



Florida Power & Light Company, 6501 S. Ocean Drive, Jensen Beach, FL 34957

March 13, 2008

L-2008-043
10 CFR 50.4
10CFR 50.55a

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

Re: St. Lucie Unit 1
Docket No. 50-335
Fourth Ten-Year Inservice Inspection Interval
ISI Program Plan – Revision 0

The fourth 10-year inservice inspection (ISI) interval for St. Lucie Unit 1 begins on February 11, 2008, and ends on Feb 10, 2018. Pursuant to CFR 50.55a(g)(4)(ii) and IWA-1400(c), the attached outlines the ISI program plan for St. Lucie Unit 1 and is based on the requirements of the 2001 Edition of ASME Section XI with Addenda through 2003 as modified by 10 CFR 50.55a.

Attached is one copy of the Fourth Interval ISI Program Plan.

Please contact Ken Frehafer at (772) 467-7748 if there are any questions about this submittal.

Very truly yours,

A handwritten signature in black ink, appearing to read 'Gordon L. Johnston', is written over a large, stylized circular flourish.

Gordon L. Johnston
Site Vice President
St. Lucie Plant

Attachment – 4th Interval-ISI-PSL-1-Program Plan Rev. 0 – 55 pages

GLJ/KWF

A047
NRR

Florida Power and Light Company
Nuclear Engineering Department
Component, Support & Inspections Group
Code & Inspections Section
700 Universe Blvd.
Juno Beach, Florida 33408

St. Lucie Nuclear Power Plant Unit 1

Fourth Inservice Inspection Interval

Program

for

St. Lucie Nuclear Power Plant
6501 South Highway A1A
Jensen Beach, Florida 34957

Commercial Service Date: December 21, 1976

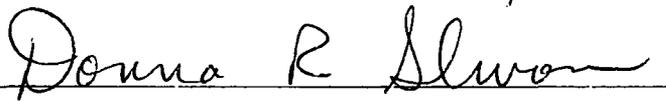
NRC Docket Number: 50-335

Document Number: 4th Interval-ISI-PSL-1-Program Plan Rev. 0

Prepared by:



Reviewed by:



Reviewed by:


Supervisor Codes & Inspections Section

Approved by:



Manager-Component Support & Inspections

Reviewed by:

 2-19-08

Authorized Nuclear Inservice Inspector

Record of Revision

Rev No.	Date	Affected Pages	Reason for Revision
0	February 11, 2008	Entire Document	Original Issue Fourth Ten Year Inspection Program

List of Effective Pages

Section	Pages	Date
Program Text	1-51	February 11, 2008
Appendices	52	February 11, 2008
Appendix A	53-54	February 11, 2008
Relief Request 1	(1 page)	February 11, 2008

Table of Contents

Cover Page.....	1
Record of Revision.....	2
List of Effective Pages	3
Table of Contents.....	4
List of Tables.....	7
Abbreviations	8
Abstract.....	11
1.0 Introduction	12
1.1 ISI Program Development.....	12
1.2 Other ISI Programs.....	12
1.2.1 Inservice Testing Program (IST).....	12
1.2.2 Steam Generator (SG) Eddy Current (ET) Program	12
1.2.3 Snubber Program	12
1.2.4 Pressure Test Program	12
1.2.5 Repair and Replacement Program.....	13
1.2.6 Metal Containment Inservice Inspection Program (IWE).....	13
1.3 Construction Permit.....	13
1.4 Commercial Service Date.....	13
1.5 Background	13
1.5.1 Preservice Inspection	13
1.5.2 First Inspection Interval	13
1.5.3 Second Inspection Interval	14
1.5.4 Third Inservice Inspection Interval.....	14
1.5.5 Fourth Inservice Inspection Interval	14
1.6 Applicable Editions and Addenda to Section XI	15
1.6.1 10CFR50.55a Limitations and Modifications	15
1.7 System Classification	18
1.7.1 System Classifications.....	18
1.7.2 Optional Construction	18
1.7.3 Containment Penetrations	18
1.7.4 Class MC Components.....	18
1.8 Inspection Program	19
1.9 Regulatory Guides.....	19
1.10 ASME Section XI Code Cases	20
1.11 Branch Technical Positions	21
1.12 Standard Review Plan.....	21
1.13 Plant Life Extension.....	22
1.14 Successive Examinations.....	22
1.15 NDE Examinations and Personnel Qualification/Certification	22
1.15.1 Alternative Examinations (IWA-2240).....	22
1.15.2 Certification and Recertification (IWA-2314).....	22
1.15.3 Alt. Qualifications of VT-2 Visual Examination Personnel (IWA-2316)	22
1.15.4 Alt. Qualifications of VT-3 Visual Examination Personnel (IWA-2317)	23
1.15.5 Appendix VIII Requirements.....	23

2.0	Risk Informed (RI) Requirements.....	23
3.0	Development of Class 1 Examination Plan	24
3.1	Class 1 Code Exemptions	24
3.2	Component Examination Basis	24
3.2.1	Category B-A	25
3.2.2	Category B-B	26
3.2.3	Category B-D	27
3.2.4	Category B-F	28
3.2.5	Category B-G-1.....	28
3.2.6	Category B-G-2.....	29
3.2.7	Category B-J.....	30
3.2.8	Category B-K.....	30
3.2.9	Category B-L-1	31
3.2.10	Category B-L-2	31
3.2.11	Category B-M-1	31
3.2.12	Category B-M-2	32
3.2.13	Category B-N-1.....	32
3.2.14	Category B-N-2.....	33
3.2.15	Category B-N-3.....	33
3.2.16	Category B-O.....	33
3.2.17	Category B-P.....	33
3.2.18	Category B-Q.....	34
4.0	Development of Class 2 Examination Plan	34
4.1	Class 2 Code Exemptions	34
4.1.1	IWC-1221.....	34
4.1.2	IWC-1222.....	35
4.1.3	IWC-1223.....	35
4.2	Component Examination Basis	36
4.2.1	Category C-A	36
4.2.2	Category C-B.....	36
4.2.3	Category C-C.....	37
4.2.4	Category C-D.....	38
4.2.5	Category C-F-1	38
4.2.6	Category C-F-2.....	39
4.2.7	Category C-F-3.....	39
4.2.8	Category C-F-4.....	39
4.2.9	Category C-G.....	40
4.2.10	Category C-H.....	40
5.0	Development of Class 3 Examination Plan	40
5.1	Class 3 Code Exemptions and Exclusions	40
5.1.1	IWD-1220.....	41
5.1.2	IWD-5221.....	41
5.2	Component Examination Basis	41
5.2.1	Category D-A	42
5.2.2	Category D-B.....	42

6.0	IWE Metal Containment Requirements	42
7.0	Development of Component Supports Examination Plan	43
7.1	Code Exemptions for Supports	43
7.2	Support Examination Basis	43
7.2.1	Category F-A	43
7.2.2	Item Numbers	44
7.3	Snubbers	44
8.0	IWL Concrete Containment Requirements	44
9.0	Augmented and Other Programs	45
9.1	Class 1	45
9.1.1	Reactor Coolant Pump	45
9.1.2	Primary System Butt Weld I & E Guidelines (MRP-139)	45
9.2	Class 2	45
9.2.1	Standard Review Plan 6.6	45
9.2.2	NRC Bulletin 79-13	46
10.0	Evaluation/Acceptance Criteria	46
10.1	Supplemental Examinations	46
10.2	Additional Examinations	46
10.3	Successive Inspections for Components	46
10.3.1	Class 1 Components	47
10.3.2	Class 2 Components	47
10.3.3	Component Supports	47
11.0	Repair/Replacement Activities	47
12.0	Relief Requests	47
13.0	Boundary Classifications	48
14.0	Addition of Welds, Components, and Component Supports	48
15.0	Records	49
15.1	General	49
15.2	Nondestructive Examinations	49
15.3	Final Reports	49
15.4	Inservice Inspection Summary Report	49
15.5	NIS-2 or NIS-2A Reports	49
15.6	NIS-BB Form	49
16.0	References	50

Appendices	52
Appendix A-Relief Requests	53
Relief Request No. 1, Risk-Informed ISI Program For Class 1 Piping Welds	1 pages

List of Tables

Table 1	Fourth Inservice Interval Dates	14
Table 2	USNRC Regulatory Guides	19
Table 3	Applicable Code Cases	20
Table 4	Listing of Class 1 Valves by Group	32
Table 5	Program Boundary Drawings	48
Table 6	Relief Requests	54

Abbreviations

ANII	Authorized Nuclear Inservice Inspector
ANSI	American Nuclear Standard Institute
AOV	Air Operated Valve
ASME	American Society of Mechanical Engineers
B&PV	Boiler and Pressure Vessel Code
BC	Branch Connection
CCW	Component Cooling Water
CRDM	Control Rod Drive Mechanism
CFR	Code of Federal Regulations
CH	Charging System
CHR	Containment Heat Removal
CPS	Code Programs Section
CRS	Code Required Surface
CSI	Component Support and Inspections
CS	Containment Spray
CV	Control Valve
CVCS	Chemical and Volume Control System
CW	Clockwise
ECCS	Emergency Core Cooling System
ECT	Eddy Current Testing
FPL	Florida Power & Light Company
FPS	Fuel Pool System
FSAR	Final Safety Analysis Report

Abbreviations

FW	Feedwater System
HPSI	High Pressure Safety Injection
HS	High Stress
HX	Heat Exchanger
ID	Identification
IE	Inspection and Enforcement
ISI	Inservice Inspection
IST	Inservice Testing
JPN	Juno Nuclear Engineering
LER	License Event Report
LPSI	Low Pressure Safety Injection
LS	Longitudinal Seam Weld
MOV	Motor Operated Valve
MSIV	Main Steam Isolation Valve
MS	Main Steam System
MT	Magnetic Particle Testing (Examination)
N/A	Not Applicable
NDE	Nondestructive Examination
NPS	Nominal Pipe Size
PDS	Program Boundary Drawings
P&ID	Piping and Instrumentation Diagram
PSI	Preservice Inspection
PSL-1	St. Lucie Unit 1

Abbreviations

PT	Liquid Penetrant Testing
PWR	Pressurized Water Reactor
QA	Quality Assurance
QC	Quality Control
QP	Quality Procedure
PZR	Pressurizer
RCS	Reactor Coolant System
RCP	Reactor Coolant Pump
RHR	Residual Heat Removal
RPV	Reactor Pressure Vessel
SD	Structural Discontinuity
SDC	Shutdown Cooling
SDCHx	Shutdown Cooling Heat Exchanger
SG	Steam Generator
SRP	Standard Review Plan
SIS	Safety Injection System
t	Thickness of Component, Pipe, etc.
TE	Terminal End
UFSAR	Updated Final Safety Analysis Report
USNRC	United States Nuclear Regulatory Commission
UT	Ultrasonic Testing (Examination)
VT	Visual Testing (Examination)

Abstract

This document describes the Class 1, 2, and 3 Inservice Inspection (ISI) Program Fourth 10-Year Inservice Inspection Interval for St. Lucie Nuclear Power Plant, Unit No. 1.

The program was developed and prepared to meet the requirements of the American Society of Mechanical Engineers, Boiler and Pressure Vessel Code, Section XI, 2001 Edition with 2003 Addenda, and 10CFR50.55a for Class 1, 2, and 3 systems. This program is subject to the limitations and modifications of 10CFR50.55a(b)(2), except design and access provisions and preservice examination requirements. This program identifies those components and/or systems and their supports that are subject to examination and testing.

Where applicable, ASME Code Cases are incorporated. The code cases used are either approved through publication in 10CFR50.55a, NRC Regulatory Guide 1.147, or are included in a Relief Request.

Other alternatives to the Code requirements have been included as relief requests, or they reference specific NRC regulations. Areas where Code compliance is not possible are also included as relief requests, along with proposed alternatives.

This document implements a Risk-Informed selection criterion for Examination Category B-F and B-J piping welds. This alternative to the requirements of Section XI was submitted to the NRC during the fourth 10-year interval as Relief Request No. 1.

The ISI Programs for Containment, Inservice Pressure Tests, and Snubber Examinations are covered under separate plant documents. General requirements for these programs are included for completeness.

Additional requirements for augmented examinations are addressed. The ISI Program does not require these examinations, but rather are included and administered at the request of the plant.

1.0 Introduction

St. Lucie Unit 1 is a two-loop Combustion Engineering Pressurized Water Nuclear Power Plant. Florida Power and Light Company (FPL) is the Owner of Record.

1.1 ISI Program Development

This document details the Inservice Inspection Program of Class 1, 2, and 3 components for the Fourth 10-Year Inservice Inspection Interval for St. Lucie Nuclear Power Plant, Unit No. 1.

The schedule of examinations is located in document 4th-Interval-ISI-PSL-1-Schedule. The isometrics used for locations of welds during examinations are located in ISI-PSL-1-Sketches. The schedule and isometrics are separate controlled documents.

1.2 Other ISI Programs

This document does not address every aspect of Inservice Inspection. The following details the examination and testing requirements of those parts covered by other documents.

1.2.1 Inservice Testing Program (IST)

The program for Inservice Testing of Class 1, Class 2, and Class 3 Pumps and Valves is covered by the St. Lucie Inservice Testing (IST) Program, which is submitted and approved separately.

1.2.2 Steam Generator (SG) Eddy Current (ET) Program

The Steam Generator (SG) Eddy Current Testing (ET) Program is governed by the requirements of St. Lucie Plant Technical Specifications, Section 3.4.5 and is administered separately.

1.2.3 Snubber Program

The program for the examination and testing of safety-related snubbers is addressed by St. Lucie Plant procedures.

1.2.4 Pressure Test Program

The program for Inservice System Pressure Testing of ASME Code Class 1, Class 2, and Class 3 components and systems is addressed by St. Lucie Plant procedures.

1.2.5 Repair and Replacement Program

The Repair and Replacement Program for ASME Code Class 1, 2, and 3 component and systems is addressed by St. Lucie Plant procedures.

1.2.6 Metal Containment Inservice Inspection Program (IWE)

The Metal Containment Inservice Inspection Program, ISI/IWE-PSL-1/2-Program, controls the examination of Containment Building under Subsection IWE and is administered separately.

1.3 Construction Permit

The Construction permit for St. Lucie Nuclear Power Plant Unit 1 was issued during July 1970. Florida Power and Light Company (FPL) is the Owner of Record.

1.4 Commercial Service Date

The Operating License for St. Lucie Nuclear Power Plant Unit 1 was issued during March 1976.

The Commercial Service Date for St. Lucie Nuclear Power Plant Unit 1 is December 21, 1976.

1.5 Background

St. Lucie Unit 1 has been examined to the requirements of different Editions and Addenda of Section XI. The applicable Edition of Section XI was mandated by changes to 10 CFR 50.55a at 10-year intervals or earlier.

1.5.1 Preservice Examinations

The Preservice Inspection was conducted in accordance with the 1970 Edition with Addenda through Winter 1970 of the ASME B&PV Code, Section XI.

1.5.2 First Inservice Inspection Interval

During the first Inservice Inspection Interval, the first inservice inspection period was conducted in accordance with the 1970 Edition with Addenda through Winter 1970 Addenda of the ASME Boiler and Pressure Vessel (B&PV) Code, Section XI. The second and third periods were conducted in accordance with the 1974 Edition with Addenda through Summer 1975 of ASME B&PV Code, Section XI.

The Reactor Pressure Vessel (RPV) examinations were conducted in accordance with the 1977 Edition with Addenda through Summer 1978.

System Pressure tests were conducted in accordance with the 1980 Edition with Addenda through Winter 1981.

The first interval for St. Lucie Unit 1 began on February 11, 1978 and ended on February 10, 1988.

1.5.3 Second Inservice Inspection Interval

The Second Ten Year Inservice Inspection Interval was conducted in accordance with the 1983 Edition with Addenda through Summer 1983 of Section XI. The second interval ran from February 11, 1988 to February 10, 1998.

1.5.4 Third Inservice Inspection Interval

The Third Ten Year Inservice Inspection Interval was conducted in accordance with the 1989 Edition with No Addenda of Section XI. The third interval ran from February 11, 1998 to February 10, 2008.

1.5.5 Fourth Inservice Inspection Interval

The Fourth Interval will be conducted in accordance with the 2001 Edition of ASME Section XI with Addenda through 2003 as modified by 10CFR50.55a.

The Fourth 10-Year Inservice Inspection Interval is divided into three successive Inspection periods as determined by calendar years of plant service within the interval.

The dates of the Fourth Interval and Periods are as follows:

Fourth Inservice Inspection Interval		
Period	Start	End
4 th Interval	2/11/2008	2/10/2018
1st Period	2/11/2008	2/10/2011
2nd Period	2/11/2011	2/10/2015
3rd Period	2/11/2015	2/10/2018

Table 1

1.6 Applicable Editions and Addenda to Section XI

In accordance with 10CFR50.55a(b)(2), in effect 2-11-2007, the Inservice Inspection Requirements for the Fourth Inservice Inspection interval applicable to Class 1, 2, and 3 components at St. Lucie Unit 1 are based on the 2001 Edition with Addenda through 2003 of ASME Section XI.

Portions of the ISI Program are based on other Editions and Addenda of Section XI, Relief Requests, the Code of Federal Regulations, Regulatory Guides, and Plant Technical Specifications and commitments. Where this has occurred, it is documented within this Program.

1.6.1 Code of Federal Regulations Modifications and Limitations

The following mandatory and optional Code of Federal Regulations Limitations and Modifications are included in 10CFR50.55a as of January 1, 2008. Only those 10CFR50.55a Limitations and Modifications applicable to the 2001 Edition with 2003 Addenda of Section XI nondestructive examination requirements for Class 1, 2, and 3 components and component supports are listed. Note that mandatory modification 10CFR50.55a(b)(2)(xxi)(C) was removed by the Final Rule dated September 29, 2005 (70FR188), effective on October 31, 2005. These Limitations and Modifications were reviewed for inclusion in the ISI Program Plan and dispositioned as follows:

- 1.6.1.1 St. Lucie 1 will not implement the option in 10CFR50.55a(b)(2)(i), to utilize ASME Section XI, 1974 Edition with Addenda through Summer 1975 and ASME Section XI, 1977 Edition with Addenda through Summer 1978.
- 1.6.1.2 St. Lucie 1 will not utilize the option in 10CFR50.55a(b)(2)(ii), to examine Class 1 piping per ASME Section XI, 1974 Edition with the Summer 1975 Addenda. Because St. Lucie 1 has a RI-ISI application for Class 1 piping, this modification is not applicable.
- 1.6.1.3 As allowed by 10CFR50.55a(b)(2)(iii), steam generator tubing at St. Lucie 1 will be examined in accordance with plant Technical Specification 3/4.4.5 in lieu of Article IWB-2000.
- 1.6.1.4 The St. Lucie 1 design does not include a concrete containment subject to ASME Section XI, Subsection IWL requirements, therefore the mandatory modification in 10CFR50.55a(b)(2)(viii) does not apply to St. Lucie 1.
- 1.6.1.5 The St. Lucie 1 design includes a metal containment subject to ASME Section XI, Subsection IWE requirements, therefore the mandatory modification in 10CFR50.55a(b)(2)(ix) applies to St. Lucie 1. These Subsection IWE requirements and 10CFR50.55a requirements are addressed under Containment ISI Program ISI/IWE-PSL-1/2-Program.
- 1.6.1.6 As required by 10CFR50.55a(b)(2)(x), St. Lucie 1 will apply the station 10CFR50 Appendix B Quality Assurance Program of NQA-1 to Section XI activities.

-
- 1.6.1.7 As required by 10CFR50.55a(b)(2)(xi), St. Lucie 1 will apply the rules in IWB-1220, "Components Exempt from Examination," of Section XI, 1989 Edition in lieu of the IWB-1220 requirements in Section XI, 2001 Edition with 2003 Addenda.
- 1.6.1.8 As allowed by 10CFR50.55a(b)(2)(xiv), for Appendix VIII Qualified Personnel, St. Lucie 1 will use the annual practice requirements in VII-4240 of Section XI Appendix VII in place of the 8 hours of annual hands-on training (when deemed appropriate) as discussed in 10CFR50.55a(b)(2)(xiv). When utilizing this option, the annual practice requirements will be performed on material or welds that contain cracks, or by analyzing prerecorded data from material or welds that contain cracks. All training will be completed no earlier than 6 months prior to performing ultrasonic examinations.
- 1.6.1.9 St. Lucie 1 will implement the Appendix VIII specimen set and qualification provisions in paragraphs (b)(2)(xv)(A) to (b)(2)(xv)(M) in accordance with 10CFR50.55a(b)(2)(xv). Note that the alternative requirements of Code Case N-695 will be utilized in lieu of those in Appendix VIII, Supplement 10.
- 1.6.1.10 As required by 10CFR50.55a(b)(2)(xvi)(A) and 10CFR50.55a(b)(2)(xvi)(B), St. Lucie 1 examinations performed from one side of a ferritic vessel weld and examinations performed from one side of a ferritic or stainless steel pipe will be conducted with equipment, procedures, and personnel that have demonstrated proficiency with single side examinations.
- 1.6.1.11 As required by 10CFR50.55a(b)(2)(xviii)(A), Level I and II nondestructive examination personnel at St. Lucie 1 will be recertified on a 3-year interval in lieu of the 5-year interval specified in IWA-2314(a) and IWA-2314(b) of the 2001 Edition with 2003.
- 1.6.1.12 As required by 10CFR50.55a(b)(2)(xviii)(B), paragraph IWA-2316 of the 2001 Edition with 2003 Addenda will only be used to qualify personnel that observe for leakage during system leakage and hydrostatic tests conducted in accordance with IWA-5211(a) and (b).
- 1.6.1.13 As required by 10CFR50.55a(b)(2)(xviii)(C), when qualifying visual examination personnel for VT-3 visual examinations under paragraph IWA-2317 of the 2001 Edition with 2003, the proficiency of the training must be demonstrated by administering an initial qualification examination and administering subsequent examinations on a 3-year interval.
- 1.6.1.14 As required by 10CFR50.55a(b)(2)(xix), St. Lucie 1 will apply the rules in IWA-2240, "Alternative Examinations," of Section XI, 1997 Addenda in lieu of the IWA-2240 requirements in Section XI, 2001 Edition with 2003 Addenda for the substitution of alternative examination methods.

- 1.6.1.15 As required by 10CFR50.55a(b)(2)(xxi)(A), the provisions of Table IWB-2500-1, Examination Category B-D, Full Penetration Welded Nozzles in Vessels, Items Nos. B3.120 and B3.140 of Inspection Program B in the 1998 Edition will be applied by St. Lucie 1. As allowed by 10CFR50.55a(b)(2)(xxi)(A), a visual examination with enhanced magnification that has a resolution sensitivity to detect a 1-mil width wire or crack, utilizing the allowable flaw length criteria in Table IWB-3512-1, 2001 Edition with the 2003 Addenda may be performed in place of an ultrasonic examination.
- 1.6.1.16 The requirements of 10CFR50.55a(b)(2)(xxi)(B) for Table IWB-2500-1, Examination Category B-G-2, Item B7.80, Pressure Retaining CRD Housing Bolting are not applicable to St. Lucie 1. The St. Lucie 1 design has threaded connections with canopy seals rather than Item No. B7.80 CRD bolting.
- 1.6.1.17 St. Lucie 1 will not implement the provision in IWA-2220, "Surface Examination" that allows the use of an ultrasonic examination method. The use of this provision is prohibited by 10CFR50.55a(b)(2)(xxii). Based on the RI-ISI application on Class 1 piping welds, St. Lucie 1 does not need to perform surface examinations on this piping.
- 1.6.1.18 10CFR50.55a(b)(2)(xxiv) prohibits the use of Appendix VIII and the supplements to Appendix VIII and Article I-3000 in the 2002 Addenda and the 2003 Addenda of the 2001 Edition. These ASME Section XI, Mandatory Appendix VIII requirements are addressed in the FPL Appendix VIII Program.
- 1.6.1.19 10CFR50.55a(b)(2)(xxvii) modifies the requirements of IWA-5242 for insulation removal from 17-4 PH or 410 stainless steel studs or bolts aged at a temperature below 1100°F or those having a Rockwell Method C hardness value above 30, and from A-286 stainless steel studs or bolts preloaded to 100,000 pounds per square inch or higher. These requirements will be implemented in accordance with the FPL Bolted Joint Program.
- 1.6.1.20 St. Lucie 1 will utilize the option in 10CFR50.55a(b)(3)(v) to implement Subsection ISTD, "Inservice Testing of Dynamic Restraints (Snubbers) in Light-Water Reactor Power Plants," ASME OM Code, 2001 Edition through the 2003 Addenda in place of the requirements for snubbers in Section XI, IWF-5200(a) and (b) and IWF-5300(a) and (b).
- 1.6.1.21 St. Lucie 1 will not implement the option in 10CFR50.55a(g)(4)(iii) to perform surface examinations on High Pressure Safety Injection System welds specified in Table IWB-2500-1, Examination Category B-J, Item Numbers B9.20, B9.21, and B9.22. Examination of these welds is being addressed in accordance with the Risk-Informed ISI Program application.

1.7 System Classification

System safety classifications, design and fabrication requirements meet the intent of 10 CFR 50.2 and Regulatory Guide 1.26, as identified within the St. Lucie Unit 1 Updated Final Safety Analysis Report (UFSAR).

Water, steam and radioactive containing components (other than turbines and condensers) are designated Quality Group A, B, C, or D in accordance with their importance to safety.

1.7.1 System Classifications

Class 1 system boundaries are developed based on 10 CFR 50.2(v), and the St. Lucie Unit 1 UFSAR. Class 2 and 3 system boundaries are developed based on Regulatory Guide 1.26 and the St. Lucie Unit 1 UFSAR.

System Quality Group classification interfaces between components of different quality groups are designated on various system piping and instrument diagrams (P&ID's) (see Section 13).

Vessels, piping, pumps and valves were built and installed according to the rules of ASME Section III and USA Standard B31.7 for those systems classified as Class 1, 2, and 3.

1.7.2 Optional Construction

Optional construction of a component within a system boundary to a classification higher than the minimum class established in the component design specification does not affect the overall system classification by which the applicable rules of Section XI are determined.

1.7.3 Containment Penetrations

Portions of piping penetrating the containment vessel which are required to be constructed to Class 1 or 2 rules for piping and which may differ from the classification of the balance of the piping system, may not affect the overall system classification that determines the applicable rules of Section XI.

1.7.4 Class MC Components

10 CFR 50.55a was amended, effective November 22, 1999, to address the requirements of ISI of metal containment buildings. The program for IWE examinations specifically defines the classification of those areas examined.

1.8 Inspection Program

Examinations for Class 1, 2, and 3 components are scheduled in accordance with Inservice Inspection Program B (IWB-2412 and Table IWB-2412-1). Examinations are scheduled based upon previous 10-Year intervals, to the extent practical and within the limits of Code Case N-624. Class 1 piping weld examinations are based on the Risk-Informed selection criteria, see Relief Request No. 1.

In order to be consistent in determining percentages, FPL chose to multiply the number of examination areas by the minimum or maximum percentages of Program B and rounding to the nearest whole number. This will be the number FPL uses for determining how many welds/components will be examined each period.

The Inservice Inspection Schedule Tables for inservice examinations of the major components of St. Lucie 1 are located in the 4th-Interval-ISI-PSL-1-Schedule. The 4th-Interval-ISI-PSL-1-Schedule includes tables that have brief descriptions of each component subject to examination, the required Code references, and any other pertinent information that is useful for determining examination requirements. The information and summary tables located in 4th-Interval-ISI-PSL-1-Schedule satisfy the requirements of IWA-2420(b)(1) through (6) respectively.

1.9 Regulatory Guides

The Regulatory Guides determined to be applicable to PSL-1 for purposes of this ISI Program are listed below:

USNRC Regulatory Guides	
1.14 Revision 1	Reactor Coolant Pump Flywheel Integrity
1.26	Quality Group Classifications
1.65	Materials and Inspections for Reactor Vessel Closure Studs
1.83	Inservice Inspection of Pressurized Water Reactor Steam Generator Tubes, Revision 1, July 1985
1.147	Section XI Code Case Acceptability

Table 2

1.10 ASME Section XI Code Cases

Section XI Code Cases applicable to the ISI Program are shown below. Each of the Code Cases has been approved and listed in USNRC Regulatory Guide 1.147, or are the subject of a relief request. When Code Cases are approved for use through a relief request, and are later added to Regulatory Guide 1.147, FPL may continue to use them in accordance with the Regulatory Guide.

Applicable Code Cases	
Number	Description
N-432-1	Repair Welding Using Automatic or Machine Gas Tungsten-Arc Welding (GTAW) Temper Bead Technique, Section XI, Division 1 (without conditions Reg. Guide 1.147, Rev. 15)
N-460	Alternate Examination Coverage for Class 1 and Class 2 Welds, Section XI, Division 1 (without conditions Reg. Guide 1.147, Rev. 15)
N-504-3	Alternative Rules for Repair of Class 1, 2, and 3 Austenitic Stainless Steel Piping, Section XI, Division 1 (with conditions Reg. Guide 1.147, Rev. 15)
N-508-3	Rotation of Serviced Snubbers and Pressure Relief Valves for the Purpose of Testing, Section XI, Division 1 (without conditions Reg. Guide 1.147, Rev. 15)
N-513-2	Evaluation Criteria For Temporary Acceptance of Flaws in Moderate Energy Class 2 or 3 Piping, Section XI Division 1, (without conditions Reg. Guide 1.147, Rev. 15)
N-526	Alternative Requirements for Successive Inspections of Class 1 and 2 Vessels, Section XI, Division 1 (without conditions Reg. Guide 1.147, Rev. 15)
N-532-4	Alternative Requirements to Repair and Replacement Documentation Requirements and Inservice Summary Report Preparation and Submission as Required by IWA-4000 and IWA-6000, Section XI, Division 1 (without conditions Reg. Guide 1.147, Rev. 15)
N-552	Alternative Methods - Qualification for Nozzle Inside Radius Section from the Outside Surface, Section XI, Division 1 (with conditions Reg. Guide 1.147, Rev. 15)
N-566-2	Corrective Action for Leakage Identified at Bolted Connections, Section XI, Division 1 (without conditions Reg. Guide 1.147, Rev. 15)
N-586-1	Alternative Examination Requirements for Classes 1, 2, and 3 Piping Component and Supports, Section XI, Division 1 (without conditions Reg. Guide 1.147, Rev. 15)
N-593	Examination for Steam Generator Nozzle-to-Vessel Welds, Section XI, Division 1 (with conditions Reg. Guide 1.147, Rev. 15)
N-600	Transfer of Qualifications Between Owners, Section XI, Division 1 (without conditions Reg. Guide 1.147, Rev. 15)
N-613-1	Ultrasonic Examination of Penetration Nozzles in Vessels, Examination Category B-D, Item Nos. B3.10 and B3.90, reactor Nozzle-to-Vessel Welds, Figs. IWB-2500-7(a), (b), and (c), Section XI, Division 1, (without conditions Reg. Guide 1.147, Rev. 15)

Applicable Code Cases	
Number	Description
N-624	Successive Inspections, Section XI, Division 1 (without conditions Reg. Guide 1.147, Rev. 15)
N-638-1	Similar and Dissimilar Metal Welding Using Ambient Temperature Machine GTAW Temper Bead technique, Section XI, Division 1 (with conditions Reg. Guide 1.147, Rev. 15)
N-648-1	Alternative Requirements for Inner Radius Examination of Class 1 Reactor Vessel Nozzles, Section XI, Division 1 (with conditions Reg. Guide 1.147, Rev. 15)
N-651	Ferritic and Dissimilar Metal Welding Using SMAW Temper Bead Technique Without Removing the Weld Bead Crown for the First Layer Section XI, Division 1 (without conditions Reg. Guide 1.147, Rev. 15)
N-661	Alternative Wall Thickness Restoration For Class 2 and 3 Carbon Steel Raw Water Service (with conditions Reg. Guide 1.147, Rev. 15)
N-685	Lighting Requirements for Surface Examination (without conditions Reg. Guide 1.147, Rev. 15)
N-686	Alternative Requirements for Visual Examinations, VT-1, VT-2, and VT-3 (without conditions Reg. Guide 1.147, Rev. 15)
N-695	Qualification Requirements for Dissimilar Metal Piping Welds, Section XI, Division 1 (without conditions Reg. Guide 1.147, Rev. 15)

Table 3

1.11 Branch Technical Position MEB 3-1

Branch Technical Position MEB 3-1 required FPL to determine where piping failure in fluid systems outside of the containment would have an adverse effect on other components and equipment. FPL completed a detailed engineering analysis of the Residual Heat Removal, Chemical Volume Control, Main Steam, Main Feedwater, Auxiliary Feedwater, and Steam Generator Blowdown systems.

The engineering analysis determined that portions of the Main Steam system needed to be included in the ISI examination schedule. These included those supports and welds to the first support beyond the Class 2 boundary. Appropriate welds and supports will be examined.

1.12 Standard Review Plan 6.6

FPL will examine the applicable welds in the Main Steam and Feedwater systems in accordance with the requirements of USNRC Standard Review Plan 6.6, Section I.8, Augmented Inservice Inspection of Class 2 Welds.

1.13 Plant Life Extension

The ISI Program will implement the FPL commitment to manage the effects of aging for systems/structures/components within the scope of license renewal. The Section XI Program is credited as an aging management program for license renewal. As such, changes to the Section XI Program shall consider License Renewal requirements described in the "Operating License Renewal" section of the St. Lucie Unit 1 Design Basis Document, DBD-SLI-OLR-1, Volume 20-10, "Operating License Renewal."

1.14 Successive Examinations

The sequence of component examinations may be modified in accordance with the requirements of ASME Code Case N-624. This allows FPL to alter the sequence of examinations to allow the examination of several components in an area during one outage instead of over several outages. This will reduce costs and radiation exposure. The percentage requirements of IWB-2412, IWC-2412, IWD-2412, and IWF-2410 (Program B) will be satisfied. Due to the implementation of the Risk-Informed ISI Program (see Relief Request No. 1), the scheduling of piping weld examinations will not follow Code requirements, as the selection criteria are different. However, the percentage requirements of IWB-2412 for those components selected will be maintained. The modified examination schedule is designed to optimize the performance of work within the plant to reduce radiation dose, eliminate interference with other work, and reduce costs.

1.15 NDE Examinations and Personnel Qualification/Certification

All NDE will be performed in accordance with the requirements of the 2001 Edition to 2003 Addenda with the following modifications as required by 10CFR50.55a.

1.15.1 Alternative Examinations (IWA-2240)

The provisions for the substitution of alternative examination methods, a combination of methods, or newly developed techniques in the 1997 Addenda of IWA-2240 must be applied. The provisions in IWA-2240 and IWA-4520(c), 2001 Edition with the 2003 Addenda are not approved for use, [Reference 10CFR50.55a(b)(2)(xix)].

1.15.2 Certification and Recertification (IWA-2314)

Level I and II nondestructive examination personnel, and personnel qualified under the American Society for Nondestructive Testing Central Certification Program and ANSI/ASNT CP-189 shall be recertified on a 3-year interval in lieu of the 5-year interval specified in IWA-2314(a) and IWA-2314(b), [Reference 10 CFR 50.55a(b)(2)(xviii)(A)].

1.15.3 Alternative Qualifications of VT-2 Visual Examination Personnel (IWA-2316)

Paragraph IWA-2316 may only be used to qualify personnel that observe for leakage during system leakage and hydrostatic tests conducted in accordance with IWA-5211(a) and (b) of the 2001 Edition with the 2003 Addenda, [Reference 10 CFR 50.55a(b)(2)(xviii)(B)].

1.15.4 Alternative Qualifications of VT-3 Visual Examination Personnel (IWA-2317)

In addition to the requirements of Paragraph IWA-2317, the proficiency of the training required under IWA-2317 must be demonstrated by administering an initial qualification examination and administering re-certification examinations on a 3-year interval, [Reference 10 CFR 50.55a(b)(2)(xviii)(C)].

1.15.5 Appendix VIII Requirements

1.15.5.1 10CFR50.55a(b)(2)(xiv) requires that all personnel qualified for performing ultrasonic (UT) examinations in accordance with Appendix VIII shall receive additional annual hands-on training. This requirement consists of at least eight hours of hands on training on samples containing cracks no earlier than six months prior to performing examinations at a licensee's facility. St. Lucie will comply with these additional training requirements for personnel performing Section XI Appendix VIII, UT examinations. Note that this requirement is also discussed in Section 1.6.1.8.

1.15.5.2 In September 1999, 10CFR50.55a incorporated an expedited implementation schedule for ASME Section XI, Appendix VIII. FPL originally implemented the requirements in accordance with the expedited schedule within the third 10-year interval for St. Lucie Unit 1. FPL will implement the requirements of ASME Section XI, Appendix VIII, as modified by 10CFR50.55.a (Section 1.6.1.18).

2.0 Risk-Informed (RI) ISI Requirements

PSL-1 is continuing to implement an alternative Risk-Informed Inservice Inspection (RI-ISI) Program for Class 1 piping welds. During the 3rd Inspection Interval, the alternative Risk-Informed Inservice Inspection Program was submitted by letter dated July 30, 2003 (L-2003-187) and supplemented by letters dated December 4, 2003 (L-2003-300) and January 28, 2004 (L-2004-016) and approved by the USNRC, SER dated March 25, 2004, "St. Lucie Nuclear Plant, Unit No. 1- Relief Request 19 Regarding Risk-Informed Inservice Inspection Program (TAC No. MC0244). This alternative to the requirements of Section XI has been re-submitted to the NRC for review and approval for the fourth 10-year interval as Relief Request No. 1 (L-2007-195). The RI-ISI program is a living program requiring feedback of new, relevant information to ensure the appropriate identification of high safety significance piping locations. The originally submitted RI-ISI program was evaluated and submitted in accordance with NEI-04-05, Living Program Guidance To Maintain Risk-Informed Inservice Inspection Programs For Nuclear Plant Piping Systems," published April 2004.

3.0 Development of the Class 1 Examination Plan.

Plant controlled isometric, P&ID's, component drawings, and plant walkdowns were used to develop the ISI drawings and the scope of examinations. During examinations, drawings will be used to locate and identify each component. Other plant controlled drawings or documents will be used when additional information is required.

Refer to the 4th-Interval-ISI-PSL-1-Schedule for a complete listing of components subject to examination and the proposed examination schedule.

3.1 Class 1 Code Exemptions

10CFR50.55a(b)(2)(xi), in effect 1-1-2008, requires the exemption criteria found in Paragraph IWB-1220 of the 1989 Edition of Section XI in lieu of the 2001 Edition with Addenda through 2003.

IWB-1220 –Components Exempt from Examination (1989 Edition of Section XI)

The following components (or parts of components) are exempted from the volumetric and surface examination requirements of IWB-2500:

- (a) Components (Notes 1 and 2) that are connected to the reactor coolant system and part of the reactor coolant pressure boundary (Note 3), and that are of such a size and shape so that upon postulated rupture the resulting flow of coolant from the reactor coolant system under normal plant operating conditions is within the capacity of makeup systems which are operable from on-site emergency power;
- (b) (1)Piping of 1" nominal pipe size and smaller, except steam generator tubing;
(2)Components and their connections in piping (Note 4) of 1" nominal pipe size and smaller;
- (c) Reactor Vessel head connections and associated piping, 2" nominal pipe size and smaller, made inaccessible by control rod drive penetrations.

Note 1:Refer to 10 CFR 50, Section 50.55a(e)(2), revised March 15, 1984.

Note 2:The exemptions from examination in IWC-1220 may be applied to those components permitted to be Class 2 in lieu of Class 1 by the regulatory authority having jurisdiction at the plant site.

Note 3:Reactor Coolant pressure boundary is defined in 10CFR50, Section 50.2(v), revised January 1, 1975.

Note 4:*In piping* is defined as having one inlet and one outlet pipe, each of which shall be NPS 1 or smaller.

3.2 Component Examination Basis

This section describes each Examination Category. The required percentage of examinations and any limitations for each Examination Category is described. All other requirements are found in the 2001 Edition with the 2003 Addenda of Section XI. The Summary Tables located in 4th Interval ISI-PSL-1-Schedule satisfy the requirements of IWA-2420(b)(1) through (6) respectively.

A narrative discussion of Class 1 components subject to examination and testing are described in detail below:

3.2.1 Category B-A, Pressure Retaining Welds in Reactor Vessel

ASME Section XI, Appendix VIII requirements are implemented as required.

Item B1.10-Shell Welds

B1.11-Circumferential

B1.12-Longitudinal

Examine essentially 100% of all longitudinal and circumferential shell welds (does not include shell to flange weld).

Items B1.20- Bottom Head Welds

B1.21-Circumferential

B1.22-Meridional

Examine essentially 100% of accessible length of circumferential and meridional head welds.

Items B1.20- Top Head Welds

B1.21-Circumferential

B1.22-Meridional

Not applicable to St. Lucie Unit 1. The replacement reactor head that was installed in 2005 (SL-1-20) is a one piece forging.

Item B1.30 - Shell-to-Flange Weld

Examine essentially 100% of the shell to flange weld.

Code Table Note 3-The examination may be performed during the first and third inspection 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. Alternatively, FPL may defer the examination to the end of the interval per Code Table Note 5, provided the conditions identified in Note 5 are met.

Item B1.40 - Head to Flange Weld

Not applicable to St. Lucie Unit 1. The replacement reactor head that was installed in 2005 (SL-1-20) is a one piece forging that does not contain a head to flange weld.

Item B1.50-Repair Welds
B1.51-Beltline Region

There are no repair welds in the beltline region of St. Lucie Unit 1.

3.2.2 Category B-B, Pressure Retaining welds in vessels other than Reactor Vessels.

All examinations are performed from the outside surface of the components.

Pressurizer:

- Items B2.10-Shell-to-Head
- B2.11-Circumferential
- B2.12-Longitudinal

Examine 100% of both shell to head welds. The replacement pressurizer that was installed in 2005 (SL-1-21) does not contain longitudinal welds.

Pressurizer

- Items B2.20-Head Welds
- B2.21-Circumferential
- B2.22-Meridional

The replacement pressurizer that was installed in 2005 (SL-1-21) does not contain any circumferential or meridional head welds.

Steam Generators (Primary Side)

- Items B2.30-Head Welds
- B2.31-Circumferential
- B2.32-Meridional

Examine 100% of one circumferential weld per head. The examinations are limited to one vessel among the group of vessels performing a similar function [Reference Note 1 Table IWB-2500-1 and Figure IWB-2500-20(d)]. The replacement steam generators that were installed in 1997 do not contain any meridional welds.

Steam Generators (Primary Side)

- Item B2.40-Tubesheet to Head Welds

Examine 100% of one weld on one vessel. The examinations are limited to one vessel among the group of vessels performing a similar function (Reference Note 1 Table IWB-2500-1 and Figure IWB-2500-20(d)).

Heat Exchangers (Primary Side)- Head
Items B2.50-Head Welds
 B2.51-Circumferential
 B2.52-Meridional

Not applicable to St. Lucie Unit 1.

Heat Exchangers (Primary Side)-Shell
Item B2.60-Tubesheet-to-Head Welds
Item B2.70-Longitudinal Welds
Item B2.80-Tubesheet-to-Shell Welds

Not applicable to St. Lucie Unit 1.

3.2.3 Category B-D, Full Penetration Welds of Nozzle in Vessels (Program B)

Examination category B-D, Item Numbers B3.120 and B3.140, will be examined in accordance with the requirements of the 1998 Edition of Section XI [Reference 10 CFR 50.55a(b)(2)(xxi)(A)].

Reactor Vessel
Item B3.90-Nozzle-to-Vessel Welds
Item B3.100-Nozzle Inside Radius Section

Examine all nozzles during the interval. In place of the UT examination of the nozzle inside radius section required by Table IWB-2500-1, FPL may implement the alternative requirements of Code Case N-648-1 as modified by NRC Reg. Guide 1.147, Rev. 15. A visual examination with enhanced magnification that has a resolution sensitivity to detect a 1-mil width wire or crack, utilizing the allowable flaw length criteria in Table IWB-3512-1 with limiting assumptions on the flaw aspect ratio. The provisions of Table IWB-2500-1 for this examination category continue to apply except that, in place of the examination volumes, the surfaces to be examined are the nozzle inside corner region surfaces shown in the figures applicable to this table.

Pressurizer
Item B3.110-Nozzle-to-Vessel Welds
Item B3.120-Nozzle Inside Radius Sections

Examine all nozzles during the interval. The replacement pressurizer installed in 2005 (SL-1-20) does not contain nozzle-to-vessel welds. The inside radius sections are required to be examined by 10CFR50.55a(b)(2)(xxi)(A). A visual examination with enhanced magnification that has a resolution sensitivity to detect a 1-mil width wire or crack, utilizing the allowable flaw length criteria in Table IWB-3512-1 may be performed in place of an ultrasonic examination (Reference 10CFR50.55a(b)(2)(xxi)(A)).

Steam Generators
Item B3.130-Nozzle-to-Vessel Welds
Item B3.140-Nozzle Inside Radius Sections

Examine all nozzles during the interval. The inside radius sections are required to be examined by 10CFR50.55a(b)(2)(xxi)(A). A visual examination with enhanced magnification that has a resolution sensitivity to detect a 1-mil width wire or crack, utilizing the allowable flaw length criteria in Table IWB-3512-1 may be performed in place of an ultrasonic examination (Reference 10CFR50.55a(b)(2)(xxi)(A)).

Heat Exchangers (Primary Side)
Item B3.150-Nozzle-to-Vessel Welds
Item B3.160-Nozzle Inside Radius Sections

Not applicable to St. Lucie Unit 1.

3.2.4 Category B-F, Pressure Retaining Dissimilar Metal Welds

These components will be examined under the RI-ISI Program (Reference Section 2.0) and Relief Request No. 1.

3.2.5 Category B-G-1 - Pressure Retaining Bolting, Greater Than 2 in. in Diameter

For heat exchangers, piping, pumps, and valves, examinations are limited to components selected for examination under B-B (vessels other than RPV), B-J (piping), B-L-2 (pump casings), and B-M-2 (valve bodies exceeding NPS 4).

Reactor Vessel
Item B6.10-Closure Head Nuts
Item B6.20-Closure Studs
Item B6.40-Threads in Flange
Item B6.50-Closure Washers, Bushings

Examine 100% of the bolting each interval.

FPL utilizes 3 sets of RPV bolting that are rotated between the 2 units. All 3 sets of RPV bolting will be examined within the fourth 10-year interval.

Pressurizer
Item B6.60-Bolts and Studs
Item B6.70-Flange Surface, when connection disassembled
Item B6.80-Nuts, Bushings, Washers

Not applicable to St. Lucie Unit 1

Steam Generators

Item B6.90-Bolts and Studs
Item B6.100-Flange Surface, when connection disassembled
Item B6.110-Nuts, Bushings, Washers

Not applicable to St. Lucie Unit 1

Heat Exchangers

Item B6.120-Bolts and Studs
Item B6.130-Flange Surface, when connection disassembled
Item B6.140-Nuts, Bushings, Washers

Not applicable to St. Lucie Unit 1

Piping

Item B6.150-Bolts and Studs
Item B6.160-Flange Surface, when connection disassembled
Item B6.170-Nuts, Bushings, Washers

Not applicable to St. Lucie Unit 1

Pumps

Item B6.180-Bolts and Studs
Item B6.190-Flange Surface, when connection disassembled
Item B6.200-Nuts, Bushings, Washers

Examine 100% of the above items of one Reactor Coolant Pump during the interval.

Valves

Item B6.210-Bolts and Studs
Item B6.220-Flange Surface, when connection disassembled
Item B6.230-Nuts, Bushings, Washers

Not applicable to St. Lucie Unit 1

3.2.6 Category B-G-2, Pressure Retaining Bolting, 2 in. and Less in Diameter

For heat exchangers, piping, pumps, and valves, examinations are limited to components selected for examination under B-B (vessels other than RPV), B-J (piping), B-L-2 (pump casings), and B-M-2 (valve bodies exceeding NPS 4).

Reactor Vessel

Item B7.10-Bolts, Studs, and Nuts

Not applicable to St. Lucie Unit 1.

Pressurizer

Item B7.20-Bolts, Studs, and Nuts

Examine 100% of the bolting each interval.

Steam Generators
Item B7.30-Bolts, Studs, and Nuts

Examine 100% of the bolting each interval on the steam generator selected for examination under Examination Category B-B.

Heat Exchangers
Item B7.40-Bolts, Studs, and Nuts

Not applicable to St. Lucie Unit 1.

Piping
Item B7.50-Bolts, Studs, and Nuts

Examine 100% of the bolting each interval.

Pumps
Item B7.60-Bolts, Studs, and Nuts

Not applicable to St. Lucie Unit 1.

Valves
Item B7.70-Bolts, Studs, and Nuts

Examine 100% of the bolting on one of each group of valves each interval.

CRD Housings
Item B7.80-Bolts, Studs, and Nuts

Not applicable to St. Lucie Unit 1 which has threaded connections with canopy seals. Examinations would otherwise be required under 10 CFR 50.55a(b)(2)(xxi)(B).

3.2.7 Category B-J, Pressure Retaining Welds in Piping

These components will be examined under the RI ISI Program (Reference Section 2.0) and Relief Request No. 1.

3.2.8 Category B-K, Welded Attachments for Vessels, Piping, Pumps, and Valves

For piping, pumps, and valves, a sample of 10% of the welded attachments will be examined. Each welded attachment will receive a surface examination of 100% of required areas of each welded attachment. Examination is also 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. Examinations performed as a result of support deformation cannot be credited under the requirements of Inspection Program B.

Pressure Vessels
Item B10.10-Welded Attachments

For multiple vessels of similar design, function and service, only one of the welded attachments of only one of the multiple components requires examination.

Piping

Item B10.20-Welded Attachments

Examine 10% of the welded attachments associated with the component supports selected for examination under IWF-2510.

Pumps
Item B10.30-Welded Attachments

Examine 10% of the welded attachments associated with the component supports selected for examination under IWF-2510.

Valves
Item B10.40-Welded Attachments

Not applicable to St. Lucie Unit 1.

3.2.9 Category B-L-1, Pump Casing Welds

Pumps
Item: B12.10-Pump Casing Welds

The outside surface of the welds of one reactor coolant pump will be examined during the inspection interval. The pump selected shall be based on pump disassembly for maintenance under B-L-2 or end of inspection interval, whichever comes first.

3.2.10 Category B-L-2, Pump Casing

Pumps
Item B12.20-Pump Casing

Examine the internal surfaces of one of the four Reactor Coolant Pumps when disassembled for maintenance. Pump to be identified when pump is disassembled.

3.2.11 Category B-M-1, Pressure Retaining Welds in Valve Bodies

Valves
Item B12.30-Less than NPS 4
Item B12.40-NPS 4 or Larger

Not applicable to St. Lucie Unit 1.

3.2.12 Category B-M-2, Valve Bodies

Valves that are of the same size, constructional design, and manufacturing method, and that perform similar functions in the system are grouped together.

Valves

Item B12.50-Valve Body, Exceeding NPS 4

Examination of at least one valve of each group of valves once per interval when disassembled for maintenance, repair, or volumetric examination.

Listing of Class 1 Valves by Group				
Group Number	Zone	Valve Number	Type	Size
1	1-021	CV-3227	Check	12"
	1-022	CV-3217		
	1-023	CV-3237		
	1-024	CV-3247		
2	1-021	V-3624	Gate	12"
	1-022	V-3614		
	1-023	V-3634		
	1-024	V-3644		
3	1-028	MV-3652	Gate	10"
	1-028	MV-3651		
	1-029	MV-3480		
	1-029	MV-3481		
4	1-039	V-3124	Check	6"
	1-039	V-3114		
	1-040	V-3144		
	1-040	V-3134		

Table 4

3.2.13 Category B-N-1, Interior of Reactor Vessel

Reactor Vessel

Item B13.10-Vessel Interior

Examine accessible areas once each inspection period above and below the reactor core made accessible for examination by removal of components during normal refueling outages.

3.2.14 Category B-N-2, Welded Core Support Structures and Interior Attachments to Reactor Vessels

Reactor Vessel (PWR)

Item B13.50-Interior Attachments within Beltline Region

Examine interior attachments within the beltline region once per interval. These examinations may be deferred until the end of the interval.

Item: B13.60-Interior Attachments Beyond Beltline Region

Examine interior attachments beyond the beltline region once per interval. These examinations may be deferred until the end of the interval.

3.2.15 Category B-N-3, Removable Core Support Structures

Item: B13.70-Core Support Structure

Examine accessible surfaces of core support structures once per interval. The structure shall be removed from the vessel. These examinations may be deferred until the end of the interval.

3.2.16 Category B-O, Pressure Retaining Welds in Control Rod Housings

Reactor Vessel

Item: B14.10-Welds in CRD Housing

Examine 10% of the peripheral CRD housings.

3.2.17 Category B-P, All Pressure Retaining Components

The system leakage test shall be conducted prior to plant startup following each refueling outage.

On systems borated for the purpose of controlling reactivity, insulation shall be removed from pressure retaining bolted connections for VT-2 visual examination. Insulation removal and VT-2 visual examination of insulated bolted connections may be deferred until the system is depressurized. When corrosion-resistant bolting material with a chromium content of at least 10%, such as SA-564 Grade 630 H1100, SA-453 Grade 660, SB-637 Type 718 or SB-637 Type 750 is used, it is permissible to perform the VT-2 examination without insulation removal. (IWA-5242).

Item B15.10-Pressure Retaining Components

3.2.18 Category B-Q, Steam Generator Tubing

Item: B16.20-Steam Generator Tubing in U-Tube Design

The extent and frequency of examination are governed by plant Technical Specifications. The steam generator tubing surveillance requirements are contained in plant technical specification 3.4.5 [Reference 10 CFR 50.55a(b)(2)(iii)].

4.0 Development of the Class 2 Examination Plan

Plant controlled isometric, P&ID's, component drawings, and plant walkdowns were used to develop the ISI drawings and the scope of examinations. During examinations, drawings will be used to locate and identify each component. Other plant controlled drawings or documents will be used when additional information is required.

Refer to the 4th-Interval-ISI-PSL-1-Schedule for a complete listing of components subject to examination and the proposed examination schedule.

4.1 Class 2 Code Exemptions

The following Class 2 exemption criteria are applicable. Paragraph IWC-1220 of ASME Section XI, 2001 Edition with Addenda through 2003 lists those piping and components exempt from examination.

IWC-1220 – Components Exempt from Examination

The following components or parts of components are exempted from the volumetric and surface examination requirements of IWC-2500;

4.1.1 IWC-1221, Components within RHR, ECC, and CHR Systems or Portions of Systems (Note 1).

- (a) For systems, except high pressure safety injection systems in pressurized water reactor plants:
 - (1) Piping NPS 4 (DN100) and smaller.
 - (2) Vessels, pumps, and valves and their connections in piping (Note 2) NPS 4 (DN100) and smaller.
- (b) For high pressure safety injection systems in pressurized water reactor plants:
 - (1) Piping NPS 1-1/2 (DN40) and smaller.
 - (2) Vessels, pumps, and valves and their connections in piping (Note 2) NPS 1-1/2 (DN40) and smaller.
- (c) Vessels, piping, pumps, valves, other components, and component connections of any size in statically pressurized, passive (i.e., no pumps) safety injection systems (Note 3) of pressurized water reactor plants.
- (d) 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.

4.1.2 IWC-1222, Components within Systems or Portions of Systems Other Than RHR, ECC, and CHR Systems (Note 1).

- (a) For systems, except auxiliary feedwater systems in pressurized water reactor plants:
 - (1) Piping NPS 4 (DN100) and smaller.
 - (2) Vessels, pumps, and valves and their connections in piping (Note 2) NPS 4 and smaller.
- (b) For auxiliary feedwater systems in pressurized water reactor plants:
 - (1) Piping NPS 1-1/2 (DN40) and smaller.
 - (2) Vessels, pumps, and valves and their connections in piping (Note 2) NPS 1-1/2 and smaller.
- (c) Vessels, piping, pumps, valves, other components, and component connections of any size in systems or portions of systems that operate (when the system function is required) at a pressure equal to or less than 275 psig (1900 kPa) and at a temperature equal to or less than 200° F (93° C).
- (d) 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.

4.1.3 IWC-1223, Inaccessible Welds

Welds or portions of welds that are inaccessible due to being encased in concrete, buried underground, located inside a penetration, or encapsulated by guard pipe.

Note 1: RHR, ECC, and CHR systems are the Residual Heat Removal, Emergency Core Cooling, and Containment Heat Removal Systems, respectively.

Note 2: *In piping* is defined as having a cumulative inlet and a cumulative outlet pipe cross-sectional area neither of which exceeds the nominal OD cross-sectional area of the designated size.

Note 3: Statically pressurized, passive safety injection systems of pressurized water reactor plants are typically called:

- (a) Accumulator tank and associated system.
- (b) Safety injection tank and associated system.
- (c) Core flooding tank and associated system.

4.2 Component Examination Basis

This section describes each Examination Category. The required percentage of examinations and any limitations for each Examination Category is described. All other requirements are found in Section XI, 2001 Edition with Addenda through 2003. The Summary Tables located in 4th-Interval-ISI-PSL-1-Schedule satisfy the requirements of IWA-2420(b)(1) through (6) respectively.

A narrative discussion of Class 2 components subject to examination and testing are described in detail below:

4.2.1 Category C-A, Pressure Retaining Welds in Pressure Vessels

Item C1.10-Shell Circumferential Welds

Examine 100% of welds at gross structural discontinuities. The examinations may be limited to one vessel or distributed among a group of vessels of similar design.

Item C1.20-Head Circumferential Welds

Examine 100% of head-to-shell welds. The examinations may be limited to one vessel or distributed among a group of vessels of similar design.

Item C1.30-Tubesheet-to-Shell Welds

Examine 100% of tubesheet-to-shell welds. The examinations may be limited to one vessel or distributed among a group of vessels of similar design.

4.2.2 Category C-B, Pressure Retaining Nozzle Welds in Vessels

Items C2.10-Nozzles in Vessels $\leq \frac{1}{2}$ in. Nominal Thickness

C2.11-Nozzle-to-Shell (Nozzle to Head) Weld

Not applicable to St. Lucie Unit 1.

Items C2.20-Nozzles Without Reinforcing Plate in Vessels $> \frac{1}{2}$ in. Nominal Thickness

C2.21-Nozzle-to-Shell (Head) Weld

C2.22-Nozzle Inside Radius Section

Applicable to Nozzle-to-Shell (Head) weld for nozzles greater than 4 NPS (Reference General Note-Figures IWC-2500-4). Nozzle Inner Radius requirement applies to nozzles greater than 12 NPS [Reference Figures IWC-2500-4(a), (b), and (c)]. Examine nozzles at terminal ends of piping runs. The examination may be limited to one vessel or distributed among the vessels of similar design.

Items C2.30-Nozzles With Reinforcing Plate in Vessels $> \frac{1}{2}$ in. Nominal Thickness.

C2.31-Reinforcing Plate Welds to Nozzle and Vessel

Examine nozzles at terminal ends of piping runs. The examination may be limited to one vessel or distributed among the vessels.

C2.32-Nozzle-to-Shell (or Head) Welds When Inside of Vessel is Accessible

Not applicable to St. Lucie Unit 1.

C2.33-Nozzle to Shell (or Head) Welds When Inside of Vessel is Inaccessible

Applicable to Nozzle-to-Shell (Head) weld for nozzles greater than 4 NPS (Reference General Note-Figures IWC-2500-4). Examine telltale hole in reinforcing plates once each period. The examination may be limited to one vessel or distributed among the vessels. This examination will be performed during the pressure test of the system.

4.2.3 Category C-C, Welded Attachments for Vessels, Piping, Pumps, and Valves

For piping, pumps, and valves, a sample of 10% of the welded attachments will be examined. Each welded attachment will receive a surface examination of 100% of required areas of each welded attachment. Examination is also 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. Examinations performed as a result of support deformation cannot be credited under the requirements of Inspection Program B.

Pressure Vessels

Item C3.10-Welded Attachments

For multiple vessels of similar design, function and service, only one of the welded attachments of only one of the multiple components requires examination.

Piping

Item C3.20-Welded Attachments

Examine 10% of the welded attachments associated with the component supports selected for examination under IWF-2510.

Pumps

Item C3.30-Welded Attachments

Not applicable to St. Lucie Unit 1.

Valves

Item C3.40-Welded Attachments

Not applicable to St. Lucie Unit 1.

4.2.4 Category C-D - Pressure Retaining Bolting > 2" in Diameter

Pressure Vessels
Item C4.10-Bolts and Studs

Not applicable to St. Lucie Unit 1

Piping
Item C4.20-Bolts and Studs

Not applicable to St. Lucie Unit 1

Pumps
Item C4.30-Bolts and Studs

Not applicable to St. Lucie Unit 1

Valves
Item C4.40-Bolts and Studs

Not applicable to St. Lucie Unit 1

4.2.5 Category C-F-1, Pressure Retaining Welds in Austenitic Stainless Steel or High Alloy Piping.

Item C5.10-Piping welds greater than or equal to 3/8 in. nominal wall thickness for piping greater NPS 4.

C5.11-Circumferential Weld

Item C5.20-Piping welds greater than 1/5 in. nominal wall thickness for piping greater than or equal to NPS 2 and less than or equal to NPS 4

C5.21-Circumferential Weld

Item C5.30-Socket Welds

Item C5.40-Pipe branch connections of branch piping greater than or equal to NPS 2

C5.41-Circumferential Welds

Examine 7.5%, but not less than 28 welds, of all dissimilar metal, austenitic stainless steel or high alloy welds not exempted by IWC-1220. The welds to be examined shall be distributed among the systems in a manner such that a representative sample of each system and size is selected. Welds that are not exempted by IWC-1220, but are not required to be nondestructively examined per Category C-F-1 are listed as C-F-3 within the 4th-Interval-ISI-PSL-1-Schedule. The weld population of C-F-1 and C-F-3 are added together and multiplied by 7.5% to determine the number of required examinations.

Longitudinal welds are examined in accordance with Note 6 in Table IWC-2500-1 for this examination category.

4.2.6 Category C-F-2, Pressure Retaining Welds in Carbon or Low Alloy Steel Piping

Item C5.50-Piping welds greater than or equal to 3/8 in. nominal wall thickness for piping greater than NPS 4

C5.51-Circumferential Weld

Item C5.60-Piping welds greater than or equal to 1./5 in. nominal wall thickness for piping greater than or equal to NPS 2 and less than or equal to NPS 4.

C5.61-Circumferential Weld

Item C5.70-Socket Welds

Item C5.80-Pipe branch connections of branch piping greater than or equal to NPS 2

C5.81-Circumferential Welds

Examine 7.5%, but not less than 28 welds, of all dissimilar metal, austenitic stainless steel or high alloy welds not exempted by IWC-1220. The welds to be examined shall be distributed among the systems in a manner such that a representative sample of each system and size is selected. Welds that are not exempted by IWC-1220, but are not required to be nondestructively examined per Category C-F-2 are listed as C-F-4 within the 4th-Interval-ISI-PSL-1-Schedule. The weld population of C-F-2 and C-F-4 are added together and multiplied by 7.5% to determine the number of required examinations.

Longitudinal welds are examined in accordance with note 7 in Table IWC-2500-1 for this examination category.

4.2.7 Category C-F-3

Those welds that are not exempt and not addressed by the requirements of category C-F-1 are counted as part of the selection criteria. These welds have been given the category of C-F-3 and are for counting purposes only. No examinations are required.

4.2.8 Category C-F-4

Those welds that are not exempt and not addressed by the requirements of category C-F-2 are counted as part of the selection criteria. These welds have been given the category of C-F-4 and are for counting purposes only. No examinations are required.

4.2.9 Category C-G, Pressure Retaining Welds in Pumps and Valves

Pumps
Item C6.10-Pump Casing Welds

Valves
Item C6.20-Valve Body Welds

Not applicable to St. Lucie Unit 1.

4.2.10 Category C-H, All Pressure Retaining Components

Item C7.10-Pressure Retaining Components

The pressure retaining components within the class 2 system boundaries are subjected to system leakage tests in accordance with IWC-5220 and visually examined per IWA-5240.

System leakage tests will be performed in accordance with the rules of Section XI as modified by IWA-5110(c), which exempts piping that penetrates a containment vessel from periodic pressure testing when the piping and isolation valves perform a containment function and the balance of the piping system is outside the scope of Section XI, Division 1 (non-classed).

5.0 Development of the Class 3 Examination Plan

Plant controlled isometric, P&ID's, component drawings, and plant walkdowns were used to develop the ISI drawings and the scope of examinations. During examinations, drawings will be used to locate and identify each component. Other plant controlled drawings or documents will be used when additional information is required.

Refer to the 4th-Interval-ISI-PSL-1-Schedule for a complete listing of components subject to examination and the proposed examination schedule.

The Class 3 system boundaries subject to examination and testing were developed based upon the requirements of Regulatory Guide 1.26, and ASME Section XI, Table IWD-2500-1.

5.1 Class 3 Code Exemptions and Exclusions

The following Class 3 exemption criteria are applicable. Paragraph IWD-1220 of Section XI, 2001 Edition with Addenda through 2003 lists those piping and components exempt from examination.

5.1.1 IWD-1220 - Components Exempt from Examination

The following components or parts of components are exempted from the VT-1 visual examination requirements of IWD-2500:

- (a) Piping NPS 4 (DN100) and smaller
- (b) Vessels, pumps, and valves and their connections in piping (Note 1) NPS 4 (DN100) and smaller.
- (c) Components that operate at a pressure of 275 psig (1900kPa) or less and at a temperature of 200° F (93° C) or less in systems (or portions of systems) whose function is not required in support of reactor residual heat removal, containment heat removal, and emergency core cooling.
- (d) Welds or portions of welds that are inaccessible due to being encased in concrete, buried underground, located inside a penetration, or encapsulated by guard pipe.

Note 1: *In piping* is defined as having a cumulative inlet and cumulative outlet pipe cross-sectional area neither of which exceeds the nominal OD cross-sectional area of the designated size.

5.1.2 IWD-5240 System Leakage Test Exclusion

The pressure retaining boundary for a System Leakage Test includes only those portions of the system required to operate or support the safety function up to and including the first normally closed valve (including a safety or relief valve) or valve capable of automatic closure when the safety function is required. Items outside this boundary and open ended discharge piping are excluded from the examination requirements.

5.2 Component Examination Basis

This section describes each Examination Category. The required percentage of examinations and any limitations for each Examination Category is described. All other requirements are found in Section XI, 2001 Edition with Addenda through 2003. The Summary Tables located in the 4th-Interval- ISI-PSL-1-Schedule satisfy the requirements of IWA-2420(b)(1) through (6) respectively.

A narrative discussion of Class 3 components subject to examination and testing are described in detail below:

5.2.1 Category D-A, Welded Attachments for Vessels, Piping, Pumps, and Valves

Each welded attachment will receive a visual (VT-1) examination of 100% of required areas of each welded attachment. Examination is also 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. Examinations performed as a result of support deformation cannot be credited under the requirements of Inspection Program B.

Pressure Vessels
Item D1.10-Welded Attachments

For multiple vessels of similar design, function and service, the welded attachments of only one of the multiple vessels requires examination.

Piping
Item D1.20-Welded Attachments

The percentage sample shall be proportional to the total number of nonexempt welded attachments connected to the piping in each system subject to examination. Examine 10% of the welded attachments.

Pumps
Item D1.30-Welded Attachments

Not applicable to St. Lucie Unit 1.

Valves
Item D1.40-Welded Attachments

Not applicable to St. Lucie Unit 1.

5.2.2 Category D-B, All Pressure Retaining Components

Item D2.10-Pressure Retaining Components

A system leakage test (IWD-5221) shall be performed during each inspection period.

6.0 IWE Metal Containment Requirements

The requirements for Code Class MC (Metal Containment) are found in the St. Lucie Containment Building Metal Containment Inservice Inspection Program, which is administered separately (Reference paragraph 1.2.6). This document establishes the administrative, managerial, and implementation control for the IWE Containment Inspection Program Plan for the first 10-year Inservice Inspection interval.

7.0 Development of Component Supports Examination Plan

Plant controlled isometric, P&ID's, component drawings, and plant walkdowns were used to develop the ISI drawings and the scope of examinations. During examinations, drawings will be used to locate and identify each component. Other plant controlled drawings or documents will be used when additional information is required.

Refer to the 4th-Interval-ISI-PSL-1-Schedule for a complete listing of components subject to examination and the proposed examination schedule.

The Class 1, 2, and 3 system boundaries subject to examination and testing were developed based upon the requirements of Regulatory Guide 1.26, and ASME Section XI, Table IWD-2500-1.

7.1 Code Exemptions for Supports

Under IWF-1230, component supports exempt from the examination requirements of IWF-2000 are those connected to piping and other items exempted from volumetric, surface, or VT-1 or VT-3 visual examination by IWB-1220, IWC-1220, IWD-1220, and IWE-1220. In addition, portions of supports that are inaccessible by being encased in concrete, buried underground, or encapsulated by guard pipe are also exempt from the examination requirements of IWF-2000.

7.2 Support Examination Basis

This section describes Examination Category F-A. The required percentage of examinations and any limitations is described. All other requirements are found in Section XI, 2001 Edition with Addenda through 2003. The Summary Tables located in 4th Interval ISI-PSL-1-Schedule satisfy the requirements of IWA-2420(b)(1) through (6) respectively.

A narrative discussion of F-A supports subject to examination and testing is described in detail below:

7.2.1 Category F-A, Supports

Item F1.10-Class 1 Piping Supports

Examine 25% of class 1 piping supports. The total percentage sample shall be comprised of supports from each system (e.g., Main Steam, Feedwater, or RHR), where the individual sample sizes are proportional to the total number of nonexempt supports of each type and function within each system.

Item F1.20-Class 2 Piping Supports

Examine 15% of class 2 piping supports. The total percentage sample shall be comprised of supports from each system (e.g., Main Steam, Feedwater, or RHR), where the individual sample sizes are proportional to the total number of nonexempt supports of each type and function within each system.

Item F1.30-Class 3 Piping Supports

Examine 10% of class 3 piping supports. The total percentage sample shall be comprised of supports from each system (e.g., Main Steam, Feedwater, or RHR), where the individual sample sizes are proportional to the total number of nonexempt supports of each type and function within each system.

Item F1.40-Supports Other Than Piping Supports (Class 1, 2, 3, and MC)

Examine the supports of only one of the multiple components within a system of similar design, function, and service.

7.2.2 Item Numbers

Item numbers will be categorized to identify support types by component support function.

- A - Single Acting Restraints
- B - Double Acting Restraints
- C - Spring Hangers and Supports
- D - Anchors
- P - Pumps
- S - Snubbers
- T - Tanks
- V - Vessels (includes Heat Exchangers)
- W - Welded Stanchions

Other codes may be used as necessary.

Several supports hold more than one classified line. These supports are counted only once and if scheduled for examination, will cover all of the applicable lines. The support will be counted once for credit.

7.3 Snubbers

Snubbers are functionally tested under the Snubber Program, which is administered separately. The requirements for the snubber program are included in QI-10-PR/PSL-6. Visual, VT-3, examinations are performed on snubbers as required by Examination Category F-A. If welded attachments are present, then these will be examined under the Class 1, 2, or 3, F-A Examination Category, as appropriate. The welded attachments are tracked within the ISI Program database.

8.0 IWL Concrete Containment Requirements

St. Lucie Unit 1 has a concrete missile shield surrounding the metal containment. This missile shield does not perform any containment functions and is outside the scope of Section XI. No examinations are required.

The bottom of containment has a metal liner, covered with concrete. The concrete serves only as a protective covering and is outside the scope of Section XI. No examinations are required.

9.0. Augmented and Other Programs

This section identifies augmented inspection programs maintained within the ISI Program that are not required by ASME Section XI. However, due to the nature of the augmented requirements, these programs have been included within the ISI Program. These augmented programs satisfy NRC requirements, operating experience, engineering judgment, etc. Augmented program revisions or deviations shall be governed by the referenced documents. The following is the detailed description of the St. Lucie Unit 1 Inservice Inspection Program Plan Basis for Augmented Examination of additional components/systems.

9.1 Class 1

9.1.1 Reactor Coolant Pump

As required by the UFSAR, Section 5.5.5.3, each Reactor Coolant Pump Flywheel is examined per the requirements of Regulatory Guide 1.14, Position C.4.b. The bore and keyway areas of each Reactor Coolant Pump flywheel are examined ultrasonically approximately every three years. Additionally, the flywheels receive a complete volumetric examination (UT) and a surface examination of all exposed surfaces at or near the end of each Inspection Interval.

9.1.2 Primary System Piping Butt Weld Inspection and Evaluation Guidelines (MRP-139)

The guideline provides generic inspection and evaluation guidelines for PWR primary system alloy 600/82/182 butt welds. Per the implementation protocol of the NEI 03-08 initiative, these guidelines are mandatory for PWR licensees.

9.2 Class 2

9.2.1 Standard Review Plan 6.6

- (a) Welds in those portions of systems addressed in USNRC Branch Technical Position APCSB 3.1 paragraph B.2.4(c);
- (b) Welds in those portions of systems addressed in SRP 6.6 paragraph I.8.

In addressing the augmented examination requirements, referenced in (a) and (b) above, pipe-to-pipe welds and longitudinal seams are required to be examined. Additionally, the Code Category (C-F-2) boundary is extended past the code class boundary (MSIV) to the first restraint providing at least two degrees of restraint to piping thermal expansion. The welds and supports thus affected are specifically identified through Examination Notes in the Main Steam and Boiler Feedwater examination Tables.

9.2.2 NRC Bulletin 79-13

Augmented Feedwater Examinations, as a result of a continuation of NRC Bulletin 79-13, and NRC Informational Notice 93-20, Thermal Fatigue Cracking of Feedwater Piping to Steam Generators.

FPL will perform a continuous enhanced ultrasonic examination starting at the Feedwater Nozzle ramp and extending out to a point of 1 diameter on the elbow. Examinations will be performed in conjunction with the Code examination schedule as identified within the 4th-Interval-ISI-PSL-1-Schedule examination Tables.

10.0 Evaluation/Acceptance Criteria

Florida Power and Light will perform non-destructive examinations using visual, surface (Penetrant and Magnetic Particle), and volumetric (Ultrasonic, Radiography, and Eddy Current) techniques. Other NDE techniques may be utilized when required.

During inservice inspections, NDE indications are evaluated against the acceptance standards of ASME Section XI. Components with indications that do not exceed the acceptance criteria will be considered acceptable for continued service. Additional examinations are not required.

Examinations that reveal indications shall be evaluated in accordance with article IWA-3000, IWB-3000, IWC-3000, IWD-3000, and IWF-3000, as applicable. Additional guidance for conditions identified during component support examinations, including minimum thread engagement acceptability, is located in engineering discipline standard STD-C-011.

10.1 Supplemental Examinations

Examinations that detect flaws/conditions that require evaluation in accordance with the requirements of IWB-3100, IWC-3100, or IWF-3100, may be supplemented by other examination methods and techniques within the limits specified by IWB-3200, IWC-3200, or IWF-3200.

10.2 Additional Examinations

Examinations that reveal flaws or relevant conditions that exceed the referenced acceptance standard, shall be extended to include additional examinations during the current outage. The additional examination requirements of IWB-2430, IWC-2430, IWD-2430, or IWF-2430, (as applicable) shall be performed as determined by Nuclear Engineering. When applicable, the criteria of Code Case N-586-1 may be applied to establish alternative examination requirements.

10.3 Successive Inspections for Components

Where components are accepted for continued service by analytical evaluation, IWB-2420(b), IWC-2420(b), or IWF-2420(b), the area containing the flaws or component support shall be subsequently reexamined in accordance with the following;

10.3.1 Class 1 Components (IWB-2420)

If a component is accepted for continued service by analytical evaluation, the areas containing flaws or relevant conditions shall be reexamined during the next three inspection periods of Inspection Plan B (IWB-2412-1.) Provided the flaws or relevant conditions remain essentially unchanged for three successive inspection periods, the component examination schedule will revert to the original schedule of successive inspections.

10.3.2 Class 2 Components (IWC-2420)

If a component is accepted for continued service by analytical evaluation, the areas containing flaws or relevant conditions shall be reexamined during the next inspection period of Inspection Plan B (IWC-2412-1). Provided the flaws or relevant conditions remain essentially unchanged for the next inspection period, the inspection schedule will revert to the original schedule of successive inspections.

10.3.3 Component Supports (IWF-2420)

If a component support is accepted for continued service by analytical evaluation, the component support shall be reexamined during the next inspection period of Inspection Plan B (IWF-2410-2). Provided the examinations do not require additional corrective measures during the next inspection period, the inspection schedule will revert to the original schedule of successive inspections.

11.0 Repair/Replacement Activities

The requirements of the 2001 Edition with the 2003 Addenda of Section XI and the Repair and Replacement Program for St. Lucie Nuclear Plant shall be met for Class 1, 2, and 3 piping and components and their supports. QI-10-PR/PSL-8, Control of Repairs and Replacements, details specific requirements for the repair, replacement, or modification of ISI components.

12.0 Relief Requests

A relief request is required when there are situations where Code requirements cannot be met or where an alternative is desired. Relief Requests shall be prepared using the NEI guidance for the standard format for requests from commercial reactor licenses pursuant to 10CFR50.55a. Relief requests will be reviewed for completeness, technical adequacy, and implementation. Reviewers may be the site ISI Coordinators, the ISI Specialist, NDE personnel, and any other group the relief request may affect. Typical examples where relief requests are submitted are as follows:

- 12.1 For Class 1 and 2 weld examinations, relief is required if 90% or less of the Code required coverage was achieved (unable to meet Code examination requirements).
- 12.2 The request for use of an alternative to a requirement listed within ASME Section XI. An example is the use of a Code Case that has not been approved for use by the latest revision of NRC Reg. Guide 1.147.

13.0 Boundary Classifications

The code required boundaries for all Class 1, 2, and 3 systems are denoted by a boxed-in letter (A, B, and C respectively) on Piping and Instrument Diagrams (P&IDs). The following list shows those P&IDs applicable to the St. Lucie ISI Program.

Drawing Number	Sheet Number	P&ID Title
8770-G-078	110A 110B	Reactor Coolant System
8770-G-078	111A	Reactor Coolant Pump 1A1
8770-G-078	111B	Reactor Coolant Pump 1A2
8770-G-078	111C	Reactor Coolant Pump 1B1
8770-G-078	111D	Reactor Coolant Pump 1B2
8770-G-078	120A	Chemical and Volume Control System
8770-G-078	120B	Chemical and Volume Control System
8770-G-078	121A	Chemical and Volume Control System
8770-G-078	121B	Chemical and Volume Control System
8770-G-078	130A	Safety Injection System
8770-G-078	130B	Safety Injection System
8770-G-078	131	Safety Injection System, Sheet 2
8770-G-078	140	Fuel Pool System
8770-G-079	1	Main Steam
8770-G-079	7	Main Steam
8770-G-080	3	Feedwater and Condensate Systems
8770-G-080	4	Feedwater and Condensate Systems
8770-G-082	1	Circulating and Intake Cooling Water System
8770-G-082	2	Intake Cooling Water Lube Water System
8770-G-083	1	Component Cooling System, Sheet 1
8770-G-083	2	Component Cooling System, Sheet 2
8770-G-086	1	Miscellaneous Systems, Sheet 1
8770-G-088	1	Containment Spray and Refueling Water Systems
8770-G-088	2	Containment Spray and Refueling Water Systems
8770-G-096	1A	Emergency Diesel Generator System, Diesel Engine 1A1
8770-G-096	1B	Emergency Diesel Generator System, Diesel Engine 1A2
8770-G-096	1C	Emergency Diesel Generator System, Air Start Package 1A
8770-G-096	2A	Emergency Diesel Generator System, Diesel Engine 1B1
8770-G-096	2B	Emergency Diesel Generator System, Diesel Engine 1B2
8770-G-096	2C	Emergency Diesel Generator System, Air Start Package 1B

Table 5

14.0 Addition of Welds, Components, and Components Supports

The rules for selection and scheduling of examinations for new welds shall be in accordance with paragraphs IWB-2412(b), IWC-2412(b), IWD-2412(b), IWF-2410(c).

15.0 Records

15.1 General

Records of Inservice Inspection Program Plans, outage schedules, calibration standards, examination and test procedures, results of activities, final reports, certifications, and corrective actions will be developed and maintained in accordance with IWA-6000.

15.2 Nondestructive Examinations

Completed NDE examination data packages shall be submitted to the ISI Specialist following completion of the inservice examination activity.

15.3 Final Reports

15.3.1 Final reports will be generated for the following activities:

- (a) Nondestructive examination activities performed on Class 1, 2, and 3 systems, components and their supports
- (b) Nondestructive examination activities performed on Class MC systems
- (c) Snubber examinations and tests
- (d) System pressure tests
- (e) Eddy current examinations
- (f) Repairs and replacements

15.3.2 The final reports shall contain, as a minimum, the information required in the NIS-1 or OAR-1 (Code Case N-532-4 as accepted in NRC Reg. Guide 1.147).

15.4 Inservice Inspection Summary Report

FPL shall forward a summary report, NIS-1 or OAR-1, of the ISI activity to the Nuclear Regulatory Commission in accordance with IWA-6230 or Code Case N-532-4 (as accepted in NRC Reg. Guide 1.147), as applicable.

15.5 NIS-2 or NIS-2A Reports

NIS-2 forms, or if Code Case N-532-4 is followed, an NIS-2A form, will be completed for each repair or replacement.

15.6 NIS-BB Form

An NIS-BB form will be completed after each Steam Generator tube examination.

16.0 References

The Inservice Inspection Program for Class 1, 2, and 3 (or Quality Groups A, B, and C respectively) systems and components and supports, was developed after reviewing the following documents and procedures. Limitations of design, geometry, and materials of construction may have an impact on the implementation of some of these documents.

- 16.1 10 CFR 50.55(a) Code of Federal Regulations.
- 16.2 Section XI of the American Society of Mechanical Engineers (ASME) Code, 1989 Edition, 1998 Edition, 2001 Edition with 2001 Addenda, 2001 Edition with 2003 Addenda.
- 16.3 USNRC Regulatory Guide 1.14 – Reactor Coolant Pump Flywheel Integrity, Revision 1, dated August 1975.
- 16.4 USNRC Regulatory Guide 1.26 - Quality Group Classifications and standards for Water-, Steam-, and Radioactive-Waste-Containing Components of Nuclear Power Plants, Revision 3, dated February 1976.
- 16.5 USNRC Regulatory Guide 1.65 - Materials and Inspections for Reactor Vessel Closure Studs, October 1973.
- 16.6 USNRC Regulatory Guide 1.83 - Inservice Examination of Pressurized Water Reactor Steam Generator Tubes, Revision 1, dated July 1975.
- 16.7 USNRC Regulatory Guide 1.85 - Materials Code Case Acceptability, ASME Section III, Division 1.
- 16.8 USNRC Regulatory Guide 1.147 - Inservice Inspection Code Case Acceptability ASME Section XI.
- 16.9 USNRC Regulatory Guide 1.178 - An Approach for Plant-Specific Risk Informed Decision Making Inservice Inspection of Piping.
- 16.10 USNRC Information Notice 93-20, Thermal Fatigue Cracking of Feedwater Piping to Steam Generators, dated March 24, 1993.
- 16.11 USNRC Bulletin 79-13, Cracking in Feedwater System Piping.
- 16.12 USNRC Bulletin 88-11, Pressurizer Surge Line Thermal Stratification.
- 16.13 EPRI Document, Guideline For The Implementation Of Appendix VIII and 10 CFR 50.55a, Volume One Programmatic Implementation, dated 10/14/2000.
- 16.14 The Performance Demonstration Initiative (PDI), a utility developed guideline for the qualification of ultrasonic examination personnel.
- 16.15 USNRC Standard Review Plan 6.6, paragraph I.8, (for Class 2 Augmented Inspections).

-
- 16.16 Branch Technical Position MEB 3-1, High Energy Fluid Systems, Protection Against Postulated Piping Failures in Fluid Systems Outside Containment.
 - 16.17 First, Second, and Third Interval Inservice Inspection Long Term Programs, Plans, and Schedules for St. Lucie Unit 1.
 - 16.18 St. Lucie Unit 1 Final Safety Analysis Report
 - 16.19 St. Lucie Unit 1 Technical Specifications, Docket number 50-335.
 - 16.20 STD-C-011, "Acceptance Criteria for As-Built Safety Related Piping and Pipe Supports," and Specification SPEC-M-004, "Maintenance Bolting Specification for St. Lucie Units 1 and 2 and Turkey Point Units 3 and 4."
 - 16.21 Generic Aging Lessons Learned (GALL) Report.
 - 16.22 St. Lucie Document – QI-10-PR/PSL-4, "Plant Inservice Inspection."
 - 16.23 St. Lucie Document - QI-10-PR/PSL-6, "Control, Inspection, and Monitoring of Mechanical and Hydraulic Snubbers."
 - 16.24 St. Lucie Document - QI-10-PR/PSL-8, "Control of Repairs and Replacements."
 - 16.25 St. Lucie Document – QI-11-PR/PSL-8, "Control of Inservice Pressure Testing."
 - 16.26 Engineering QI – ENG-QI 5.2, "Implementation of ASME Section XI (Inservice Inspection)."
 - 16.27 Engineering Evaluation PSL-ENG-LRAM-01-026, "Evaluation of Environmental Effects of Fatigue – License Renewal Basis Document."
 - 16.28 Engineering Evaluation PSL-ENG-LRAM-00-056, "Reactor Vessel Internals Inspection Program – License Renewal Basis Document."
 - 16.29 Engineering Evaluation PSL-ENG-LRAM-00-097, "ASME Section XI, Subsections IWB, IWC and IWD Inservice Inspection Program – License Renewal Program Basis Document."
 - 16.30 Engineering Evaluation PSL-ENG-LRAM-00-119, "ASME Section XI, Subsection IWF Inservice Inspection Program -License Renewal Program Basis Document."
 - 16.31 Engineering Evaluation PSL-ENG-LRAM-00-120, "Reactor Vessel Integrity Program – License Renewal Basis Document."
 - 16.32 CSI Procedure- ENG-CSI-A600, "Alloy 600 Management Program"
 - 16.33 St. Lucie Document ISI/IWE-PSL-1/2-Program, "ASME Section XI, Subsection IWE, Containment Building Metal Containment Inservice Inspection Program for St. Lucie Units 1 and 2."

Appendices

Appendix A

Relief Requests

Relief Requests		
Relief Request Number	Description	Status
1	Risk-Informed ISI Program For Class 1 Piping Welds	Submitted

Table 6

Relief Request #1

“St. Lucie Unit 1 Risk-Informed Inservice Inspection Piping Program Submittal”

Relief Request 1 has been submitted to the NRC for review by FPL letter L-2007-195