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SUBJECT: Forwards "St Lucie Plant Unit 1 Second 10-Yr Insp Plan, Vols 1 & 2."

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AUGUST 29 1988

L-88-377
10 CFR 50.55a

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

Gentlemen:

Re: St. Lucie Unit 1
Docket No. 50-335
Request for Additional Information
2nd 10-Year Interval Inservice Inspection Program Plan

By NRC letter dated May 20, 1988 (E. G. Tourigny to W. F. Conway), you requested additional information concerning the Florida Power & Light Company (FPL) submittal of September 2, 1987 related to the above subject. By letter L-88-268, dated June 20, 1988, FPL provided a response schedule of August 31, 1988. The purpose of this letter is to provide our response to the request for additional information.

Additionally, the purpose of this letter is to inform you that review of Relief Request No. 2, No. 9, and No. 12, included in the FPL submittal of September 2, 1987, is no longer necessary. Therefore, by this letter we are withdrawing these relief requests.

Should there be further questions, please contact us.

Very truly yours,

W. F. Conway
W. F. Conway
Senior Vice President - Nuclear

WFC/MSD/cm

Attachment

cc: Dr. J. Nelson Grace, Regional Administrator, Region II,
USNRC
Senior Resident Inspector, USNRC, St. Lucie Plant

8809060255 880829
PDR ADCK 05000335
Q PNU

St. Lucie Plant, Unit 1
Request for Additional Information
Second Ten-Year Interval - ISI Program Plan

Questions:

- A. Provide isometric and/ or component drawings showing welds, components, and supports which the ASME Code requires to be examined during the second 10-year interval.

- B. Section 5.0, "Submittal Summary," of the ISI Program Plan states: "The Second Ten Year Inservice Inspection Plan Tables are being prepared for the components and piping systems which are subject to examination per the requirements of ASME Section XI." In order to continue the review, the staff requests an itemized listing of the components subject to examination during the second 10 year interval. The requested listing, along with the isometric drawings, will permit the staff to determine if the extent of ISI examinations meets the applicable Code requirements.

- C. Provide a list of the ultrasonic calibration standards being used during the second 10 year interval ISI at St. Lucie, Unit 1. This list should include the calibration standard identifications, material specifications, and sizes.

- D. Provide a list of the nondestructive examination procedures that are being used during the second inspection interval.

Response to Questions A., B., C., and D.

The additional information requested in items A., B., C., & D., is being supplied in the form of the St. Lucie Unit 1 Second 10-Year Examination Plan. (Document number JNS-PSL-100) Two (2) uncontrolled copies of this document are being supplied for your review. These copies are complete except for Appendix G, which contains the Code boundary drawings previously submitted with the original Second Ten Year Inspection Program Plan.

St. Lucie Plant, Unit 1
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Second Ten-Year Interval - ISI Program Plan

Question:

- E. Section 3.0, "Relief Requests," of the ISI Program Plan states: "... During the First Ten Year Inspection Interval, there were cases where component configuration and/ or interferences prohibited 100% coverage of the Code required volume or surfaces. In each case, where such limitations were encountered, the details are documented in a Relief Request. Since those same conditions will prevail during this Inservice Inspection Interval, those Relief Requests are included that will be utilized in the Second ISI Interval..."

The relief requests submitted for the second 10-year interval should be specific only to the examinations being performed during the second interval. The following are "examples" of relief requests which do not appear to reflect Section XI requirements for the second 10-year interval only:

- RR-1: Examination Category B-A, Pressure Retaining Welds in the Reactor Pressure Vessel;
- RR-2: Examination Category B-A, Reactor Pressure Vessel Closure Head; and
- RR-3: Examination Category B-B, Pressure Retaining Welds in Vessels other than Reactor Vessels.

Revise the above relief requests, and any others which do not reflect the specific examination requirements for the second 10-year interval, to reference only those items which are scheduled during the second 10-year interval.

RESPONSE:

The relief requests were revised to reflect the specific examination requirements for the second 10-year interval. The text of the relief requests references only those items scheduled for examination during the second 10-year interval. The attachments supplied with the relief requests may present more information than applicable. This is for reference purposes.

St. Lucie Plant, Unit 1
Request for Additional Information
Second Ten-Year Interval - ISI Program Plan

Question:

- F. All Relief Requests: Provide an estimate of the percentage of the Code-required examination that can be completed for each of the specific examinations for which relief is requested for the second 10-year interval. If the Code required examination for a specific weld cannot be completed to the extent required by the Code, consideration should be given to meeting the intent of the Code by performing examinations on adjacent similar weldments (e.g. reactor vessel beltline region welds, reactor vessel head meridional welds, etc.).

RESPONSE:

An estimate of the Code required volume/surface covered that can be achieved for each of the specific examinations is supplied. This information is located in the attachments to and in the revised text of the relief requests.

Regarding , " ...consideration should be given to meeting the intent of the Code by performing examinations on adjacent similar weldments...". In the selection of the welds to be examined during the second 10-year interval, where a choice could be made between several similar welds (i.e. reactor vessel beltline welds), those selected for examination are the weld or welds which allow for the maximum Code required volume and the maximum surface area to be achieved.

Question:

- G. Relief Request Nos. 1,2,3,4,5,6,7, and 9: These relief requests list attachments (e.g. drawings, sketches, tables) that accompany the relief requests. These attachments are missing from the package that was submitted for review and are required in order to continue the review.

RESPONSE:

An additional copy of all the applicable relief requests and attachments is included in the two (2) uncontrolled copies of document JNS-PSL-100, which have been supplied with the subject submittal.

St. Lucie Plant, Unit 1
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Question:

- H. Relief Request No. 2: Relief is requested from performing both the Code-required surface and volumetric examinations on the reactor pressure vessel closure head-to-flange weld and on the closure head meridional welds.

The "Basis for Relief" provided with the request for relief shows no justification for not performing the Code-required surface examination on the closure head to flange weld. Provide information as to why the surface examination of the closure head-to-flange weld cannot be performed to the extent required by the code.

Also discuss the impact of removing the closure head insulation ring in order to perform the Code-required surface and volumetric examinations on the closure head meridional welds, or the possibility of performing additional examinations on adjacent meridional welds in order to meet the intent of the Code.

RESPONSE:

Relief Request No. 2 is being withdrawn due to scheduled modifications on the insulation ring which will affect the examination areas identified in the request. This Request for Relief may be re-submitted at a later date.

Question:

- I. Relief Request No. 6: Relief is requested from the ASME Code required surface examination of the reactor pressure vessel nozzle-to-pipe transition welds. The licensee has proposed the use of state-of-the-art ultrasonic techniques to examine the outside surface of the reactor pressure vessel nozzle-to-pipe transition welds, from the I.D. surface, in lieu of the Code-required surface examination. The licensee reports that the ultrasonic examination will investigate the outside surface of the welds in two directions circumferentially and in two directions axially covering 100% of the weld plus one inch of the base material on each side. The examination sensitivity will be established using 2% of thickness notches.

St. Lucie Plant, Unit 1
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I (Cont.)

The proposal could be considered acceptable provided that the licensee meets the following conditions:

- (1) The remote volumetric examination includes the entire weld volume and heat affected zone instead of only the inner one-third of the weld as required by the Code.
- (2) The ultrasonic testing instrumentation and procedure are demonstrated to be capable of detecting O.D. surface-connected defects, in the circumferential orientation, in a laboratory test block. The defects should be cracks and not machined notches.

Provide a discussion of the above conditions.

RESPONSE:

This technique was used successfully at Turkey Point Unit 4 to examine the safe end to reactor pressure vessel welds. Examination sensitivity was established using .10 inch deep notches (3.6%T).

In order to qualify this technique, Southwest Research Institute designed and fabricated a weld mock-up/calibration block for Florida Power & Light which duplicated, to the extent possible, the configuration of the nozzle to pipe welds. Cracks were initiated in the block at specific locations on the inside and outside surfaces. The sizes of these cracks were controlled for qualification purposes. Crack depths range from approximately 0.100 inch to 0.200 inch with a length of .5 inch. Prior to the performance of the actual examinations on the vessel safe ends the technique and procedure were demonstrated to the satisfaction of the Authorized Nuclear Inservice Inspector using this mock-up.

Although material differences exist between the Main Reactor Coolant System piping at The Turkey Point Units (cast stainless steel, ccss) and the Main Reactor Coolant System piping at St. Lucie Unit 1 (carbon steel clad), the procedure and equipment have demonstrated the ability to detect O.D. surface indications.

St. Lucie Plant, Unit 1
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Second Ten-Year Interval - ISI Program Plan

Question:

J.

Relief Request No. 9: Relief is requested from performing surface examinations on all pressure retaining piping welds in the Containment Spray System with 1/2 inch or less nominal wall thickness. Based on review of Appendix B, "Class 2 Examination Summary Tables," and Relief Request No. 9, it appears that the Containment Spray System has been completely exempted from any ISI examinations during the second 10-year interval.

Paragraph 10 CFR 50.55a(b)(2)(iv) requires that ASME Code Class 2 piping welds in the Residual Heat Removal (RHR), Emergency Core Cooling (ECC), and Containment Heat Removal, (CHR) systems shall be examined. These systems should not be completely exempted from inservice volumetric examination based on Section XI exclusion criteria contained in IWC-1220. Later editions and addenda of the Code, and Code Case N-408 which has been implemented by St. Lucie Unit 1, require volumetric and surface examination of Class 2 piping welds greater than or equal to 3/8-inch nominal wall thickness for piping greater than 4-inch nominal pipe size (NPS). Based on Code Case N-408, piping and other components of any size beyond the last shutoff valve in open ended portions of systems that do not contain water during normal plant operating conditions are exempt from the volumetric and surface examination requirements of IWC-2500. Discuss the method that the Class 2 piping welds in the containment spray systems meets the 7.5% volumetric and surface examination requirement of Code Case N-408.

RESPONSE:

Containment Spray System piping shall be examined to the extent required by Code Case N-408, Alternative Rules for Examination of Class 2 Piping Section XI, Division 1.

(a) The following components (or parts of components) of RHR, ECC, and CHR systems (or portions of systems) are exempt from the volumetric and surface examination requirements of IWC-2500:

(6) piping and other components of any size beyond the last shutoff valve in open ended portions of systems that do not contain water during normal plant operation.

Per this basis, Relief Request No. 9 is being withdrawn.

St. Lucie Plant, Unit 1
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Second Ten-Year Interval - ISI Program Plan

Response to Question J (Cont.)

- (c) For welds in austenitic stainless steel or high alloy piping, the requirements of table 1, Examination Category C-F-1, Pressure Retaining Welds in Austenitic Stainless Steel or High Alloy Piping, shall be used as an alternative to the requirements of Table IWC-2500-1.

St. Lucie Plant, Unit 1
Request for Additional Information
Second Ten-Year Interval - ISI Program Plan

The following is a listing by St. Lucie Zone designation, pipe size line designation, and wall thickness ("T") for the Containment spray System (CSS) piping from the Refueling Water Tank (RWT) through the Containment Spray pumps to the isolation valves outside containment.

Zone 70 - RWT to LPSI/HPSI/ CS Pump Inlet

Line #	"T"	MATERIAL	EXEMPT by T < 3/8"
24"-CS-1	.250	304 SS	YES
24"-CS-2	.250	304 SS	YES
24"-CS-3	.250	304 SS	YES

Zone 73 - Inlet Piping 1A-LSPI/HPSI/CS Pumps

24"-SI-504	.250	304 SS	YES
24"-CS-5	.250	304 SS	YES
24"-CS-41	.250	304 SS	YES
14"-CS-7	.250	304 SS	YES

Zone 74 - Inlet Piping 1B - LPSI/HPSI/CS Pumps

24"-SI-506	.250	304 SS	YES
24"-CS-40	.250	304 SS	YES
24"-CS-4	.250	304 SS	YES
14"-CS-6	.250	304 SS	YES

Zone 76 - CS Pump 1B to SDCHx A Inlet

12"-CS-15	.250	304 SS	YES
12"-CS-9	.330	304 SS	YES
12"-CS-412	.330	304 SS	YES

Zone 78 - CS Pump 1B to SDCHx B Inlet

12"-CS-14	.250	304 SS	YES
12"-CS-8	.330	304 SS	YES
12"-SI-414	.330	304 SS	YES

Zone 79 - SDCHx 1B Discharge to Isolation Valve I-MV-07-3B

12"-SI-407	.330	304 SS	YES
12"-CS-10	.330	304 SS	YES

Zone 80 - SDCHx 1A Discharge to Isolation Valve I-MV-07-3A

12"-SI-406	.330	304 SS	YES
12"-CS-11	.330	304 SS	YES

Based on criteria established in Code Case N-408, Table 2 Code Category C-F-1, This piping does not have to be volumetrically or surface examined as "T" is < 3/8".

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Response to Question J (Cont.)

The exam requirements for the Containment Spray system have been addressed in accordance with 10 CFR 50.55a(b)(2)(iv) and Code Case N-408. Based on these documents no exams are required except as required in Table IWC-2500-1 Examination Category C-H, All Pressure Retaining Components. However, the welds in these systems, up to the isolation valves were utilized for the total weld count from which the 7.5% examination requirement was determined for those welds meeting the examination criteria (NPS 4", T < 3/8") per Category C-F-1, Note 2 of Code Case N-408.

Question:

K. Relief Request No. 12: This is a generic relief request without a listing of specific components for which relief is requested. The regulations do not provide for granting generic relief requests. Therefore, the staff requests the following information:

- (1) List the specific Class 1 and Class 2 welds for which relief is being requesting during the second 10-year interval.
- (2) For each of the subject welds, provide a description of the obstructions of limitations encountered during the course of examination(s); and
- (3) Provide an estimate of the percentage of the Code-required examination(s) that can be performed for each of the welds listed.

RESPONSE:

Relief Request No. 12 is being withdrawn. In the future any Requests for Relief submitted will include as a minimum the information listed above.

Question:

L. Appendix A, " Class 1 Examination Summary Tables," in the ISI Program Plan does not include any pressure retaining dissimilar metal nozzle welds (Examination Category B-F) on the reactor pressure vessel for examination during the second 10-year interval. Confirm that there are no reactor vessel nozzle-to-safe end welds that would require examination during the second 10-year interval at St. Lucie Unit 1.

St. Lucie Plant, Unit 1
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RESPONSE to Question L.

The Main Reactor Coolant Piping is Carbon Steel Clad. There are no dissimilar metal nozzle welds to the reactor pressure vessel for examination.

Question:

M. Provide clarifications on the following items with regard to the "Class 2 Examination Summary Tables," Examination Category C-F-1, in Appendix B of the ISI Program Plan:

- (1) Define Code Item Numbers C5.43 and C5.44 of the Examination Category C-F-1 as listed on pages 4, 5, and 6 of the Table.
- (2) Define the exemption used for excluding the RHR, ECC, and CHR systems listed under Code Item Number C5.44.
- (3) Based on review of the summary Table for C-F-1 welds, it appears that the SD-CLG, LPSI, and C.S. systems have been completely exempted from ISI examinations during the second 10-year interval.

Paragraph 10 CFR 50.55a(b)(2)(iv) requires that ASME Code Class 2 piping welds in the RHR, ECC, and CHR systems shall be examined. These systems should not be completely exempted from inservice volumetric examination based on Section XI exclusion criteria contained in IWC-1220. (See paragraph I. above for further information.)

RESPONSE:

- (1) Code Item Numbers C5.43 and C5.44 are not Code Item Numbers. C5.43 and C5.44 are "DUMMY" numbers used for computer sorting purposes since no Code Item Nos. exist for exempt components. These numbers appear only in the tables within the ISI Program Plan.
- (2) The basis for excluding RHR, ECC, and CHR systems listed under the "DUMMY" code item number (C5.44) is that all lines in these systems with "T" < 3/8 " were excluded per Code Case N-408 Category C-F-1 requirements.

St. Lucie Plant, Unit 1
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The following summary table identifies all lines in these systems by St. Lucie 1 Zone designation, pipe size, line designation and wall "T". Only those zones not previously identified in Response "J" are identified here.

Zone 43 - LPSI Pump 1A and 1B Discharge Header piping

Line #	"T"	MATERIAL	EXEMPT by T < 3/8"
10"-SI-417	.250	304 SS	YES
10"-SI-419	.250	304 SS	YES
12"-SI-475	.330	304 SS	YES
12"-SI-410	.330	304 SS	YES
12"-SI-814	.330	304 SS	YES
12"-SI-366	.330	304 SS	YES
12"-SI-367	.330	304 SS	YES

Zone 44 - LPSI Pump Discharge Header Piping

12"-SI-475	.330	304 SS	YES
12"-SI-477	.330	304 SS	YES
6"-SI-464	.280	304 SS	YES
6"-SI-146	.719	304 SS	NO
6"-SI-409	.280	304 SS	YES
6"-SI-129	.719	304 SS	NO
6"-SI-113	.719	304 SS	NO
6"-SI-463	.280	304 SS	YES
6"-SI-144	.719	304 SS	NO
6"-SI-111	.719	304 SS	NO
6"-SI-462	.280	304 SS	YES

Zone 49 - SDC Line A Outside Containment

10"-SI-420	.250	304 SS	YES
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Zone 50 - SDC Line B Outside Containment

10"-SI-422	.250	304 SS	YES
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Zone 51 - SDC Line A Inside Containment

10"-SI-420	.250	304 SS	YES
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Zone 52 - SDC Line B Inside Containment

10"-SI-422	.250	304 SS	YES
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Zone 57 - SI Tank 1A1 to Loop 1A1

Zone 58 - SI Tank 1A2 to Loop 1A2

Zone 59 - SI Tank 1B1 to Loop 1B1

Zone 60 - SI Tank 1B2 to Loop 1B2

Exempt IWC-1221(e)
Code Case N-408

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Zone 75 - SDCHx 1B Discharge

Line #	"T"	MATERIAL	EXEMPT by T < 3/8"
10"-SI-474	.307	304 SS	YES

Zone 77 - SDHx 1A Discharge

10"-SI-472	.307	304 SS	YES
12"-SI-408	.330	304 SS	YES

Zone 73 - Inlet Piping-1A to LPSI/HPSI Pumps

6"-SI-508	.280	304 SS	YES
6"-SI-425	.280	304 SS	YES
14"-SI-511	.250	304 SS	YES
14"-SI-424	.250	304 SS	YES

Zone 74 - Inlet Piping 1B to LPSI/HPSI Pumps

8"-SI-427	.322	304 SS	YES
6"-SI-428	.280	304 SS	YES
6"-SI-426	.280	304 SS	YES
14"-SI-512	.250	304 SS	YES
14"-SI-466	.250	304 SS	YES

- 3) Normal practices in plant construction currently provide system Code Class changes (i.e. Class 1 to Class 2) at a valve inside containment on all primary systems. In the case of St. Lucie Unit 1, the Safety Injection System (ECC and RHR* Return), has its class break outside containment. Refer to the Code Boundary Diagrams for clarification.

All of the welds in these Class 1 Zones (21 through 24 inside Containment) and Zones (39 and 40 outside Containment) are scheduled for examination in the 2nd Interval.

All other portions of the Class 2 ECC, RHR and CHR Systems have been exempted as denoted above and as allowed by 10 CFR 50a(b)(2)(iv), and Code Case N-408 ,except as required by Table IWC-2500-1 Examination Category C-H.

* RHR at St. Lucie Plant is Referred to as Shutdown Cooling, (SHC).

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Question:

- N. The ISI Program Plan states that the extent and frequency of testing for mechanical and hydraulic snubbers shall be governed by the Plant Technical Specifications. Provide a brief narrative on the examination of component supports that explains the basis of the program. Provide an estimate of the sample size versus the entire population, separated by Code Class.

RESPONSE

100% of the safety related snubbers are visually examined (VT-3, VT-4) each scheduled refueling outage. At least once per 18 months during shutdown, a representative sample (10% of the safety related snubbers) shall be functionally tested either in place or in a bench test. For each snubber that does not meet the functional test acceptance criteria, an additional 10% of that type of snubber shall be functionally tested. Functional test shall continue until no additional snubbers are found inoperable or all safety related snubbers have been tested.

The representative sample selected for functional testing shall include the various configurations, operating environments and range of size and capacity of snubbers.

Class 1, 2, and 3 supports subject to examination are those supports located on components and systems which are required to be examined under IWB, IWC, IWD, and Code Case N-408. Of those supports subject to examination a minimum of 25% of the total number of supports in each Code Class will be examined during the second inspection interval.

The following is a break out of the number of supports subject to examination, the number of supports scheduled for examination, and the percentage of supports scheduled.

Class 1 Supports Total No.	No. Scheduled	%
268	76	28.3
Class 2 Supports		
152	54	35.2
Class 3 Supports		
473	128	27.0