ENGINEERING BRANCH 1 FIRE PROTECTION INSPECTION EXIT

Inspection of: St. Lucie Nuclear Plant **Report Number:** 50-335,389/03-02

Inspection Dates: March 10-14 and 24-28, 2003 (onsite inspection)

Type of Inspection: TRIENNIAL FIRE PROTECTION BASELINE INSPECTION: Fire Protection Features and Post-Fire Safe Shutdown Capability

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Inspectors: M. Thomas, Lead/Operations Inspector; G. Wiseman, Fire Protection Inspector; S. Walker, Electrical Inspector; P. Fillion, Electrical Inspector (Open Items Followup); F. Jape, Operations Inspector (Training); R. Deem, Contractor (Mechanical Systems/Operations);

Accompanying Personnel: R. Rodriguez, Nuclear Reactor Safety Intern, will be in training and support the open items followup/Electrical areas.

Inspection Scope: This inspection was conducted in accordance with revised Inspection Procedure **71111.05**, Fire Protection, dated 03/23/01, and the NRC Reactor Oversight Process. The inspection team focused their review on the separation of the systems and equipment necessary to achieve and maintain safe shutdown and fire protection features of these plant areas. The team used IPEEE data, with assistance from the RII Senior Risk Analyst, to identify risk significant plant areas and components among those with the highest CDFs and CCDPs. The fire areas/fire zones chosen for review during this inspection are:

1. **Unit 2 Fire Area B, Cable Spreading Room (Fire Zone 52).** A fire in this area could result in evacuation of the Unit 2 main control room (MCR) and the plant could be brought to cold shutdown from a remote location even with the loss of all unprotected equipment and cables in Fire Zone 52. Use of Train "A" equipment is credited for a fire in this area.

2. **Unit 2 Fire Area C, is a dual elevation fire area encompassing Fire Zone 34 (Train "B" Switchgear Room) and Fire Zone 48 (Electrical Equipment Supply Fan Room).** Fire Area C and the essential equipment and cables within, have been evaluated with respect to the protection and separation criteria of Appendix R, Section III.G.2 to assure that the ability to safely shut down the plant is not adversely effected by a single fire event. Safe shut down of Unit 2 from the MCR using Train "A" equipment is credited for a fire in this area.

3. **Unit 2 Fire Area I, consists of Fire Zone 51 West (Cable Loft) above false ceiling, Fire Zone 21 (Personnel Rooms), Fire Zone 32 (PASS and Radiation Monitoring Room), Fire Zone 33I (Instrument Repair Shop), and Fire Zone 23 (Train "B" Electrical Penetration Room).** Fire Area I and the essential equipment and cables within, have been evaluated with respect to the protection and separation criteria of Appendix R Section III.G.2 to assure that the ability to safely shut down the plant is not effected by a single fire event. Safe shut down of Unit 2 from the MCR using Train "A" equipment is credited for a fire in this area.

INSPECTION RESULTS: Two Findings were identified.

Findings No. 1

Silicone oil filled transformers in Unit 2 fire areas were not evaluated in the Fire Hazards Analysis (FHA) as required by the Fire Protection Program commitments. The affected fire

#1/39

areas were Fire Area A (Fire Zone 37, A SWGR Rm); Fire Area C (Fire Zone 34, B SWGR Rm); and Fire Area QQ (Fire Zone 47, Turbine Bldg SWGR Rm)

Licensing Basis/Requirements:

PSL License Condition fire protection 2.C(20) requires PSL to implement and maintain an approved fire protection program as described in the UFSAR and SERs

UFSAR Section 9.5A, Part 2.4, Appendix A to BTP 9.5-1 states that the overall fire protection program should be based on evaluation of potential fire hazards through the plant and the effects of postulated design basis fires relative to maintaining the ability to perform safe shutdown functions.

UFSAR Section 9.5A , part 4.0 states that the FHA identifies fire hazards and postulates credible fires.

The PSL Fire Protection Plan, procedure 1800022, section 8.7.1.A states that insitu combustible features are evaluated in the fire hazards analysis as contributors to fire loading in the respective fire zones.

The 380 gallons of transformer silicone dielectric cooling fluid in each transformer was not evaluated in the FHA as contributors to fire loading and effects on SSD in FZ 34, 37 or 47.

Note: This finding affects:

1. Existing fire protection licensing bases (deviations to Appendix R granted by the NRC)

2. Current engineering evaluation allowed under GL 86-10 for fire protection barriers or system s not submitted to the NRC(see CR-02-396) Derated Thermo-Lag fire barrier wall partition separating the CSR and B Switchgear Room)

3. IPEEE Risk Analysis for External Event Fire (the transformer were likely not accounted for in ISDS and could affect total CDF for the fire areas.

4. The Maintenance and surveillance programs transformer related fluid sampling and condition evaluations—Will be followed up by Resident inspections.

The licensee issued CRs ***03-0637*** and **03-0978** to address this finding

Note: Missed Opportunities For Identification:

- In 1997 the licensee conducted a UFSAR Combustible Loading Update evaluation documented in PSL-ENG-SEMS-97-070 but failed to identify that the transformers in fire zone A37contained combustible silicone fluid.

- AND the PSL Triennal FP Audit in 2001 documented in QA audit Report QSL-FP-01-07 reviewed the FHA but did not identify any fire loading discrepancies.

Finding No. 2

Use of Manual Operator actions outside the MCR for III.G.2 areas (Fire Area C and Fire Area I) without prior NRC approval. Many manual operator actions were used in lieu of physical protection of cables and equipment relied on for SSD during a fire. This was a deviation from

the approved Fire Protection Program. The licensee identified this issue in CR 03-0153 prior to this inspection. This finding is more than minor. This finding will be Unresolved pending completion of the SDP to determine the risk associated with using the manual operator actions in lieu physical protection.

NOTE: The NRC and the Nuclear industry are working to resolve this issue on a generic basis.

In addition to the two findings, seven condition reports (CRs) were written as a result of this inspection. The CRs met the NRC criteria for minor issues and will not be discussed in the report details.

Open Items Reviewed: Three open items assigned to EB1 were reviewed for closure.

LER 50-335/00-004, Pressurizer Level Instrumentation Conduit Separation Outside Appendix R Design Bases

LER 50-335,389/00-001, Outside Design Bases Appendix R Hi-Lo Pressure Interface and Separation Issues

URI 50-335,389/99-08-03, PORV Cabling May Not Be Protected From Hot Shorts Inside Containment