C* Update

September 20, 2004

Revised C* Report

- To be Completed in October.
- Provides Tubesheet Region Inspection Lengths for CE-designed Units
- Based on Conservative Methodology Previously Submitted to NRC by SCE/APS
- Addresses NRC RAIs on CE-designed Units
- **C* Participants Available to Meet with NRC Staff in early November**

STEAM GENERATOR INSPECTION PLANNING SL2-15 NOVEMBER 2004 - NRR, WHITE FLINT

FLORIDA POWER & LIGHT
ST. LUCIE UNIT 2
STEAM GENERATOR INSPECTION PLANNING

NRR - WHITE FLINT
SEPTEMBER 20, 2004

STEAM GENERATOR INSPECTION PLANNING
SL2-15 NOVEMBER 2004 - NRR, WHITE FLINT

AGENDA

- Purpose of Meeting
- Background
- SL2-15 Inspection Scope
- Projected Tube Plugging
- Operating Experience
- Contingency Planning
- Generic Letter 2004-01
- Summary & Closing

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STEAM GENERATOR INSPECTION PLANNING
SL2-15 NOVEMBER 2004 - NRR, WHITE FLINT

Purpose of Meeting

- Review SL2 S/G Condition
- Review SL2-15 Inspection Plans
- GL 2004-01 Response
- Address Staff Concerns

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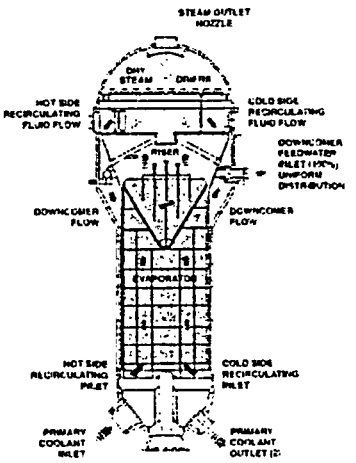
STEAM GENERATOR INSPECTION PLANNING
SL2-15 NOVEMBER 2004 - NRR, WHITE FLINT

Background

S/G Design

- CE Model 3410
- 8411 Tubes / SG
- ~18.3 EFPY @ SL2-15
- A-600 HTMA Tubing
- CS Lattice Support System
- Tubesheet Joint - Explosive
- Total Tubes Plugged
  - SG A - 671 (8.0%)
  - SG B - 872 (10.4%)
- T-Hot ~600°F



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STEAM GENERATOR INSPECTION PLANNING
SL2-15 NOVEMBER 2004 - NRR, WHITE FLINT

Background

FPL Steam Generator Program

- Committed to Safe Operation
- Full Implementation of NEI 97-06, S/G Program Guidelines
  - Inspection
  - Chemistry
  - Leak Monitoring
- Incorporate Industry Experience
- Extensive Examination History at Unit 2
- Conservative Approach
  - In Situ Pressure Test at Last 5 Inspections

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STEAM GENERATOR INSPECTION PLANNING
SL2-15 NOVEMBER 2004 - NRR, WHITE FLINT

Background

- Last Inspection - SL2-14 in April 2003
- Results Discussed with NRR During Outage
  - Most Damage Mechanisms as Expected
  - No ODSCC in Dings
  - PWSCC in Tubesheet Limited and Confined to Upper 2"
  - Increase in Axial ODSCC at Eggcrate Supports
  - Degradation Trend Typical for Unit with A-600 MA Tubing

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STEAM GENERATOR INSPECTION PLANNING
SL2-15 NOVEMBER 2004 - NRR, WHITE FLINT

Background

Summary of PSL-2 Indication Counts (April 2003)

Mechanism	Number of Indicators		
	S/G A	S/G B	Total
Axial ODSCC at Eggcrates	222	441	663
Axial ODSCC at Diagonal Straps [1]	0	2	2
Axial ODSCC at Dings	0	0	0
Axial ODSCC in Freespans [2]	1	0	1
Axial ODSCC at Tubesheet (Hot)	17	14	31
Axial IDSCC below Tubesheet (Hot)	6	2	8
Circumferential ODSCC at Tubesheet (Hot)	3	7	10
Circumferential Indications below Expansion Transition	0	0	0
OD Volumetric at Tubesheet (Hot) [3]	0	2	2
Wear at Tubesheet (Cold)	5	1	6
Wear at Diagonal/Vertical and Eggcrate Supports	695	478	1173

Notes:
1. Two indicators detected at bat wing supports were evaluated in combination with eggcrate indications.
2. Single indication detected in freespan was evaluated in combination with eggcrate indications.
3. Volumetric indications are attributed to loose part wear. These indications were evaluated in combination with top-of-tubesheet wear indications.

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STEAM GENERATOR INSPECTION PLANNING
SL2-15 NOVEMBER 2004 - NRR, WHITE FLINT

Background

Tube Plugging by Mechanism (1)	4/00	11/01	4/03
ODSCC at Eggcrates	14	259	482(2)
Wear at Tube Supports	18	11	--
ODSCC at Top of Tubesheet	16	19	27
Preservice, FO Wear, Preventative	--	51	6
Circ. ODSCC at Top of Tubesheet	5	13	10
OD Volumetric - Various	--	2	--
IDSCC Below Top of Tubesheet	1	1	4
ODSCC at Dings	--	5	--
ODSCC in Freespan	--	--	1
	54	361	530
Cumulative Plugging	652	1013	1543
Cumulative Percent	3.9%	6.0%	9.2%

(1) Axial unless noted otherwise. (2) Includes 2 indications at Diagonal Strap.

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STEAM GENERATOR INSPECTION PLANNING
SL2-15 NOVEMBER 2004 - NRR, WHITE FLINT

Background

In Situ Pressure Testing Through SL2-14

- 54 Total Indications
- Mechanisms Include
  - Axial ODSCC at Eggcrates
  - Axial ODSCC at Dings
  - Axial ODSCC at TTS
  - Axial IDSCC below TTS
  - Circ ODSCC at TTS
  - OD Volumetric TTS

No Leakage or Burst

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STEAM GENERATOR INSPECTION PLANNING
SL2-15 NOVEMBER 2004 - NRR, WHITE FLINT

SL2-15 Inspection Scope

- Visual Examination of All Tube Plugs
- Bobbin Probe All Active Tubes
  - Screen Dings <5 Volts in Straight Sections
  - Full Length Row 3-140, Straight Length Row 1-2
- Plus Point Probe
  - 100% Hot Leg Top of Tubesheet (+3"/- WCAP Value)
  - Cold Leg Periphery Tubes for FO Damage (+3"/-2")
  - 35% Row 1-2 U-bends (~40/SG)
  - 100% Wear Scars at Eggcrates & HL Diagonal (A-118, B-84)
  - 20% Wear Scars at U-bends & CL Diagonal (A-111, B-73)
  - All Tubes with No Tube Expansion (A-22, B-1)

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STEAM GENERATOR INSPECTION PLANNING
SL2-15 NOVEMBER 2004 - NRR, WHITE FLINT

SL2-15 Inspection Scope (con't)

- Plus Point Probe for Dings

	SGA	SGB
All Dings Hot Leg Tubesheet to 1st Support	43	24
All Dings >5 volts 1st Support to HL Bend	98	77
All Dings in HL & CL Square Bends Row 19-140	68	54
All Dings >5 volts in Horizontal Run Row 19-140	97	107
All Dings in Rows 1-18 U-Bends	140	104
20% Dings >5 volts CL Tubesheet to CL Bend	26	23
	472	389

- In Situ Testing Based on Industry Screening Guidance

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STEAM GENERATOR INSPECTION PLANNING
SL2-15 NOVEMBER 2004 - NRR, WHITE FLINT

Projected Tube Plugging

Mechanism/Location	Predicted Number SL2-15
Axial ODSCC at Eggcrate Supports	700 – 1100
Axial ODSCC at Top of Tubesheet	30 – 50
Circumferential ODSCC at Expansion Transitions	10 – 20
Axial ODSCC at Dings	5 – 10
Axial IDSCC Below Secondary Face of Tubesheet	5 – 10
TOTAL PROJECTED	750 – 1190

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STEAM GENERATOR INSPECTION PLANNING
SL2-15 NOVEMBER 2004 - NRR, WHITE FLINT

Operating Experience

- Continue Emphasis on Dings/Dents & Anomalous Indications
- Foreign Object Damage
- U-Bend Cracking
- Coverage of Auto Analysis
- Tube to Tube Wear (Tube Sever Potential)
  - Wear Progression Analysis Completed for Plugged Tubes
  - 49 Locations Susceptible to Tube-to-Tube Contact <SL2-17
  - Susceptible Locations to be Reviewed by Lead Analysts

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Contingency Planning

Issue or Inspection Item	Contingency Action
Leaking Plug	Replace as Necessary
Crack in Row 1&2 U-bend	Test 100% Affected Rows & 20% Row 3, etc.
Crack in U-bend Wear Scar	Test All (A~450, B~300)
Crack in Cold Leg Ding	Test All (A~104, B~92)
Foreign Object Wear	Bound FO Wear
CL Expansion Transition Cracking	Test 100% in Affected SG
Freespan Cracking	Validate Bobbin POD

Generic Letter 2004-01

FPL Program Complied with NEI 97-06 and Tech Specs for All Past Inspections

- Tubesheet Inspection Depth Not Challenged
  - Cracking Limited to 2" Below Top of Tubesheet
  - Inspections to 5" and 8" Below Top of Tubesheet
- Frequency & Extent of Cracking is Limited
- LAR to Redefine Inspection Depth Submitted Prior to SL2-14
  - Withdrawn Based on Inspection Results and Discussions with NRC

STEAM GENERATOR INSPECTION PLANNING
SL2-15 NOVEMBER 2004 - NRR, WHITE FLINT

Generic Letter 2004-01

ID Axial Cracks Below Expansion Transition (1)

RFO Date	Exam Scope	Exam Depth	No. IND	Maximum Depth Into Tubesheet
04-97	100%	~2"	1	-1.10"
11-98	100%	~2"	0	- -
04-00	100%	2"	1	-0.17"
11-01	100%	5"	2(2)	-2.10"
04-03	100%	8"	8(3)	-1.89"

(1) No ID circumferential indications reported below transition
(2) Only one tube affected
(3) Only four tubes affected

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STEAM GENERATOR INSPECTION PLANNING
SL2-15 NOVEMBER 2004 - NRR, WHITE FLINT

Generic Letter 2004-01

- Planning for SL2-15 Inspection
  - Assumptions on Distribution of Degradation in Tubesheet Challenged by Recent Inspection Results
  - Need to Redefine Tube Inspection Depth and Plugging Limit
  - Submit License Amendment Request
    - Follow Guidance in GL 2004-01
      - Tube Inspection & Plugging Limit Definitions
    - Inspection Depth Based on WCAP
      - New WCAP to Address NRC Comments
- May Request Expedited License Amendment Approval

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Summary & Closing

- FPL Program Meets Industry Guidance
- Reasonable Assurance of Tube Integrity
- Compliance with Tech Spec & NRC Position
- Amend License Consistent with GL 2004-01
- Identify & Address Staff Concerns