B&PV code, 1989 Edition, Table IWB-2500-1, requires that the RPV shell-to-flange weld be volumetrically examined once each inspection interval. The footnotes to the Table provide partial deferral, but in no case is it allowed to be totally deferred to the end of the interval.

C. RELIEF REQUESTED:

Pursuant to 10 CFR 50.55a (a)(3)(i), FPL requests the approval to use the requirements of Code Case N-623, "Deferral of Inspections of Shell-to-Flange and Head-to-Flange Welds of a Reactor Vessel, Section XI, Division 1" for the Shell-to-Flange weld only. These examinations will be performed during the third inspection interval.

Note: FPL is not requesting authorization to apply N-623 for the Head-to-Flange weld.

D. BASIS FOR RELIEF:

Code Case N-623 provides an alternative to the examination scheduling requirements for the reactor pressure vessel (RPV) shell-to-flange and head-to-flange welds contained in Examination Category B-A, "Pressure Retaining Welds in Reactor Vessel," of the 1989 Edition of ASME Section XI. These examinations currently may be partially deferred to the end of a 10-year Inservice Inspection Interval, but total deferral is not allowed. Code Case N-623 provides an option to the Owner for total deferral of these weld examinations provided three basic conditions are met:

- (1) no welded repair/replacement activities have ever been performed on these welds;
- (2) the welds do not contain identified flaws or relevant conditions that currently requires successive inspections in accordance with IWB-2420(b); and
- (3) the RPV is not in the first inspection interval.

Florida Power & Light Company (FPL) meets these conditions for the St. Lucie Unit 1 RPV. Total deferral of these examinations to the end of the inspection interval would allow the RPV Ultrasonic examinations to be scheduled, in aggregate, at the same time and would result in a significant burden reduction with no change to the examination methods or techniques required under the 1989 Edition of Section XI.

The present large population of operating reactors supports deferral of these shell-to-flange weld examinations to the end of a specific plant's 10-year inspection interval. Each reactor is representative of the operating conditions throughout the population of reactors for a particular Nuclear Steam Supply System (NSSS) design. The volume and number of RPV welds inspected

**St. Lucie Unit 1
THIRD INSPECTION INTERVAL
RELIEF REQUEST NUMBER 17**

within successive 10-year intervals among these various operating reactors are essentially uniformly distributed. This being the case, examining the shell-to-flange welds within the population of operating reactors sequentially for the period of a plant specific 10-year interval, or all at the end of that interval provides the necessary assurance that any industry wide degrading condition will be detected. Additionally, performing Ultrasonic examination of the RPV welds at one time, on a specific RPV, will improve the reliability and reproducibility of the Ultrasonic examinations since the procedures and techniques utilized on the population of welds will be at a uniform level of technology. The use of this Code Case will thus close the 10-year gap in technology between various examinations now being performed on a specific RPV. The experience to date indicates that examinations performed on these shell-to-flange welds have not identified any detrimental flaws or relevant conditions and that changing the schedule for examining these welds in aggregate at the end of successive 10-year intervals should provide an equivalent indication of the RPV integrity for a specific RPV.

The ASME Boiler and Pressure Vessel Committee approved Code Case N-623 on February 26, 1999.

E. PROPOSED ALTERNATIVE:

- 1) Perform examinations of the shell-to-flange weld in accordance with Code Case N-623.
- 2) Periodic system pressure tests per Category B-P, Table IWB-2500-1.

F. IMPLEMENTATION SCHEDULE:

PSL-1 Third Inservice Inspection Interval

G. ATTACHMENTS TO THE RELIEF:

ASME Boiler and Pressure Vessel Committee approved Code Case N-623 on February 26, 1999

CASES OF ASME BOILER AND PRESSURE VESSEL CODE

Approval Date: February 26, 1999

See Numeric Index for expiration
and any reaffirmation dates.

Case N-623
Deferral of Inspections of Shell-to-Flange and
Head-to-Flange Welds of a Reactor Vessel
Section XI, Division 1

Inquiry: What alternative rules may be used in lieu of Table I, Examination Category B-A (Program B), "Pressure Retaining Welds in Reactor Vessel", Section XI, Division 1 to allow deferral of inspections of shell-to-flange welds and head-to-flange welds of a reactor vessel?

Reply: It is the opinion of the Committee that, as an alternative to the existing requirements, inspection

of shell-to-flange welds and head-to-flange welds of a reactor vessel may be deferred to the end of the inspection interval without conducting partial examinations from the flange face if the following conditions are met:

(a) No welded repair/replacement activities have ever been performed on the shell-to-flange or head-to-flange weld.

(b) Neither the shell-to-flange weld nor head-to-flange weld contains identified flaws or relevant conditions that currently require successive inspections in accordance with IWB-2420(b).

(c) The vessel is not in the first inspection interval.

TABLE 1
EXAMINATION CATEGORIES

EXAMINATION CATEGORY B-A, PRESSURE RETAINING WELDS IN REACTOR VESSEL							
Item No.	Parts Examined	Examination Requirements/ Fig. No.	Examination Method	Acceptance Standard	Extent and Frequency of Examination		
					1st Inspection Interval	Successive Inspection Intervals [Note (3)]	Deferral of Examination to End of Interval
B1.10	Shell Welds		Volumetric	IWB-3510	All welds [Note (2)]	Same as for 1st interval	Permissible
B1.11	Circumferential	IWB-2500-1					
B1.12	Longitudinal	IWB-2500-2					
B1.20	Head Welds	IWB-2500-3	Volumetric	IWB-3510	Accessible length of all welds [Note (2)]	Same as for 1st interval	Permissible
B1.21	Circumferential						
B1.22	Meridional						
B1.30	Shell-to-Flange Weld	IWB-2500-4	Volumetric	IWB-3510	Weld [Note (2)]	Same as for 1st interval	Permissible [Notes (4), (5)]
B1.40	Head-to-Flange Weld	IWB-2500-5	Volumetric and surface	IWB-3510	Weld [Note (2)]	Same as for 1st interval	Permissible [Notes (4), (5)]
B1.50	Repair Welds [Note (1)]	IWB-2500-1 and -2	Volumetric	IWB-3510	All weld repair areas	Same as for 1st interval	Permissible
B1.51	Beltline region						

NOTES:

- (1) Material (base metal) weld repairs where repair depth exceeds 10% nominal of the vessel wall. If the location of the repair is not positively and accurately known, then the individual shell plate, forging, or shell course containing the repair shall be included.
- (2) Includes essentially 100% of the weld length.
- (3) During the first and second periods, the examination may be performed from the flange face, provided these same portions are examined from the head during the third period.
- (4) When using Inspection Program B, the shell-to-flange weld examination may be performed during the first and third periods, in which case 50% of the shell-to-flange weld shall be examined by the end of the first period, and the remainder by the end of the third period. During the first period, the examination need only be performed from the flange face, provided this same portion is examined from the shell during the third period.
- (5) Deferral in the first inspection interval is not permitted. Deferral in successive inspection intervals is permitted provided that:
 - (a) No welded repair/replacement activities have been performed either on the shell-to-flange weld or head-to-flange weld.
 - (b) Neither the shell-to-flange weld nor the head-to-flange weld contains identified flaws or relevant conditions that require successive inspections in accordance with IWB-2420(b).

**St. Lucie Unit 1
THIRD INSPECTION INTERVAL
RELIEF REQUEST NUMBER 18**

A. COMPONENT IDENTIFICATION:

Class: 1

Reactor Pressure Vessel Stud Holes

Threads in Flange

B. EXAMINATION REQUIREMENT:

Rules for Inservice Inspection of Nuclear Power Plant Components, Section XI, 1989 Edition, Examination Category B-G-1 Pressure Retaining Bolting, Greater than 2 inches in Diameter, code item B6.40, Reactor Vessel (RPV) Threads in Flange.

Section XI of the ASME B&PV code, 1989 Edition, Table IWB-2500-1, requires that the reactor vessel threads in flange be volumetrically examined each inspection interval.

C. RELIEF REQUESTED:

Pursuant to 10CFR 50.55a (a)(3)(i), Florida Power & Light Company (FPL) requests to implement an alternative to repeating the sequence of the RPV threads in flange examination established during the first Inservice Inspection interval as specified in IWB-2420 and the scheduling requirements contained within Table IWB-2412-1. These examinations will be performed during the third inspection period of the third inspection interval.

D. BASIS FOR RELIEF:

Total deferral of this examination to the end of the inspection interval would allow the RPV ultrasonic examinations to be scheduled, in aggregate, at the same time and would result in a significant burden reduction with no change to the examination methods or techniques required under the 1989 Edition of Section XI.

10 CFR 20.1101(b) mandates FPL to reduce radiation exposure to as low as reasonably achievable. In order to satisfy this requirement and other new regulations, FPL must re-evaluate every aspect of every job. Adjusting the sequence of examinations will allow FPL to minimize the amount of work being conducted in radiation areas, meet safety requirements, ALARA requirements, and still meet the intent of Section XI.

The present large population of operating reactors supports deferral of the reactor vessel threads in the flange examinations to the end of a specific plant's 10-year inspection interval. Each reactor is representative of the operating conditions throughout the population of reactors for a particular Nuclear Steam Supply System (NSSS) design. The volume and number of the reactor vessel threads in the flange inspected within successive 10-year intervals among these various operating reactors are essentially uniformly distributed. This being the case, examining the reactor vessel threads in the flange within the population of operating reactors sequentially for the period of a plant specific 10-year interval, or all at the end of that interval provides the necessary assurance that any industry wide degrading condition will be detected. Additionally, performing ultrasonic examination of the reactor vessel threads in the flange at one time, on a specific RPV, will improve the reliability and reproducibility of the ultrasonic examinations since the procedures and techniques utilized on the population will be at a uniform level of

**St. Lucie Unit 1
THIRD INSPECTION INTERVAL
RELIEF REQUEST NUMBER 18**

technology. The alternative will thus close the 10-year gap in technology between various examinations now being performed on a specific RPV.

Adjusting the sequence of examinations will reduce the need for personnel to prepare and examine items in essentially the same areas several times. Changing the sequence of the areas to be examined can significantly reduce the total radiation exposure, time, and manpower required to perform these tasks.

St. Lucie performed the reactor vessel threads in flange examinations in the first and second periods of the first and second intervals. During the first period of the first interval, 1/3 of the stud holes in the flange were examined. During the second period of the first interval, the remaining 2/3 of the stud holes in the flange were examined. During the first period of the second interval, the same 1/3 of the stud holes in the flange examined in the first period first interval were examined. During the second period of the second interval, all 54 stud hole threads in the flange examinations were performed. The experience-to-date at St Lucie Units 1 & 2 indicates that examinations performed have not identified any detrimental flaws or relevant conditions, so modifying the ISI schedule would have no effect on the safe operation of the plant.

E. PROPOSED ALTERNATIVE:

- 2) Perform all the stud holes threads in flange examinations in the third period, scheduled to coincide with the 10-year reactor vessel examinations.
- 2) Periodic system pressure tests per Category B-P, Table IWB-2500-1.

F. IMPLEMENTATION SCHEDULE:

PSL-1 Third Inservice Inspection Interval

H. ATTACHMENTS TO THE RELIEF:

None