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FACIL:50-389 St. Lucie Plant, Unit 2, Florida Power & Light Co. 05000389
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RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 97-002-01:on 981204,containment sump debris screen was not IAW design.Caused by gap in screen encl.Performed SE to document & licensing basis requirements for Unit 2 containment sump screens.With 981222 ltr.

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Florida Power & Light Company, 6351 S. Ocean Drive, Jensen Beach, FL 34957

December 22, 1998

L-98-319
10 CFR § 50.73

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

Re: St. Lucie Unit 2
Docket No. 50-389
Reportable Event: 1997-002-01
Date of Event: December 2, 1998
Containment Sump Debris Screen not in
Accordance with Design due to Gaps in Screen Enclosure

The attached revision to Licensee Event Report 1997-002 is being submitted pursuant to the requirements of 10 CFR § 50.73 to provide notification of the subject event.

Very truly yours,

J. A. Stall
Vice President
St. Lucie Nuclear Plant

JAS/EJW/KWF
Attachment

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

1/1
IE22

NRC FORM 366 (6-1998) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104 EXPIRES 06/30/2001

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LICENSEE EVENT REPORT (LER)

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TITLE (4)

Containment Sump Debris Screen not in Accordance with Design due to Gaps in Screen Enclosure

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
12	02	1998	1997	- 002 -	01	12	22	1998	FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9)	1
POWER LEVEL (10)	000

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)

	20.2201(b)		20.2203(a)(2)(v)		50.73(a)(2)(i)		50.73(a)(2)(viii)
	20.2203(a)(1)		20.2203(a)(3)(i)	X	50.73(a)(2)(ii)		50.73(a)(2)(x)
	20.2203(a)(2)(i)		20.2203(a)(3)(ii)		50.73(a)(2)(iii)		73.71
	20.2203(a)(2)(ii)		20.2203(a)(4)		50.73(a)(2)(iv)		OTHER
	20.2203(a)(2)(iii)		50.36(c)(1)		50.73(a)(2)(v)		Specify in Abstract below or in NRC Form 366A
	20.2203(a)(2)(iv)		50.36(c)(2)		50.73(a)(2)(vii)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Kenneth W. Frehafer, Licensing Engineer	(561) 467 - 7748

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
B	BQ	SCN	N/A	NO	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-

SUPPLEMENTAL REPORT EXPECTED (14)				EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
	YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO				

ABSTRACT *(Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)* (16)

On December 2, 1998, St. Lucie Unit 2 was in mode 6 at 0% reactor power. The Facility Review Group reviewed and approved the determination that various sump screen anomalies found during the Unit 2 cycle 11 refueling outage were reportable as a condition that was outside the design basis of the sump. As part of the long term corrective actions associated with the St. Lucie cycle 10 refueling outage identified ECCS sump deficiencies, surveillance procedure MSP-68.01, "Containment Sump Inspection," and QC Technique Sheet 10.54 were developed to provide detailed inspection scope and acceptance criteria for the ECCS sump screen enclosure inspections. The cycle 11 refueling outage inspection activities identified anomalies not found during the cycle 10 refueling outage sump repair activities.

The cause of deficiencies found during the cycle 11 refueling outage was inadequate corrective actions for the sump screen anomalies found during the cycle 10 refueling outage.

All identified sump screen deficiencies were dispositioned and/or repaired.

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BACKGROUND INFORMATION

The Emergency Core Cooling System (ECCS) containment sump [EIIS:BQ] at St. Lucie Unit 2 is a large collecting reservoir provided to supply water to the Containment Spray (CS) [EIIS:BE] and Safety Injection (SI) [EIIS:BQ] systems for long term recirculation following design basis accidents. The sump is located at the lowest floor elevation in containment (excluding the reactor cavity sump) and is shielded by vertically and horizontally mounted screens designed to prevent debris, generated as a result of an accident, from entering the safety injection and containment spray systems. Per the St. Lucie Unit 2 Updated Final Safety Analysis Report (UFSAR), Section 6.2.2.2.3, the containment sump was designed in accordance with the recommendations of NRC Regulatory Guide 1.82, Revision 0.

A coarse outer trash rack is provided between the secondary shield wall vent openings to prevent clogging of the sump screening. The fine mesh filter screens completely enclose the ECCS suction lines. The total vertical area of the sump screens ensures that the coolant velocity through the screens remains acceptable during recirculation. A fine mesh vertical screen is also provided in the sump to assure separation of the redundant ECCS suction lines.

DESCRIPTION OF THE EVENT

On May 18, 1997, St. Lucie Unit 2 was in cold shutdown (Mode 5) following refueling. During an inspection of the ECCS containment sump, the sump screens were found to be in a degraded condition. Specifically, during an inspection of the containment sump area as required by Technical Specification (TS) 4.5.2, the Resident NRC Inspector and FPL operational support personnel identified an opening that existed between the edge of the vertical divider screen in the containment sump and the outside screen panel which encloses the sump. The vertical divider screen is designed to provide independence for the two ECCS suction lines (Train A and B) by dividing the sump into two distinct suction areas.

Based on the inspection observations, FPL site engineering and maintenance personnel performed additional walkdowns of the containment sump screens in order to compare them with design requirements. The additional inspections confirmed that a gap of approximately 2 inches existed between the outboard end of the divider screen panel (panel 10) and the screen panel which formed the outside wall around the sump (panel 4). The inspections also identified an additional 3/8 inch gap and missing metal panel associated with the vertical divider as well as some small gaps associated with the upper horizontal screen components and shield wall divider screen. The openings which were found were in excess of that which is allowed by design.

A Plant Change/Modification (PCM 97- 037M) was implemented to restore the containment sump debris screen to an acceptable configuration. All field work for the completion of this modification was completed in accordance with the requirements of the PCM and the integrity of the outer screen enclosure and the vertical divider screen was fully restored. The containment sump was returned to operable status at 0531 on May 22, 1997, prior to the Unit 2 startup.

As part of the long term corrective actions associated with the St. Lucie cycle 10 refueling outage identified ECCS sump deficiencies, surveillance procedure MSP-68.01, "Containment Sump Inspection," and QC Technique Sheet 10.54 were developed to provide detailed inspection scope and acceptance criteria for the ECCS sump screen enclosure

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inspections. The first use of the detailed surveillance procedures for St. Lucie Unit 2 was scheduled to occur before the transition to Mode 4 during the cycle 11 refueling outage. However, in order to allow sufficient time to repair any screen discrepancies that might be identified, a preliminary evaluation of the sump by QC and Engineering was scheduled to occur early in the outage.

On November 15, 1998, QC completed their general evaluation of the Unit 2 containment sump enclosure, that resulted in the identification of eight anomalies in the ECCS containment sump screens and structural steel. These discrepancies exceeded the maximum gap size of 0.090 inches (for the exterior screens) or 0.135 inches (for the divider screens) as permitted by the UFSAR. When Planning and Engineering entered the sump to examine these anomalies to determine the appropriate repair methods, additional anomalies were discovered. Due to the discovery of additional sump screen anomalies, FPL recognized the need to re-inspect the sump. Environmental conditions were improved by the installation of temporary shielding and the residual water was removed from the sump. QC completed the sump re-inspection on November 22, 1998, and the inspection results were given to Engineering for evaluation. Engineering completed evaluation of the sump screen enclosure anomalies on December 2, 1998, and after review of the Engineering evaluation by the Facility Review Group (FRG), these anomalies were determined to be reportable under 10 CFR 50.73. All identified sump screen enclosure discrepancies were dispositioned and/or repaired prior to restart.

In general, the anomalies found were characterized as follows:

Screen-to-Frame Anomalies:

Screen-to-frame anomalies occurred where the 0.090 inch screen mesh did not meet or properly overlap onto the steel frames. Anomalies were found where the horizontally anchored steel mesh was not in contact with the top or bottom frame members, resulting in small horizontal gaps in excess of the maximum allowable gaps (0.135 inch for the divider screens, 0.090 inch for all other screens). Where the mesh was bolted onto the vertical frame members, construction practices and tolerances resulted in the inward or outward buckling (or puckering) of the mesh between the bolts, resulting in gaps along the frame in excess of the maximum allowable gaps. Likewise, the mesh at the frame corners had been pulled in or pushed out resulting in small gaps in the frame corners in excess of the maximum allowable gaps. In one instance, excess mesh material sagged around one of the steel rods, causing the mesh to protrude beyond the frame, and resulting in gaps at the bottom of the steel rod.

Screen-to-Penetration Anomalies:

Screen-to-penetration anomalies occurred where the 0.090 inch screen mesh did not meet or properly overlap onto objects penetrating the screen enclosure (i.e., pipes, reactor drain tank, structural members). These would typically include situations where the mesh does not directly contact the penetrating item/penetration sleeve, or where mesh patches used to cover existing gaps do not maintain contact between the adjoining surfaces. In these situations, a small gap or crease remains through which debris could migrate into the sump. Examples of this were found on the divider screen (Panel 10) where the reactor drain tank penetrates. "Boot seals" consisting of a fine screen have been installed on pipes or pipe sleeves penetrating the screen enclosure. However, one condition was identified where gaps were noted in the boot seal where a tube penetrated.

Structural Members:

Structural member anomalies occur where adjoining steel members are not in contact with each other resulting in gaps in excess of the maximum allowable gaps. Anomalies pertaining to gaps between screen panel frames, structural beams, steel plates, and concrete walls/floors are included within this category. The sump enclosure is comprised of many separate mesh panels welded together. The panels are welded or bolted to structural steel or concrete walls/floors to anchor and support the enclosure. At various locations, steel plate is used to either cover a seam or to construct a box to support a penetration. Inspection of the sump identified anomalies pertaining to adjoining mesh frames not properly sealed, interface between panels and structural members and concrete structures not properly sealed, and steel plates used to establish part of enclosure barrier not properly sealed. Included within this group are anomalies associated with inadequate repairs of existing gaps at various structural member interfaces.

Screening:

Anomalies were also noted within the 0.090 inch steel screen mesh. These anomalies pertain to openings or holes within the screen mesh which exceed the maximum allowable criteria.

CAUSE OF THE EVENT

The deficiencies associated with the containment sump divider screen were caused by a failure to properly implement the design requirements for the screen enclosure during initial system construction. Plant design drawing 2998-G-797, Sheet 13, specifies full closure of the vertical seams associated with the sump divider screen. An approximate 2 inch gap at the outboard end of the divider screen panel existed because the design detail to extend and connect the divider panel to the outside screen panel was not properly implemented during the original construction of the sump enclosure. The omission of a metal panel in the divider screen wall, and several other small gaps found in the sump screen enclosure were also a result of inattention to detail during original system construction. Failure to identify the above deficiencies through as-built verification at the time of construction resulted in unnecessary operation outside the approved design.

Insufficient guidance contributed to a prolonged delay in identifying the construction inadequacies and component gaps associated with the containment sump debris screen. Specifically, the surveillance requirements for performing the sump inspection did not require a detailed inspection of the sump screen enclosure for compliance with the UFSAR design basis. Technical Specification 4.5.2.e.2 requires a visual inspection of the containment sump to verify that subsystem suction inlets are not restricted by debris and that sump components show no evidence of structural distress or corrosion. This inspection is performed every 18 months. There are no specific plant requirements to inspect for gaps in the debris screens or to verify that the physical condition of the screen enclosure is sufficient to prevent bypassing the filtering function.

In February of 1994, FPL performed an inspection and general configuration verification of the St. Lucie Unit 2 containment sump based on industry events documented in NRC Information Notice (IN) 89-77, Supplement 1 (December 3, 1993). The IN was issued to alert licensees of potential problems associated with debris found in containment emergency sumps and incorrect screen configurations. As a result of the inspection, several sump screen configuration deficiencies were

identified and subsequently corrected, however, the 1994 inspection primarily focused on damaged or missing components and obvious configuration inadequacies. The inspection scope did not provide for a detailed as-built verification of design which could have identified the additional deficiencies described in this report. As a result, an opportunity for earlier detection of the containment sump screen deficiencies was missed.

The deficiencies found during the St. Lucie Unit 2 cycle 11 sump screen enclosure inspections were caused by inadequate corrective actions associated with the cycle 10 sump activities. The most recent St. Lucie Unit 2 cycle 11 sump screen enclosure inspection results indicate that FPL mistakenly placed too high a confidence level on the ability of the previous sump walkdown and repair activities to identify sump screen enclosure discrepancies.

As noted previously, there were discrepancies noted by the NRC resident and FPL operational support personnel during the cycle 10 refueling outage. These discrepancies involved openings which existed between the edge of the vertical divider screen in the containment sump and the outside screen panel which encloses the sump. Subsequent to this, FPL site engineering and maintenance personnel performed additional walkdowns of the containment sump screens to determine required repairs. The walkdown focused on the areas of the ECCS sump screens where the discrepancies had been noted, primarily the sump interior vertical divider screen. During the course of this walkdown, additional gaps were found in the sump screen enclosure, including a 3/8 inch gap and missing metal panel associated with the vertical divider, as well as some small gaps associated with the upper horizontal screen components and the divider screen. Modifications were implemented to restore the identified containment sump screen enclosure deficiencies to an acceptable configuration, based on Engineering's knowledge of the design bases for the sump screen. No other deficiencies were observed during the repair operations or the sump close out inspections. The sump was returned to operable status on May 22, 1997, prior to the Unit 2 startup.

As part of the long term corrective actions associated with the ECCS sump deficiencies, prior to the start of the Unit 2 cycle 11 refueling outage, detailed inspection procedures, MSP-68.01, "Containment Sump Inspection," and QC Technique Sheet 10.54, were developed to provide acceptance criteria for future sump inspections. Although the previous cycle 10 refueling outage startup sump walkdown provided reasonable assurance that the Unit 2 ECCS sump screen enclosure was operable, and that the identified discrepancies were restored to original design requirements, the scope, level of detail, and reporting criteria of the newly developed inspection procedures were more rigorous than the walkdowns previously performed. Recognizing that the level of detail applied to inspection activities would be greater than that for the walkdowns performed during the cycle 10 refueling outage startup, Engineering prepared a contingency modification package to disposition and repair any minor deficiencies that might be found during the cycle 11 refueling outage sump inspection.

As discussed earlier, additional ECCS sump screen enclosure discrepancies were identified during the Unit 2 cycle 11 ECCS sump screen enclosure inspection. Although the total number of deficiencies noted was higher than that found during the cycle 10 walkdowns, the nature and categorization of the discrepancies found during the Unit 2 cycle 11 refueling outage ECCS sump screen enclosure inspections were much less significant than the anomalies previously identified.

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ANALYSIS OF THE EVENT

This event is being reported pursuant to the requirements of 10 CFR 50.73 (a)(2)(ii)(B), as "any event or condition of the nuclear power plant. . . that resulted in the nuclear power plant being in a condition that was outside the design basis of the plant." The St. Lucie Unit 2 UFSAR provides a description of the containment sump and debris screen design.

Design Basis

The St. Lucie Unit 2 UFSAR, Section 6.2.2.2.3, states that the design of the containment sump follows the recommendations outlined in Regulatory Guide 1.82, and includes the following:

a) A large capacity sump, enclosing the redundant suctions of the ECCS and the CS systems which are separated by approximately 15 feet is provided for continuous recirculation.

b) . . . Where necessary, such as in the case of safety injection tank piping and charging lines, design provisions are made to protect the sump from the effects of piping failure.

c) The sump is located at the lowest floor elevation in the containment (exclusive of the reactor cavity sump) and is shielded by two screens; an outer trash rack, and a fine mesh filter. The fine mesh screens completely enclose the suction lines rising vertically above the floor elevation. The screen panels are rigidly attached to the sump walls by being welded to embedded plates. In turn, the screen sections are welded to each other. All piping that penetrates the screens is provided with boots connecting the pipe and screen, blocking any potential unfiltered flow path. With these design provisions. . . no fluid can reach the suction lines without being filtered by the fine mesh screens.

d) Drains from the various regions of the containment are directed to the sump via vent openings in the secondary shield wall. These vent openings have coarse screens acting as trash racks that prevent debris laden water from impinging on the fine screens.

e) Debris generated inside containment as a result of an accident will be confined between the primary and secondary shield wall. Debris is prevented from reaching the trash racks placed at the secondary shield wall vent openings . . . Insulation on piping and equipment is considered to be the primary source of post-accident debris inside containment which could potentially clog the sump screening . . .

f) Fine mesh filter screens are provided, completely enclosing the sump suctions. Enough wetted vertical screen area is provided such that, with an assumed 50 percent blockage, coolant velocity through the screens is approximately 0.2 ft/second. No credit is taken for the horizontal screen area. In addition, a fine, seismically supported vertical screen is provided in the sump to completely separate the redundant suction lines.

g) All screens and supporting structures are designed to withstand the effects of the SSE. The screens are 18 gage wire with an open area of .0081 square inches. The screen mesh size was selected to avoid entrapment of particles in the fuel

assembly spacer grids and material is made of 304 stainless steel to resist corrosion and structural degradation.

The actual field configuration of the Unit 2 containment sump debris screen included openings which were greater than that required by design specifications and therefore represented a condition outside the design basis of the plant.

Following this event, FPL performed a safety evaluation which reviewed the design requirements of the St. Lucie Unit 2 containment sump and concluded that the sump screen configuration provided in plant design documents was consistent with the guidelines of Regulatory Guide 1.82 and therefore acceptable.

Analysis of Safety Significance

An engineering review was performed which evaluated the safety significance and generic implications of the as-found condition of the St. Lucie Unit 2 containment sump screen enclosure. The review is summarized below.

The Unit 2 containment sump is protected against debris resulting from a postulated loss of coolant accident (LOCA) by two separate barriers. Course trash racks (with 3/4 inch openings) ensure that large debris is prevented from reaching the containment sump. A fine mesh screen with a design mesh size of .090 inches encloses the sump and a divider screen within the enclosure separates the two sump suction lines. The design fluid flow velocity across the screens is 0.2 feet/second and as built flow velocities are actually lower. Therefore, heavy solid particles would sink and not be entrained by the flow to the sump. Debris which would be entrained is on the order of 1.05 specific gravity (only slightly more dense than water) and of low structural strength.

The Unit 2 fine mesh screens comprise several hundred square feet of filter screen area. The gaps which were identified during the sump walkdowns were on the order of several square inches and represented only a very small fraction of the total screen area. Moreover, the gaps were located on the divider screen and horizontal surface of the screen enclosure. The flow paths through these gaps do not represent direct paths to the sump suction lines and consequently, large, heavy particles would be expected to precipitate out before being entrained by the fluid flow into the suction piping.

The gaps in the outer containment fine mesh screen enclosure could have potentially allowed larger than design basis particles to enter the suction for the CS and HPSI systems. Openings in the divider screen could have allowed particles to enter the redundant spray header or the redundant HPSI train if one side of the screen enclosure was compromised. However, it should be noted that there are no identified credible mechanisms which would damage the screen enclosure during a LOCA.

The most limiting components, when considering particle size, are the CS and HPSI pumps, the HPSI throttle valves, the CS nozzles, and the fuel assembly spacer grids. The potential impact of the identified gaps in the screen enclosure and divider screen on these components is discussed in the following paragraphs.

The CS system is designed to reduce containment temperature and pressure following a postulated LOCA. The peak temperature and pressure occur early in the design basis LOCA scenario, and is essentially a function of the containment heat sinks. Significant cooling of the containment atmosphere by the CS system occurs during the injection phase of the LOCA event before suction is transferred to the containment

sump from the refueling water tank [EIIS:BP]. Furthermore, the CS system is essentially redundant to the emergency containment coolers [EIIS:BK] for long term containment cooling and the containment coolers would not be affected by the condition of the containment sump enclosure. The CS pumps are capable of passing solid particles of 1/4 inch or less without damage and the CS nozzles are capable of passing solid particles of up to 3/8 inch. Both the pumps and spray nozzles would be expected to pass low density particles of much larger size without damage. Therefore, the relatively small gaps in the sump screens would not be expected to adversely affect the CS system's ability to mitigate the consequences of a LOCA.

The initial reflooding of the reactor core is accomplished by the safety injection tanks and the low pressure safety injection (LPSI) system [EIIS:BP] during the injection phase of the event and are unaffected by the sump condition. The HPSI system provides simultaneous hot and cold leg injection during the recirculation phase of a LOCA. The HPSI pumps are capable of passing solid particles of 1/4 inch or less without damage. The HPSI throttle valves utilize a basket disk with four flow ports. The valves are capable of passing solid particles up to 0.19 inches but portions of the flow ports could be blocked by hard debris of 0.14 inches or more. The pumps and throttle valves would be expected to pass low density particles of much larger size without damage. Therefore, the relatively small gaps in the sump screens would not be expected to have adversely affected the HPSI system's ability to mitigate the consequences of a LOCA.

The St. Lucie Unit 2 UFSAR states that the design basis for the sump screen fine mesh size is to prevent debris from blocking the fuel assembly spacer grids. This consideration exceeds the requirements of Regulatory Guide 1.82, in that this is a much smaller particle size than could affect the most limiting HPSI or CS component. The fuel assembly flow channels could be partially blocked by debris of approximately 0.124 inches or greater. However, considerable area for flow is available around each fuel assembly and particles of approximately 0.255 inches would be required to block the widest part of the channel. Based on the relatively small area that the gaps in the screen represent, the amount of debris would be expected to be small and, as stated previously, the type of debris anticipated to be entrained would be of low density and low structural strength.

The sump design and design basis for the St. Lucie Unit 1 sump screens was reviewed for generic applicability to this event, and it was concluded that Unit 1 does not have the same potential for having sump screen gaps (beyond design) as found on Unit 2. The St. Lucie Unit 1 fine mesh screen consists of a small box surrounding each suction pipe and the enclosure does not involve a geometry as complex as the Unit 2 design. A double barrier to prevent large debris from entering the sump is also included on Unit 1. The rough screen utilizes steel grating and wire mesh with 1/2 inch clear openings with the exception of one section which utilizes 1/4 inch openings.

In addition, each Unit 1 recirculation line suction is encased with a fixed fine mesh screen capable of filtering out 1/4 inch particles. The Unit 1 screens are box type strainers, each with flow areas equivalent to two times the cross sectional area of the recirculation pipe. The pumps which use the containment sump for suction during the recirculation phase of a LOCA on Unit 1 have the capability of passing particles 1/4 inch and smaller without any detrimental effect on pump capability. Furthermore, the design basis of the fine mesh screen is 1/4 inch openings on Unit 1

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as opposed to .090 inches on Unit 2, making the Unit 1 design basis more tolerant of small gaps equal to 1/4 inch or less.

Previous inspection of the Unit 1 containment sump concluded that the containment sump (grating and screening) was generally configured in accordance with UFSAR drawings. As previously discussed, a similar inspection performed for the Unit 2 containment sump had identified discrepancies in the field configuration.

All necessary field work to modify the St. Lucie Unit 2 containment sump in accordance with design requirements was completed prior to plant startup, and within the action requirements of the St. Lucie Unit 2 Technical Specifications. As discussed above, the affect of the identified gaps in the Unit 2 containment sump screen on the limiting ECCS, CS, and fuel components was assessed and it was concluded that the condition did not represent a significant impact to the operation of components required for accident mitigation. Therefore, the protection of the public health and safety was not adversely affected by this event.

The size of the gaps in the containment sump screen enclosure reported in this LER revision are bounded by those identified during the previous cycle 10 refueling outage. Therefore, this LER revision does not change the conclusions of the original safety significance evaluation.

CORRECTIVE ACTIONS

1. FPL performed a safety evaluation to document the design and licensing basis requirements for the Unit 2 containment sump screens. Based on the evaluation, changes were submitted to update the Unit 2 UFSAR to more accurately describe the containment sump screen design.
2. The discrepancies associated with the St. Lucie Unit 2 containment sump screen enclosure were corrected in accordance with Plant Change/Modification (PCM) 97-037M. The PCM included modifications to the containment sump screens as required to meet the intent of the applicable design drawings. This was completed prior to the Unit 2 startup following the Cycle SL 2-10 refueling outage.
3. To augment current surveillance instructions, additional procedural guidance will be developed for performing containment sump inspections to provide specific requirements for inspecting for gaps in the sump screen as well as verifying the cleanliness of the sump area. The procedural guidance will be designed to ensure that the physical condition of the sump screens continues to meet the design requirements and that the filtering function of the screens remains intact.
4. The St. Lucie Unit 1 containment sump debris screens will be inspected during the next outage when Unit 1 enters Mode 5 for a sufficient duration. The inspection will include a detailed as-built verification of the screen configuration.
5. This event will be scheduled into the Engineering Support Personnel (ESP) training program at St. Lucie to provide emphasis on the continuing need for effective assessment and disposition of lessons learned from industry experience such as that contained in NRC Information Notice 89-77.
6. The St. Lucie Unit 2 cycle 11 sump screen enclosure was inspected to the new surveillance procedure. All deficiencies identified during the St. Lucie Unit 2 cycle 11 refueling outage were dispositioned or repaired, giving reasonable assurance that the ECCS sump screen enclosure is restored to design conditions.

ADDITIONAL INFORMATION

Failed Components

Equipment: Containment Sump Debris Screen Enclosure

Material: Type 304 stainless steel

Cause code: B - Construction/Installation

Previous Similar Events

LER 50-389/97-002, Revision 0 documents the ECCS sump screen enclosure deficiencies found during the St. Lucie Unit 2 cycle 10 refueling outage.

Results of Unit 1 cycle 16 refueling outage sump screen inspections

On November 11, 1997, several discrepancies were identified with the Unit 1 sump screen enclosure, as documented in Condition Report 97-1976. The Unit 1 sump screen configuration is different from Unit 2, and consist of an inner ¼ X ¼ inch screen around the ECCS recirculation pump suction and outer ½ X ½ inch screening. Only the inner screen provides the necessary filtration to limit the size of debris recirculated into the ECCS system to less than ¼ X ¼ inch to protect the ECCS pumps and CS nozzles. No anomalies were noted on the inner ¼ X ¼ inch screens. The outer screen anomalies were repaired. These Unit 1 screen deficiencies were determined to be not reportable, as the containment sump screen enclosure was operable with the identified anomalies.