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

FPL

January 6, 2005

L-2004-233
10 CFR 50.90

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

RE: St. Lucie Unit 2
Docket No. 50-389
Proposed License Amendment
Add Steam Generator Repair Method
Westinghouse Electric LLC Alloy 800 Leak Limiting Sleeves

Pursuant to 10 CFR 50.90, Florida Power & Light Company (FPL) requests to amend Facility Operating License NPF-16 for St. Lucie Unit 2. The proposed amendment revises Technical Specification (TS) Section 3/4.4.5, Steam Generators, to allow repair of steam generator (SG) tubes by installing Westinghouse Electric LLC (Westinghouse) Alloy 800 leak limiting sleeves. The current Technical Specification requires SG tubes to be plugged when degradation is 40 percent through-wall penetration or greater, and does not provide for a method to repair a tube and maintain it in service. St. Lucie Unit 2 SGs are scheduled for replacement after Cycle 16 and the sleeve design discussed in this evaluation is not applicable to the replacement SG design. Therefore, the proposed changes will apply only to the original St. Lucie Unit 2 SGs to ensure they are maintained within the analyzed plugging limits.

Attachment 1 is a description of the proposed changes and the supporting justification. Attachment 2 is the Determination of No Significant Hazards and Environmental Considerations. Attachment 3 is a marked up copy of the proposed Technical Specification changes. Attachment 4 is an information copy of the proposed changes to the TS Bases. Attachment 5 is copy of the retyped TS pages. Attachment 6 is a list of implementation commitments. Enclosures 1 and 2 provides proprietary and nonproprietary versions of Westinghouse WCAP-15918-P, Revision 2, *Steam Generator Tube Repair For Combustion Engineering and Westinghouse Designed Plants With 3/4-inch Inconel 600 Tubes Using Leak Limiting Alloy 800 Sleeves*, dated July 2004, respectively.

WCAP-15918-P (Enclosure 1) describes the technique for installing the sleeves to repair degraded SG tubes as well as detailing the analyses and testing performed to verify the adequacy of Alloy 800 sleeves for installation in SG tubes as an acceptable repair technique. Westinghouse Electric Company, LLC has determined that portions of this information are proprietary in nature. Therefore, it is requested that this document be withheld from public disclosure in accordance with the provisions of 10 CFR 2.390(a)(4). The Westinghouse reasons for the classification of this information as proprietary and the signed affidavit are included as Attachment 7. Correspondence with respect to the copyright or proprietary aspects of the items listed above or the

Enclosure 1 Contains 2.390 Proprietary Information

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supporting Westinghouse affidavit should reference CAW-04-1865 and should be addressed to J. A. Gresham, Manager, Regulatory Compliance and Plant Licensing, Westinghouse Electric Company LLC, P.O. Box 355, Pittsburgh, Pennsylvania 15230-0355.

The St. Lucie Facility Review Group and the Florida Power & Light Company Nuclear Review Board have reviewed the proposed amendment.

In accordance with 10 CFR 50.91 (b)(1), a copy of the proposed amendment is being forwarded to the State Designee for the State of Florida.

Approval of this proposed license amendment is requested by January 2006 to support using the repair method during the spring 2006 St. Lucie Unit 2 refueling outage SL2-16. Please issue the amendment to be effective on the date of issuance and to be implemented within 60 days of receipt by FPL. Please contact George Madden at 772-467-7155 if there are any questions about this submittal.

Very truly yours,

William Jefferson, Jr.
Vice President
St. Lucie Plant

WJ/GRM

Attachments

cc: Mr. William A. Passetti, Florida Department of Health

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STATE OF FLORIDA)
) ss.
COUNTY OF ST. LUCIE)

William Jefferson, Jr. being first duly sworn, deposes and says:

That he is Vice President, St. Lucie Plant, for the Nuclear Division of Florida Power & Light Company, the Licensee herein;

That he has executed the foregoing document; that the statements made in this document are true and correct to the best of his knowledge, information, and belief, and that he is authorized to execute the document on behalf of said Licensee.

William Jefferson, Jr.

STATE OF FLORIDA

COUNTY OF ST LUCIE

Sworn to and subscribed before me

this 6 day of Jan., 2005
by William Jefferson, Jr., who is personally known to me.

Leslie J. Whitwell
Name of Notary Public - State of Florida

Leslie J. Whitwell
MY COMMISSION # DD020212 EXPIRES
May 12, 2005
BONDED THRU TROY FAIN INSURANCE, INC.

(Print, type or stamp Commissioned Name of Notary Public)

Enclosure 1 Contains 2.390 Proprietary Information

ATTACHMENT 1

DESCRIPTION OF THE PROPOSED CHANGES AND JUSTIFICATION

Introduction/Background

A change is proposed to revise the St. Lucie Unit 2 Technical Specifications Section 3/4.4.5, Steam Generators, to allow repair of steam generator (SG) tubes by installing Westinghouse Electric LLC (Westinghouse) Alloy 800 leak limiting sleeves. The current Technical Specification requires SG tubes to be plugged when degradation is 40 percent through-wall penetration or greater, and does not provide for a method to repair a tube and maintain it in service. The St. Lucie Unit 2 SGs are scheduled for replacement after Cycle 16 and the sleeve design discussed in this evaluation is not applicable to the replacement SG design. Therefore, the proposed changes will apply only to the original St. Lucie Unit 2 SGs to ensure they are maintained within the analyzed plugging limits.

Discussion

The proposed amendment would revise Technical Specification 3/4.4.5, Steam Generators, to allow repair of SG tubes by installation of Alloy 800 leak limiting sleeves developed by Westinghouse. Attachment 6, Westinghouse WCAP-15918-P, Revision 2, *Steam Generator Tube Repair For Combustion Engineering and Westinghouse Designed Plants With 3/4-inch Inconel 600 Tubes Using Leak Limiting Alloy 800 Sleeves*, dated July 2004, describes the technique for installing the sleeves to repair degraded SG tubes. In addition, WCAP-15918-P details the analyses and testing performed to verify the adequacy of Alloy 800 sleeves for installation in SG tubes as an acceptable repair technique.

The proposed change does not adversely impact plant safety or operation. Attachment 2 concludes that the proposed changes do not involve a significant hazards consideration. This change affects surveillance inspection and repair requirements for SG tubes, which form a portion of the reactor coolant system pressure boundary.

Description of Proposed Change

The proposed changes allow the use of Westinghouse Alloy 800 leak limiting sleeves and apply only to the original SGs. A note will be included in the St. Lucie Unit 2 Technical Specifications to clarify that Alloy 800 sleeves are applicable only to the original SGs. Modification of the St. Lucie Unit 2 Technical Specifications is proposed as follows:

- Technical Specification (TS) 4.4.5.4.a.6, Plugging Limit, is modified to add a repair limit to allow the affected area of a SG tube to be repaired by sleeving as

an alternative to plugging. Plugging requirements for the Alloy 800 sleeves are also established.

- Add TS 4.4.5.4.a.10, Tube Repair, to identify the Westinghouse Alloy 800 leak limiting sleeve as an acceptable sleeve design for maintaining a tube in service.
- TS 4.4.5.4.b - change "(plug all tubes exceeding the plugging limit and all tubes containing through-wall cracks)" to "(plug or repair all tubes exceeding the plugging or repair limit and all tubes containing through-wall cracks)."
- Add TS 4.4.5.2.b.4 to require inspection of all in service Alloy 800 sleeves using a plus point coil or equivalent qualified technique during each refueling outage.
- TS Table 4.4-2, "Steam Generator Tube Inspection" - in five places in the "Action Required" columns, the words "or repair" are inserted after "plug."
- TS 4.4.5.5 a - The sentence "Within 15 days following the completion of each inservice inspection of SG tubes, the number of tubes plugged in each SG shall be reported to the Commission" is changed to "Within 15 days following the completion of each inservice inspection of SG tubes, the number of tubes plugged or repaired in each SG shall be reported to the Commission."
- TS 4.4.5.5 b.1. - The Special Report content requirement "Number and extent of tubes inspected" is changed to "Number and extent of tubes and sleeves inspected,"
- TS 4.4.5.5 b.3. - The Special Report content requirement "Identification of tubes plugged" is changed to "Identification of tubes plugged or repaired."

Attachment 4 provides suggested changes to Section 3/4.4.5, STEAM GENERATORS, in Technical Specification Bases, Attachment 6 of ADM-25.04, Reactor Coolant System. The Technical Specification Bases changes are provided for information only. The St. Lucie Unit 2 Technical Specification Bases Control Program controls the review, approval, and implementation of Technical Specification Bases changes.

Basis/Justification for Proposed Changes

Pressurized water reactor SGs have experienced tube degradation related to corrosion phenomena such as wastage, pitting, intergranular attack, stress corrosion cracking and crevice corrosion along with other phenomena such as denting and vibration wear. Tubes that experience excessive degradation reduce the integrity of the primary to secondary pressure boundary. These tubes are considered defective and must be repaired or removed from service. The installation of SG tube plugs removes the heat transfer surface of the plugged tube from service and leads to a reduction in the primary coolant flow available for core cooling. Sleeving is a SG tube repair method that provides a process to reestablish tube serviceability.

The St. Lucie Unit 2 SGs are vertical tube and shell recirculating heat exchangers designed and fabricated by Combustion Engineering (CE). The tubes are Alloy 600 mill

annealed and the tube supports are carbon steel lattice type design. Each tube is explosively expanded into the tubesheet for the entire tubesheet thickness. The dominant damage mechanism at St. Lucie Unit 2 in recent inspections is axial outside diameter stress corrosion cracking, which occurs most frequently at the lower hot leg tube supports and, to a lesser extent, at the secondary face of the tubesheet.

Technical Analysis

The proposed changes revise TS 4.4.5.4.a.6, TS Table 4.4-2, and adds TS 4.4.5.4.a.10 to permit the installation of leak limiting Alloy 800 sleeves to repair SG tubes at St. Lucie Unit 2 as an alternative to plugging. TS 4.4.5.2.b.4 is added to require in service inspection of Alloy 800 sleeves with Plus Point probes or equivalent techniques. TS 4.4.5.4.b, 4.4.5.5 a, 4.4.5.5 b.1, and 4.4.5.5 b.3, are modified to address reporting of results.

Westinghouse provides two types of leak limiting Alloy 800 sleeves. The first type of sleeve spans the transition zone (TZ) of the parent SG tube at the top (secondary face) of the tubesheet and is called a TZ sleeve. The TZ sleeve is hydraulically expanded into the SG tube at the upper end and is hard rolled into the SG tube within the tubesheet. The length of the TZ sleeves permits the sleeve to span the degraded SG tube section at the top of the tubesheet. The second type of sleeve spans a degraded area of the SG tube at a tube support plate (TSP) elevation or in a free span section and is called a tube support (TS) sleeve. The TS sleeve is hydraulically expanded into the SG tube near each end of the sleeve.

There are two distinct advantages associated with the leak limiting Alloy 800 sleeves compared to other sleeve designs. First, no welding, brazing, or heat treatment is required during sleeve installation. Secondly, the strain within the tube is low, thereby, reducing the likelihood of future degradation due to stress-influenced mechanisms. Although the Alloy 800 sleeves may allow slight leakage past the sleeve (assuming the parent SG tube is leaking), the sleeve is designed to maintain normal operation and postulated post-accident leakage to extremely small amounts, when compared to the Technical Specification primary-to-secondary leakage limits.

The SG tube with the installed sleeve meets the structural requirements of SG tubes that are not degraded. Even in the event of the severance of the SG tube, the sleeve will provide the required structural support and acceptable primary-to-secondary leakage for normal operating and accident conditions. Extensive analyses and testing have been performed on the sleeve and repair joints to demonstrate that the design and licensing criteria are met.

WCAP-15918-P, Revision 2, provides a detailed description of the design, installation, and testing associated with the leak limiting Alloy 800 sleeves for SG tube repair in Westinghouse (formerly CE) designed plants with 3/4-inch outside diameter Inconel 600 tubes of varying wall thickness. These analyses address a combination of one TZ

sleeve and/or up to two TS sleeves that could be installed in a single SG tube. Acceptable sleeve locations covered by the analyses are in the SG tube straight legs from the top of the tubesheet up to the upper most tube support plate region. WCAP-15918-P, Revision 2 also shows that a significant number of Alloy 800 sleeves have been in operation for a number of years with no service induced degradation. In addition, no detectable leakage has been associated with a tube that has an Alloy 800 leak limiting sleeve.

The principal accident associated with the proposed changes is the steam generator tube rupture (SGTR) event. The consequences associated with a SGTR event are discussed in St. Lucie Unit 2 Updated Final Safety Analysis Report (UFSAR) Section 15.6.2, Infrequent Events. The SGTR event is a breach of the barrier between the reactor coolant system and the main steam system. The integrity of this barrier is significant from the standpoint of radiological safety in that a leaking SG tube allows the transfer of reactor coolant into the main steam system. In the event of a SGTR, radioactivity contained in the reactor coolant mixes with water in the shell side of the affected SG. This radioactivity is transported by steam to the turbine and then to the condenser, or directly to the condenser via the turbine bypass valves, or directly to the atmosphere via the atmospheric dump/relief valves, main steam safety valves, or the auxiliary feedwater pump turbine exhaust. Non-condensable gases in the condenser are removed by the condenser air removal system. When radiation is detected, the vent path is rerouted to the plant vent. The use of leak limiting Alloy 800 sleeves allows the repair of degraded SG tubes such that the function and integrity of the SG tube is maintained. Therefore, the SGTR accident is not adversely affected by the use of leak limiting Alloy 800 sleeves.

The consequences of a hypothetical failure of a leak limiting Alloy 800 sleeve, and/or the associated SG tube, would be bounded by the current SGTR analysis. Due to the slight reduction in the inside diameter of the SG tube caused by the installed sleeve, primary coolant release rates through a sleeve and ruptured parent tube would be slightly less than assumed for the SGTR analysis. Therefore, the sleeve would result in lower total primary fluid mass release to the secondary system. A main steam line break (MSLB) or feedwater line break (FLB) will not cause a SGTR since the sleeves are analyzed for a design basis accident differential pressure greater than that predicted in the St. Lucie Unit 2 safety analysis. The impact of sleeving on SG performance, heat transfer, and flow restriction is not significant compared to plugging. The proposed St. Lucie Unit 2 Technical Specification changes to allow the use of leak limiting Alloy 800 sleeves do not adversely impact any other previously evaluated design basis accident.

Evaluation of the proposed leak limiting Alloy 800 sleeves indicates no detrimental effects on the sleeve or sleeved tube assembly from reactor system flow, primary coolant chemistry, secondary coolant chemistry, thermal conditions or transients, or other pressure conditions that may be experienced at St. Lucie Unit 2. Any leakage experienced during normal operation and post-accident conditions, is extremely small relative to the primary-to-secondary operational leakage limits in the Technical

Specifications. Data and calculation methodology concerning the reduction in primary coolant flow rate and sleeve-to-plug equivalency ratios is contained in Section 10 of WCAP-15918-P, Revision 2. Table 1 below provides a comparison of loading conditions assumed in WCAP-15918-P, Revision 2, with respect to corresponding St. Lucie Unit 2 operating and accident values. The values assumed in WCAP-15918-P, Revision 2, are equivalent or more conservative than St. Lucie Unit 2 plant specific values (including those for 30 percent SG tube plugging margin).

Table 1 - LOADING CONDITIONS COMPARISON

		St. Lucie Unit 2	WCAP-15918-P
T-Hot (Primary) Inlet	Operating Design	604°F 650°F	608.6°F 650°F
T-Steam (Secondary)	Operating Design	~525°F 550°F	505.8°F 560°F
Primary-to-Secondary ΔT	Operating	<80°F	92.8°F
Primary Pressure	Operating Design	2250 psia 2500 psia	2250 psia 2560 psia
Secondary Pressure	Operating Design	815 psia 1000 psia	790 psia 1100 psia
Normal Operating Primary-to-Secondary ΔP	Operating	1435 psi	1460 psi
MSLB FLB Primary-to-Secondary ΔP		<2560 psi <2560 psi	2560 psi 2560 psi
LOCA Primary-to-Secondary ΔP		<1000 psi	1170 psi

WCAP-15918-P, Revision 2, describes the specific qualifications of leak limiting Alloy 800 sleeves. A summary of these results is provided below.

Sleeve Installation Requirements

The sleeves will be installed in accordance with the processes provided by the vendor and described in Westinghouse WCAP-15918-NP, Revision 2, which address sleeve design, qualification, installation methods, non-destructive examination, and ALARA considerations.

A plant-specific document will be developed to specify the locations where sleeves can successfully be installed in accordance with the requirements of WCAP-15918-NP, Revision 2. This document will be utilized to determine that a tube is an acceptable sleeving candidate. Tubes with indications outside of the acceptable locations would not be sleeved.

Visual inspections of over 600 conditioned tubes at four different plants indicate that normal in-process instructions and quality assurance surveillance are sufficient to ensure acceptable conditioning of the tube inside diameter (ID) No axial scratches, loose particles, or other detrimental conditions were identified during these inspections.

General Structural Assessment

The Alloy 800 tubing, from which the sleeves are fabricated, is procured to the requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section II, Part B, SB-163, NiFeCr Alloy, Unified Numbering System N08800, and Section III, Subsection NB-2000. Alloy 800 is incorporated in ASME Code Case N-21 and is considered acceptable for use by Regulatory Guide 1.85, Materials Code Case Acceptability ASME Section III, Division 1, Revision 24, dated July 1986. Additionally, supplemental requirements more tightly controlling parameters within the limits allowed by the ASME specification are imposed by the WCAP.

Fatigue and stress analyses of sleeved tube assemblies have been completed in accordance with the requirements of Section III of the ASME Boiler and Pressure Vessel Code and NRC Regulatory Guide (RG) 1.121, Bases for Plugging Degraded PWR Steam Generator Tubes, August, 1976. SG tubes with installed Alloy 800 sleeves meet the structural integrity requirements of tubes that are not degraded. Even in the event of the severance of the SG tube in the region behind the sleeve, the sleeve will provide the required structural support and acceptable leakage between the primary and secondary systems for normal operating and accident conditions. The selected design criteria for the sleeves ensure that all design and licensing requirements are considered. Extensive testing and analyses have been performed on the sleeve and sleeve-to-tube joints to demonstrate that these design criteria are met.

Mechanical testing has been performed to support the analyses prepared using ASME Code stress allowable values. Corrosion testing of sleeve-tube assemblies has been performed in Belgium (Laborelec Laboratories) and the U.S. (Westinghouse) with satisfactory results. These results, when analyzed in conjunction with corrosion test results from the tungsten inert gas-welded sleeve program, confirm the adequacy of the sleeve joint design. The Alloy 800 sleeve material showed no signs of degradation under high temperature and pressure conditions in a caustic environment, while the sleeve-tube specimens maintained primary side pressure and exhibited no leakage throughout the duration of the test program. Earlier design variations of this sleeve-tube assembly (larger diametrical hydraulic expansion or varying number of expansions/configurations) were used at KORI I (South Korea) and Tihange 3 (Belgium) steam generators. The current design configuration is in service or recently in service at Angra I (Brazil), KRSKO (Slovenia), Ringhals 4 (Sweden), Tihange 2 (Belgium), Ulchin 1 and 2 (South Korea), and Calvert Cliffs 1 and 2 (United States) steam generators.

RG 1.121, and Electric Power Research Institute (EPRI) Technical Report 10001191, Steam Generator Degradation Specific Management Flaw Handbook, dated 2001, are used to develop the structural limit of the sleeve should sleeve wall degradation occur as described in Section 8.2 of WCAP-15918-P. The EPRI document adds margin to account for the configuration of a long axial crack. Leak limiting Alloy 800 sleeves have been shown (by test and analysis) to retain burst strength in excess of three times the normal operating pressure differential at end of operating cycle conditions. No credit for the presence of the parent SG tube behind the sleeve was assumed for the minimum wall burst evaluation for the Alloy 800 sleeve. Bounding normal operating, design seismic, and transient loading conditions on the SG tube sleeves were used for the structural analysis of the sleeves and are summarized in Section 8.5 of WCAP-15918-P. The loading conditions described in Section 8 of WCAP-15918-P are conservative with respect to St. Lucie Unit 2 operating and accident conditions.

The RG 1.121 bounding structural limit for leak limiting Alloy 800 sleeves is 48 percent through-wall, as detailed in Section 8.2.1 of WCAP-15918-P, Revision 2. This limit is based on normal operating conditions for the worst case envelopment of SG conditions for CE plants.

The eddy current inspection method qualification for Alloy 800 sleeves installed in 3/4 (0.750)-inch tubing is documented per Appendix H of EPRI Technical Report TR-107569-V1R5, PWR Steam Generator Examination Guidelines: Revision 5, Volume 1: Requirements, dated September 1997.

Corrosion Assessment

Historically, Alloy 800 has been used successfully for SG tubes, tube plugs, and sleeves primarily in Western Europe. Over 200,000 Alloy 800 tubes have been used for up to 19 years with only minimal tube failures (thinning/wastage, wear). No evidence of primary or secondary side stress corrosion cracking has been identified in any Alloy 800 tube. Over 5,300 Alloy 800 sleeves of the leak limiting type design have been used in 10 nuclear plants worldwide. No service induced stress corrosion cracking has been identified in any of the sleeved tube assemblies to date. Accelerated corrosion testing of Alloy 800 sleeve-tube assemblies has been performed in simulated primary and secondary side SG environments. The Alloy 800 sleeves showed no signs of cracking in both the primary and secondary side tests. The specific details of Alloy 800 sleeve corrosion performance are contained in Section 6 of WCAP-15918-P, Revision 2.

Mechanical Integrity Assessment

Mechanical testing of Alloy 800 sleeve-tube assemblies was performed using mock-up SG tubes. The tests determined axial load, collapse pressure, burst pressure, leak rates, wear, and thermal cycling capability. The demonstrated load capacity of the assemblies provides an adequate safety factor for normal operating and postulated accident conditions. The load capacity of the upper and lower sleeve joints is sufficient

to withstand thermally induced stresses and displacements resulting from the temperature differential between the sleeve and the SG tube and pressure induced stresses resulting from normal operating and post-accident conditions. The burst and collapse pressures of the sleeve provide margin over the limiting pressure differential. The mechanical testing demonstrated that the installed sleeve would withstand the cyclic loading resulting from power changes in the plant and other transients. The loading conditions developed in Section 8 of WCAP-15918-P were used to develop the conditions for the mechanical tests described in Section 7 of WCAP-15918-P. The temperature and pressure differentials described in Section 8 of WCAP-15918-P are conservative with respect to St. Lucie Unit 2 operating and accident conditions.

Leak Rate Assessment

Although the Alloy 800 sleeve to SG tube joint is not designed to be leak tight, conservative leak rate tests have been performed to provide the basis for leak rate calculations considering normal operating and accident conditions. The Alloy 800 TZ and TS sleeve leakage characteristics were evaluated at shutdown, normal operating, and accident temperatures so that all possible plant conditions would be enveloped by the test results. The St. Lucie Unit 2 post-accident leakage limit proposed in FPL license amendment letter L-2003-220 [18] is 0.15 gpm in the affected SG. EPRI TR-104788-R2, PWR Primary-To-Secondary Leak Guidelines impose a conservative operational leakage limit of 150 gallons per day (0.10 gpm) for a single SG. Up to 10,428 TZ sleeves or 4591 TS sleeves could be installed in each SG and still meet these leakage limits. Details of the leakage assessment are contained in Section 7.3 of WCAP-15918-P.

St. Lucie Unit 2 will conservatively assume all installed sleeves will leak for post-accident leakage calculations. The leak rate for each sleeve will be based on the upper 95 percent confidence limit on the mean value of leakage for appropriate temperature and pressure conditions. The total sleeve leakage rate will be included in the condition monitoring and operational assessment process as required by NEI 97-06, Steam Generator Program Guidelines, for comparison against the limit on accident induced leakage as specified in the UFSAR for the MSLB radiological consequences analysis.

Sleeve Inspections

Post-installation - As required by EPRI Technical Report 1003138, post-installation (pre-service) examination will be performed on the full length of all leak limiting Alloy 800 sleeve/tube assemblies using Plus Point probes or an equivalent EPRI Appendix H qualified technique. This examination will establish in-service inspection baseline data and initial installation acceptance data on the primary pressure boundary of the sleeve/SG tube assembly repair.

In service Inspection - Alloy 800 sleeves are not expected to be in operation exceeding one cycle and, hence, no inservice inspection is expected. However, should inservice

inspection be needed, examination will be performed on the full length of all the leak limiting Alloy 800 sleeve/tube assemblies (i.e., the sleeve-to-tube joint) using Plus Point probes or an equivalent EPRI Appendix H qualified technique. This inspection exceeds the 20 percent sampling requirement of Section 3.4.1 of EPRI Technical Report 1003138 and therefore, is conservative with respect to current industry requirements.

Plugging Requirements for Tubes With Alloy 800 Sleeves

To ensure that a defect in the pressure boundary of a sleeve does not adversely impact tube integrity, a sleeved tube will be plugged on detection of any imperfection, degradation, or defect (as defined in Technical Specification 4.4.5.4) in the pressure boundary portion of the (a) sleeve or (b) the original tube wall in the leak limiting sleeve/tube assembly (i.e., the sleeve-to-tube joint). Imperfections that are detected in the non-pressure boundary portion of the original parent tube wall associated with a sleeve do not impact the pressure boundary of the sleeve/tube assembly and do not impact the structural integrity of the sleeve.

Effects of Sleeving on Operation

The effects of sleeve installation on SG heat removal capability and reactor coolant system flow rate are discussed in Section 10 of WCAP-15918-P. The typical hydraulic equivalency of plugs and installed sleeves, called the sleeve/plug ratio or sleeve to plug equivalency ratio, is contained in Table 10-1 of WCAP-15918-P for different configurations of TZ sleeves and TS sleeves in 3/4-inch outside diameter (OD) SG tubes. Table 10-1 sleeve/plug ratio values are an approximation, and small variations in the sleeve/plug ratio will occur based on operating parameters and SG conditions. However, since these ratios vary from 10 to 28, between 1682 and 4704 sleeves are required to equal 1 percent tube plugging given that St. Lucie Unit 2 has 16,822 total tubes (i.e., 1 percent = 168.2 tubes). Therefore, sleeve installation is not a significant factor in primary system flow rate or the heat transfer capability of the SGs. St. Lucie 2 will use the sleeve/plug ratio values contained in Table 10-1 of WCAP-15918-P to determine the equivalent SG plugging due to installed leak limiting Alloy 800 sleeves. The total SG plugging level for each SG will be determined by adding the equivalent SG plugging percentage due to installed leak limiting Alloy 800 sleeves to the percent of SG tubes plugged. The total SG plugging level must be maintained less than the limit allowed by the accident analyses of record.

Alloy 800 is an alternative to Alloy 600 and is comprised of the same three major metallurgical components (nickel, iron, chrome) as Alloys 600 and 690. It has been in use in SGs for many years in European nuclear plants and has performed well in a primary chemistry environment similar to St. Lucie Unit 2. Therefore, Alloy 800 is compatible with the primary chemistry regime used at St. Lucie Unit 2 and no changes to this regime are necessary.

Severe Accident Considerations

Severe accidents can lead to primary pressures as high as 2500 psi and high primary temperature between 1200°F and 1500°F. At severe accident conditions, pressure tends to loosen the tube joint and temperature tends to tighten it. As the temperature reaches 1500°F, both the sleeve and tube yield at steam line break pressures. Because the sleeve material is specified to have a low yield stress (30 ksi minimum and controlled maximum), the sleeve will yield at a lower temperature (or pressure) than the tube, thereby, tending to tighten the tube joint. At 1500°F, the ultimate stress of the sleeve material is comparable to that of the SG tube and the integrity of the sleeve repair is commensurate with the integrity of the inservice SG tubes. Therefore, under severe accident conditions, sleeving is expected to have no impact on plant risk.

Conclusions

The St. Lucie Unit 2 SGs are scheduled for replacement after Cycle 16 operation. The proposed amendment would revise Technical Specification 3.4.5, Steam Generators, to allow repair of steam generator (SG) tubes by installing Alloy 800 leak limiting sleeves. The proposed changes would apply only to the original St. Lucie Unit 2 SGs to allow the use of Alloy 800 sleeves to maintain them within the analyzed plugging limits.

Based on past usage, extensive testing, and analysis, the leak limiting Alloy 800 sleeves provide satisfactory repair of defective SG tubes. Design criteria were established based on the requirements of the ASME Code and RG 1.121.

Determination of No Significant Hazards - Based on the discussions provided in Attachment 2 of this evaluation, Florida Power & Light has determined that (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public. Therefore, the proposed changes do not involve a significant hazard consideration.

Precedents

The NRC has previously approved the use of leak limiting Alloy 800 sleeves for the Watts Bar Nuclear Plant Unit 1 (License Amendment No. 44 to Facility Operating License No. NPF-90, Watts Bar Nuclear Plant, Unit 1 - Issuance of Amendment for Steam Generator Tube Repair (TAC No. MB6976), dated August 15, 2003 (ADAMS # ML032300143)), and for the Calvert Cliffs Plant (License Amendment No. 231 to Facility Operating License No. DPR-53 and Amendment No. 207 to Facility Operating License No. DPR-69, Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2 – Issuance of Amendment RE: Steam Generator Tube Repair Using Leak Limiting Alloy 800 Sleeves (TAC Nos. MA4278 and MA4279), dated September 1, 1999.

Calvert Cliffs applied the technique in ABB-Combustion Engineering Report CEN-633-P, Revision 3, Steam Generator Tube Repair for Combustion Engineering Designed Plants with 3/4-inch OD .048-inch Wall Inconel 600 Tubes Using Leak Limiting Alloy 800 Sleeves, dated October 1998 (ABB-Combustion Engineering proprietary) as the basis for the acceptability of the leak limiting Alloy 800 sleeve. Watts Bar applied the technique in Westinghouse WCAP-15918-P, Revision 0, (CEN-633-P, Revision 05-P), Steam Generator Tube Repair for Combustion Engineering and Westinghouse Designed Plant with 3/4 Inch Inconel 600 Tubes Using Leak Limiting Alloy 800 Sleeves, dated November 2002 (proprietary), as the basis for the acceptability of the leak limiting Alloy 800 sleeve.

Revision 3 of the CEN-633-P report addressed the specific 3/4 inch outside diameter (OD) 0.048 inch wall thickness SG tube size contained in the Calvert Cliffs Combustion Engineering SGs. Since 1998, the CEN-633-P, Revision 3, report was revised to include additional testing and analysis, to incorporate other industry comments, to reflect the purchase of ABB-Combustion Engineering by Westinghouse, and to include evaluation for SG tube repair for Westinghouse designed plants with 3/4 inch OD Inconel 600 tubes. Westinghouse WCAP-15918-P, Revision 0, (CEN-633-P, Revision 05-P), Steam Generator Tube Repair for Combustion Engineering and Westinghouse Designed Plant with 3/4-Inch Inconel 600 Tubes Using Leak Limiting Alloy 800 Sleeves, dated November 2002 (proprietary), provides the basis for SG tube repair using leak limiting Alloy 800 sleeves for Westinghouse plants with 3/4-inch Inconel 600 tubes.

Westinghouse WCAP-15918-P, Revision 2, (CEN-633-P, Revision 05-P), Steam Generator Tube Repair for Combustion Engineering and Westinghouse Designed Plant with ¾-Inch Inconel 600 tubes Using Leak Limiting Alloy 800 Sleeves, dated July 2004 (proprietary) was updated to incorporate comments, add operating experience and modify the definition of pressure boundary. The St. Lucie Unit 2 request for approval to use leak limiting Alloy 800 sleeves is based on Westinghouse WCAP-15918-P, Revision 2.

A similar request for NRC approval to use leak limiting Alloy 800 sleeves has been made based on WCAP-15918-P, Revision 00, (CEN-633-P, Revision 05-P), by TXU Generation Company LP (TXU Energy) for Comanche Peak Steam Electric Station in the letter CPSES-200301190, Comanche Peak Steam Electric Station (CPSES), Docket Nos. 50-445 and 50-446, License Amendment Request (LAR) 03-03, Revision to Technical Specification 5.5.9, Steam Generator Repair Using Leak Limiting Alloy 800 Sleeves, dated July 21, 2003 (ADAMS # ML032120445).

A similar request for NRC approval to use leak limiting Alloy 800 sleeves has been made based on WCAP-15919-P, Revision 00, by Pacific Gas & Electric Company (PG&E) for Diablo Canyon Power Plant Units 1 and 2, PG&E letter DCL-03-132, Diablo Canyon Power Plant Units 1 and 2 Docket Nos. 50-275 and 50-323, License Amendment Request 03-15, Steam Generator Tube Repair Using Leak Limiting Alloy

800 Sleeves, and Revision to Technical Specification Table 5.5.9-2, Steam Generator Tube Inspection, dated October 22, 2003.

A similar request for NRC approval to use leak limiting Alloy 800 sleeves has been made based on Westinghouse WCAP-15919-P, Revision 00, by First Energy Nuclear Operating Company for Beaver Valley Power Station, Unit No. 1 Docket No. 50-334, License No. DPR-66, License Amendment Request No. 322, Steam Generator Tube Repair Using Alloy 800 Sleeves, dated January 27, 2004.

References

1. Westinghouse Electric LLC WCAP-15919-P, Revision 00, Steam Generator Tube Repair for Westinghouse Designed Plants with 7/8-Inch Inconel 600 Tubes Using Leak Limiting Alloy 800 Sleeves, dated August 2003 (proprietary).
2. American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section II, Part B, SB-163, NiFeCr Alloy UNS N08800, and Section III, Subsection NB-2000.
3. Regulatory Guide 1.85, Materials Code Case Acceptability ASME Section III, Division 1, Revision 24, dated July 1986.
4. Regulatory Guide 1.121, Bases for Plugging Degraded PWR Steam Generator Tubes, dated August 1976.
5. EPRI Technical Report 10001191, Steam Generator Degradation Specific Management Flaw Handbook, dated 2001.
6. EPRI Technical Report TR-107569-VIR5, PWR Steam Generator Examination Guidelines: Revision 5, Volume 1: Requirements, dated September 1997.
7. EPRI Technical Report 1003138, Pressurized Water Reactor Steam Generator Examination Guidelines: Revision 6, Requirements, dated October 2002.
8. ABB-Combustion Engineering Report CEN-633-P, Revision 3, Steam Generator Tube Repair for Combustion Engineering Designed Plants with 3/4-Inch OD .048-Inch Wall Inconel 600 Tubes Using Leak Limiting Alloy 800 Sleeves, dated October 1998 (proprietary).
9. Westinghouse Electric LLC WCAP-15918-P, Revision 00, (CEN-633-P, Revision 05-P), Steam Generator Tube Repair for Combustion Engineering and Westinghouse Designed Plant with 3/4-Inch Inconel 600 tubes Using Leak Limiting Alloy 800 Sleeves, dated November 2002 (proprietary).
10. License Amendment No. 231 to Facility Operating License No. DPR-53 and Amendment No. 207 to Facility Operating License No. DPR-69, Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2 - Issuance of Amendment RE: Steam Generator Tube Repair Using Leak Limiting Alloy 800 Sleeves (TAC Nos. MA4278 and MA4279), dated September 1, 1999.
11. Watts Bar Nuclear Plant Unit 1 License Amendment No. 44 to Facility Operating License No. NPF-90, Watts Bar Nuclear Plant, Unit 1 - Issuance of Amendment for Steam Generator Tube Repair (TAC No. MB6976), dated August 15, 2003.

12. TXU Generation Company LP (TXU Energy) letter CPSES-200301190, Comanche Peak Steam Electric Station (CPSES), Docket Nos. 50-445 and 50-446, License Amendment Request (LAR) 03-03, Revision to Technical Specification 5.5.9, Steam Generator Repair Using Leak Limiting Alloy 800 Sleeves, dated July 21, 2003.
13. Pacific Gas & Electric Company (PG&E) letter DCL-03-132, Diablo Canyon Power Plant Units 1 and 2 Docket Nos. 50-275 and 50-323, License Amendment Request (LAR) 03-15, Steam Generator Tube Repair Using Leak Limiting Alloy 800 Sleeves and Revision to Technical Specification Table 5.5.9.-2, Steam Generator (SG) Tube Inspection, dated October 22, 2003.
14. St. Lucie Unit 2 Updated Final Safety Analysis Report, amendment 15.
15. St. Lucie Unit 2 Technical Specifications through amendment 134.
16. First Energy Nuclear Operating Company for Beaver Valley Power Station, Unit No. 1 Docket No. 50-334, License No. DPR-66, License Amendment Request No. 322, Steam Generator Tube Repair Using Alloy 800 Sleeves dated January 27, 2004.
17. EPRI TR-104788-R2, PWR Primary-To-Secondary Leak Guidelines.
18. FPL Letter L-2003-220, Proposed License Amendments Alternate Source Term and Conforming Amendments, September 18, 2003.

ATTACHMENT 2

St. Lucie Unit 2
Docket No. 50-389
Application of Leak Limiting Alloy 800 Sleeves in 3/4-Inch OD Steam Generator Tubes at St. Lucie Unit 2
Determination of No Significant Hazards Consideration

Title 10, Part 50, of the Code of Federal Regulations (10 CFR 50) Appendix A, General Design Criterion (GDC), Criterion 14, Reactor Coolant Pressure Boundary, contains requirements applicable to steam generator tubes since they form part of the reactor coolant pressure boundary. GDC 14 requires that the reactor coolant pressure boundary be designed, fabricated, erected, and tested in order to have an extremely low probability of abnormal leakage, of rapidly propagating failure, and of gross failure.

Tubes installed in the St. Lucie Unit 2 steam generators are designed in accordance with Section III of the ASME Code, 1965 Edition through Summer 1967 Addenda. The design criteria for leak limiting Alloy 800 steam generator tube sleeves have been established to meet the loading condition and stress requirements of section III of the ASME Code (1995 Edition, No Addenda), which is consistent with the Section of the ASME Code that applies to the original steam generator tubes. Table 3.2-1 of the St. Lucie Unit 2 Updated FSAR, states that the steam generator primary side is designed in accordance with the Quality Class A requirements of Regulatory Guide 1.26. As such, repair of the reactor coolant pressure boundary including steam generator tubes is performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code.

Appendix B of 10 CFR 50, Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants, requires a quality assurance program for the design, fabrication, construction, and operation of structures, systems, and components in nuclear power plants. The requirements of 10 CFR 50 Appendix B apply to all activities affecting the safety-related functions of structures, systems, and components. These activities include designing, purchasing, fabricating, handling, shipping, storing, cleaning, erecting, installing, inspecting, testing, operating, maintaining, repairing, refueling, and modifying safety-related structures, systems and components. Alloy 800 leak limiting steam generator tube sleeves are safety-related components and therefore, must meet Appendix B requirements.

Regulatory Guide 1.121, Bases for Plugging Degraded PWR Steam Generator Tubes, dated August, 1976, provides guidance for determining the minimum wall thickness at which a steam generator tube should be plugged. The performance criteria of Regulatory Guide 1.121 recommend that the margin of safety against steam generator tube rupture under normal operating conditions should not be less than three (3) at any tube location where defects have been detected. The margin of safety against tube failures under postulated accident conditions should be consistent with the margin of

safety determined by the stress limits specified in the ASME Code. The requirements of Regulatory Guide 1.121 were used to develop the structural limit of leak limiting Alloy 800 sleeve, should sleeve wall degradation occur. In addition, the fatigue and stress analysis of the sleeved tube assemblies has been completed in accordance with the requirements of Regulatory Guide 1.121.

Leak limiting Alloy 800 sleeves provide satisfactory repair of degraded steam generator tubes as has been shown by past usage, extensive testing, and analysis. Qualified nondestructive examination techniques are used to perform necessary sleeve and parent steam generator tube inspections for defect detection and to verify proper installation of the repair sleeve. Based on these considerations, there is reasonable assurance that the health and safety of the public will not be endangered by steam generator tube sleeving in the proposed manner. Such activities are conducted in compliance with the Commission's regulations, thus, installation of leak limiting Alloy 800 tube sleeves is not inimical to the common defense and security or to the health and safety of the public.

The NRC provides standards in 10 CFR 50.92(c) for determining whether or not a significant hazard consideration exists. Florida Power & Light Company has evaluated whether or not a significant hazards consideration is involved with the proposed tube sleeving effort by focusing on the three standards set forth in 10 CFR 50.92, Issuance of Amendment. A proposed amendment to a facility operating license involves no significant hazards consideration if operation of the facility in accordance with the proposed amendment would not (1) involve a significant increase in the probability or consequences of an accident previously evaluated, (2) create the possibility of a new or different kind of accident from any accident previously evaluated, or (3) involve a significant reduction in a margin of safety. Each standard is discussed below.

1. **Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?**

   No, the leak limiting Alloy 800 tube sleeves are designed using the applicable ASME Boiler and Pressure Vessel Code and meet the design objectives of the original steam generator tubing. The applied stresses and fatigue usage factors for the sleeves are bounded by the limits established in the ASME Code. Mechanical testing has shown that the structural strength of leak limiting sleeves under normal, upset, emergency, and faulted conditions provides margin to the acceptance limits. These acceptance limits bound the most limiting burst margin of three times the normal operating pressure differential as recommended by NRC Regulatory Guide 1.121. Burst testing of sleeved-tube assemblies has confirmed the analytical results and demonstrated that levels of primary-to-secondary leakage are not expected to exceed acceptable levels during any anticipated plant operating condition.

   The leak limiting Alloy 800 sleeve depth-based structural limit is determined using NRC guidance and the pressure-stress equation of the ASME Code, Section III with

margin added to account for the configuration of long axial cracks. An Alloy 800 sleeved tube will be plugged on detection of an imperfection in the sleeve or in the pressure boundary portion of the original tube wall.

An evaluation of repaired steam generator tubes, plus testing, and analysis indicates that unacceptable detrimental effects on the leak limiting Alloy 800 sleeve or of a sleeved tube are not expected from the reactor coolant system flow, primary or secondary coolant chemistries, thermal conditions or transients, or pressure conditions as may be experienced at St. Lucie Unit 2. Corrosion testing and historical performance of sleeved steam generator tubes indicates no evidence of sleeve or tube corrosion considered detrimental under anticipated service conditions. The implementation of the proposed tube sleeving has no significant effect on either the configuration of the plant or the manner in which it is operated.

The consequences of a hypothetical failure of a leak limiting Alloy 800 sleeved tube is bounded by the current steam generator tube rupture analysis described in the St. Lucie Unit 2 Updated Final Safety Analysis Report. Due to the slight reduction in the inside diameter caused by the sleeve wall thickness, primary coolant release rates through the parent tube during a tube rupture event would be slightly less than that assumed for the steam generator tube rupture analysis and therefore, would result in lower total primary fluid mass release to the secondary system. A main steam line break or feedwater line break will not cause a steam generator tube rupture since the sleeves are analyzed for a maximum accident differential pressure greater than that predicted in the St. Lucie Unit 2 safety analysis.

Fluid leakage from a sleeved tube during plant operation would be minimal and is well within the allowable Technical Specification leakage limits. Therefore, the proposed tube sleeving does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. **Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?**

No, the leak limiting Alloy 800 sleeves are designed using the applicable ASME Code as guidance, and therefore, meet the objectives of the original steam generator tubing. As a result, the function of the steam generator will not be significantly affected by the installation of the proposed sleeves. The proposed sleeves do not interact with any other plant systems. Any accident that would result from potential tube or sleeve degradation in the repaired portion of the tube is bounded by the existing steam generator tube rupture accident analysis, thus the potential for a new type of accident is not created. The continued integrity of the sleeved tube is periodically verified by surveillance inspections performed in compliance with Technical Specification requirements. A sleeved tube will be plugged on detection of any service induced imperfection, degradation, or defect in

the sleeve and/or pressure boundary portion of the original tube wall in the sleeve/tube assembly (i.e., the sleeve-to-tube joint).

Implementation of the proposed change has no significant effect on either the configuration of the plant or the manner in which it is operated. Therefore, the proposed change does not create the possibility of a new or different accident from any accident previously evaluated.

3. **Does the proposed change involve a significant reduction in a margin of safety?**

No, the repair of degraded steam generator tubes with leak limiting Alloy 800 sleeves restores the structural integrity of the degraded tube under normal operating and postulated accident conditions. The reduction in core cooling margin due to the addition of Alloy 800 sleeves is not significant because the cumulative effect of all sleeved and plugged tubes will continue to be less than the currently-allowed core cooling margin threshold established by the total steam generator tube plugging level. Design safety factors utilized for the sleeves are consistent with the safety factors in the ASME Boiler and Pressure Vessel Code used in the original steam generator design. Each tube and portions of the tube with an installed sleeve that constitute the reactor coolant pressure boundary will be monitored; a sleeved tube will be plugged on detection of any service induced imperfection, degradation, or defect in the sleeve and/or pressure boundary portion of the original tube wall in the sleeve/tube assembly (i.e., the sleeve-to-tube joint). Use of the previously-identified design criteria and design verification testing assures that the margin to safety is not significantly different from that of the original steam generator tubes. Therefore, the proposed repairs employing leak limiting Alloy 800 tube sleeves do not involve a significant reduction in a margin of safety.

Based on the above, we have determined that the proposed amendment does not (1) involve a significant increase in the probability or consequences of an accident previously evaluated, (2) create the possibility of a new or different kind of accident from any previously evaluated, or (3) involve a significant reduction in a margin of safety; and therefore, does not involve a significant hazards consideration.

Environmental Impact Consideration Determination

The proposed license amendment changes requirements with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The proposed amendment involves no significant increase in the amounts and no significant change in the types of any effluents that may be released off-site, and no significant increase in individual or cumulative occupational radiation exposure. FPL has concluded that the proposed amendment involves no significant hazards consideration, and therefore, meets the criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), an environmental impact statement or

environmental assessment need not be prepared in connection with issuance of the amendment.

ATTACHMENT 3

ST. LUCIE UNIT 2 MARKED-UP TECHNICAL SPECIFICATION PAGES

Pages

3/4 4-12

3/4 4-14

3/4 4-15

3/4 4-17

Enclosure 1 Contains 2.390 Proprietary Information

TS PAGE INSERTS

Insert A TS Page 3/4 4-12

4. All Alloy 800 sleeves in service shall be inspected over their full length using a Plus Point coil or equivalent qualified technique during each refueling outage.* These inspections will include both the tube end and the sleeve.*

Insert B footer on TS Pages 3/4 4-12, 3/4 4-14, 3/4-15, 3/4 4-17

* Applies to original steam generators only

Insert C for TS Page 3/4 4-14

6.

6. Plugging (or Repair*) Limit means the imperfection depth at which the tube shall be removed from service by plugging (or repaired by sleeving in the affected area because it may become unserviceable prior to the next inspection*). The plugging (or repair*) limit imperfection depths are specified as follows:

   i. Original tube wall: 40% of the nominal tube wall thickness. The Plugging or Repair Limit is not applicable in the portion of the tube that is greater than 10.1 inches below the bottom of the hot leg expansion transition or top of the tubesheet, whichever is lower, to the tube end.* Degradation detected between 10.1 inches below the bottom of the hot leg expansion transition or top of the tubesheet, whichever is lower, and the bottom of the hot leg expansion transition or top of the tubesheet, whichever is higher, shall be plugged or repaired on detection.*

   ii. Westinghouse Alloy 800 leak limiting sleeve: Plug on detection of any service induced imperfection, degradation, or defect in the (a) sleeve and/or (b) pressure boundary portion of the original tube wall in the sleeve/tube assembly (i.e., the sleeve-to-tube joint).*

Insert D for TS Pages 3/4 4-15

10. Tube Repair refers to sleeving which is used to maintain a tube in service.* The Westinghouse Alloy 800 sleeve design as described in WCAP-15918-P, Revision 2 is acceptable.*

REACTOR COOLANT SYSTEM

SURVEILLANCE REQUIREMENTS (Continued)

1. All nonplugged tubes that previously had detectable wall penetrations (greater than 20%).

2. Tubes in those areas where experience has indicated potential problems.

3. A tube inspection (pursuant to Specification 4.4.5.4.a.8) shall be performed on each selected tube. If any selected tube does not permit the passage of the eddy current probe for a tube inspection, this shall be recorded and an adjacent tube shall be selected and subjected to a tube inspection.

Insert A

c. The tubes selected as the second and third samples (if required by Table 4.4-2) during each inservice inspection may be subjected to partial tube inspection provided:

1. The tubes selected for these samples include the tubes from those areas of the tube sheet array where tubes with imperfections were previously found.

2. The inspections include those portions of the tubes where imperfections were previously found.

The results of each sample inspection shall be classified into one of the following three categories:

Category	Inspection Results
C-1	Less than 5% of the total tubes inspected are degraded tubes and none of the inspected tubes are defective.
C-2	One or more tubes, but not more than 1% of the total tubes inspected are defective, or between 5% and 10% of the total tubes inspected are degraded tubes.

Insert B

REACTOR COOLANT SYSTEM

SURVEILLANCE REQUIREMENTS (Continued)

4.4.5.4 Acceptance Criteria

a. As used in this Specification

1. Imperfection means an exception to the dimensions, finish or contour of a tube from that required by fabrication drawings or specifications. Eddy-current testing indications below 20% of the nominal tube wall thickness, if detectable, may be considered as imperfections.

2. Degradation means a service-induced cracking, wastage, wear or general corrosion occurring on either inside or outside of a tube.

3. Degraded Tube means a tube containing imperfections greater than or equal to 20% of the nominal wall thickness caused by degradation.

4. % Degradation means the percentage of the tube wall thickness affected or removed by degradation.

5. Defect means an imperfection of such severity that it exceeds the plugging limit. A tube containing a defect is defective.

Insert C

6. Plugging Limit means the imperfection depth at or beyond which the tube shall be removed from service and is equal to 40% of the nominal tube wall thickness. This Plugging Limit is not applicable in the portion of the tube that is greater than 10.1 inches below the bottom of the hot leg expansion transition or top of the tubesheet, whichever is lower, to the tube end. Degradation detected between 10.1 inches below the bottom of the hot leg expansion transition or top of the tubesheet, which is lower, and the bottom of the hot leg expansion transition or top of the tubesheet, whichever is higher, shall be plugged on detection.

7. Unserviceable describes the condition of a tube if it leaks or contains a defect large enough to affect its structural integrity in the event of an Operating Basis Earthquake, a loss-of-coolant accident, or a steam line or feedwater line break as specified in 4.4.5.3c., above.

8. Tube Inspection means an inspection of the steam generator tube from 10.1 inches below the bottom of the hot leg expansion transition or top of the tubesheet, whichever if lower, completely around the U-bend to the top support of the cold leg.

9. Preservice Inspection means an inspection of the full length of each tube in each steam generator performed by eddy current techniques prior to service to establish a baseline

Insert B

Enclosure 1 Contains 2.390 Proprietary Information

REACTOR COOLANT SYSTEM

SURVEILLANCE REQUIREMENTS (Continued)

Insert D

condition of the tubing. This inspection shall be performed after the field hydrostatic test and prior to initial POWER OPERATION using the equipment and techniques expected to be used during subsequent inservice inspections.

b. The steam generator shall be determined OPERABLE after completing the corresponding actions (plug all tubes exceeding the plugging limit and all tubes containing through-wall cracks) required by Table 4.4-2. or repair*

4.4.5.5 Reports

a. Within 15 days following the completion of each inservice inspection of steam generator tubes, the number of tubes plugged in each steam generator shall be reported to the Commission in a Special Report pursuant to Specification 6.9.2. or repaired*

b. The complete results of the steam generator tube inservice inspection shall be submitted to the Commission in a Special Report pursuant to Specification 6.9.2 within 12 months following completion of the inspection. This Special Report shall include:

1. Number and extent of tubes inspected. and sleeves*
2. Location and percent of wall-thickness penetration for each indication of an imperfection.
3. Identification of tubes plugged or repaired*

Insert B

Enclosure 1 Contains 2.390 Proprietary Information

TABLE 4.4-2

STEAM GENERATOR TUBE INSPECTION

1st SAMPLE INSPECTION			2nd SAMPLE INSPECTION		3rd SAMPLE INSPECTION	
Sample Size	Result	Action Required	Result	Action Required	Result	Action Required
A minimum of S Tubes per S.G.	C-1	None	N/A	N/A	N/A	N/A
	C-2	Plug defective tubes and inspect additional 2S tubes in this S.G.	C-1	None	N/A	N/A
			C-2	Plug defective tubes and inspect additional 4S tubes in this S.G.	C-1	None
					C-2	Plug defective tubes
					C-3	Perform action for C-3 result of first sample
			C-3	Perform action for C-3 result of first sample.	N/A	N/A
	C-3	Inspect all tubes in this S.G., plug defective tubes and inspect 2S tubes in each other S.G.	All other S.G.s are C-1	None	N/A	N/A
			Some S.G.s C-2 but no additional S.G. are C-3	Perform action for C-2 result of second sample.	N/A	N/A
			Additional S.G. is C-3	Inspect all tubes in each S.G. and plug defective tubes.	N/A	N/A

or repair*

$S = 3\frac{N}{n}\%$ Where N is the number of steam generators in the unit, and n is the number of steam generators inspected during an inspection.

Insert B

ATTACHMENT 4

ST. LUCIE UNIT 2 MARKED-UP TECHNICAL SPECIFICATION BASES PAGES

Bases for TS Section 3/4.4.5
ADM-25.04 Attachment 6
Pages

6 of 15

7 of 15

Enclosure 1 Contains 2.390 Proprietary Information

SECTION NO.: 3/4.4	TITLE: TECHNICAL SPECIFICATIONS BASES ATTACHMENT 6 OF ADM-25.04 REACTOR COOLANT SYSTEM ST. LUCIE UNIT 2	PAGE: 6 of 15
REVISION NO.: 2		

3/4.4 **REACTOR COOLANT SYSTEM** (continued)

BASES (continued)

3/4.4.4 **PORV BLOCK VALVES**

The power-operated relief valves (PORVs) and steam bubble function to relieve RCS pressure during all design transients up to and including the design step load decrease with steam dump. Operation of the PORVs in conjunction with a reactor trip on a Pressurizer Pressure-High signal minimizes the undesirable opening of the spring-loaded pressurizer code safety valves. The opening of the PORVs fulfills no safety-related function and no credit is taken for their operation in the safety analysis for MODE 1, 2, or 3.

Each PORV has a remotely operated block valve to provide a positive shutoff capability should a relief valve become inoperable. Since it is impractical and undesirable to actually open the PORVs to demonstrate their reclosing, it becomes necessary to verify OPERABILITY of the PORV block valves to ensure capability to isolate a malfunctioning PORV. As the PORVs are pilot operated and require some system pressure to operate, it is impractical to test them with the block valve closed.

The PORVs are sized to provide low temperature overpressure protection (LTOP). Since both PORVs must be OPERABLE when used for LTOP, both block valves will be open during operation with the LTOP range. As the PORV capacity required to perform the LTOP function is excessive for operation in MODE 1, 2, or 3, it is necessary that the operation of more than one PORV be precluded during these MODES. Thus, one block valve must be shut during MODES 1, 2, and 3.

3/4.4.5 **STEAM GENERATORS**

and sleeves*

The Surveillance Requirements for inspection of the steam generator tubes ensure that the structural integrity of this portion of the RCS will be maintained. The program for inservice inspection of steam generator tubes is based on a modification of Regulatory Guide 1.83, Revision 1. Inservice inspection of steam generator tubing is essential in order to maintain surveillance of the conditions of the tubes in the event that there is evidence of mechanical damage or progressive degradation due to design, manufacturing errors, or inservice conditions that lead to corrosion.

Inservice inspection of steam generator tubing also provides a means of characterizing the nature and cause of any tube degradation so that corrective measures can be taken.

or sleeve*

*Applies to original Steam Generators only

SECTION NO.: 3/4.4	TITLE: TECHNICAL SPECIFICATIONS BASES ATTACHMENT 6 OF ADM-25.04 REACTOR COOLANT SYSTEM ST. LUCIE UNIT 2	PAGE: 7 of 15
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3/4.4 **REACTOR COOLANT SYSTEM** (continued)

BASES (continued)

3/4.4.5 **STEAM GENERATORS** (continued)

The plant is expected to be operated in a manner such that the secondary coolant will be maintained within those chemistry limits found to result in negligible corrosion of the steam generator tubes. If the secondary coolant chemistry is not maintained within these limits, localized corrosion may likely result in stress corrosion cracking. The extent of cracking during plant operation would be limited by the limitation of steam generator tube leakage between the primary coolant system and the secondary coolant system (primary-to-secondary leakage = 1.0 gpm from both steam generators. Cracks having a primary-to-secondary leakage less than this limit during operation will have an adequate margin of safety to withstand the loads imposed during normal operation and by postulated accidents. Operating plants have demonstrated that primary-to-secondary leakage of 0.5 gpm per steam generator can readily be detected by radiation monitors of steam generator blowdown. Leakage in excess of this limit will require plant shutdown and an unscheduled inspection, during which the leaking tubes will be located and plugged.

or sleeve*

or sleeves*

Wastage-type defects are unlikely with proper chemistry treatment of the secondary coolant. However, even if a defect should develop in service, it will be found during scheduled inservice steam generator tube examinations. Plugging will be required of all tubes with imperfections exceeding the plugging limit of 40% of the tube nominal wall thickness. Steam generator tube inspections of operating plants have demonstrated the capability to reliably detect degradation that has penetrated 20% of the original tube wall thickness.

or sleeving*

Westinghouse Alloy 800 leak limiting sleeves are plugged on detection of any imperfection, degradation or defect in the (a) sleeve and/or (b) pressure boundary portion of the original tube wall in the sleeve/tube assembly (i.e., the sleeve-to-tube joint).*

*Applies to Original Steam Generators only

ATTACHMENT 5

ST. LUCIE UNIT 2 RETYPED TECHNICAL SPECIFICATION PAGES

The attached retype reflects the currently issued version of the Technical Specifications. Pending Technical Specification changes or Technical Specification changes issued subsequent to this submittal are not reflected in the enclosed retype. The enclosed retype should be checked for continuity with Technical Specifications prior to issuance.

Pages

3/4 4-12

3/4 4-14 (text reformatted)

3/4 4-15

3/4 4-17

Enclosure 1 Contains 2.390 Proprietary Information

REACTOR COOLANT SYSTEM

SURVEILLANCE REQUIREMENTS (Continued)

1. All nonplugged tubes that previously had detectable wall penetrations (greater than 20%).

2. Tubes in those areas where experience has indicated potential problems.

3. A tube inspection (pursuant to Specification 4.4.5.4.a.8) shall be performed on each selected tube. If any selected tube does not permit the passage of the eddy current probe for a tube inspection, this shall be recorded and an adjacent tube shall be selected and subjected to a tube inspection.

4. All Alloy 800 sleeves in service shall be inspected over their full length using a Plus Point coil or equivalent qualified technique during each refueling outage.* These inspections will include both the tube end and the sleeve.*

c. The tubes selected as the second and third samples (if required by Table 4.4-2) during each inservice inspection may be subjected to partial tube inspection provided:

   1. The tubes selected for these samples include the tubes from those areas of the tube sheet array where tubes with imperfections were previously found.

   2. The inspections include those portions of the tubes where imperfections were previously found.

The results of each sample inspection shall be classified into one of the following three categories:

Category	Inspection Results
C-1	Less than 5% of the total tubes inspected are degraded tubes and none of the inspected tubes are defective.
C-2	One or more tubes, but not more than 1% of the total tubes inspected are defective, or between 5% and 10% of the total tubes inspected are degraded tubes.

* Applies to original steam generators only

Enclosure 1 Contains 2.390 Proprietary Information

REACTOR COOLANT SYSTEM

SURVEILLANCE REQUIREMENTS (Continued)

4.4.5.4 Acceptance Criteria

a. As used in this Specification

1. Imperfection means an exception to the dimensions, finish or contour of a tube from that required by fabrication drawings or specifications. Eddy-current testing indications below 20% of the nominal tube wall thickness, if detectable, may be considered as imperfections.

2. Degradation means a service-induced cracking, wastage, wear or general corrosion occurring on either inside or outside of a tube.

3. Degraded Tube means a tube containing imperfections greater than or equal to 20% of the nominal wall thickness caused by degradation.

4. % Degradation means the percentage of the tube wall thickness affected or removed by degradation.

5. Defect means an imperfection of such severity that it exceeds the plugging limit. A tube containing a defect is defective.

6. Plugging (or Repair*) Limit means the imperfection depth at which the tube shall be removed from service by plugging (or repaired by sleeving in the affected area because it may become unserviceable prior to the next inspection*). The plugging (or repair*) limit imperfection depths are specified as follows:

i. Original tube wall: 40% of the nominal tube wall thickness. The Plugging or Repair Limit is not applicable in the portion of the tube that is greater than 10.1 inches below the bottom of the hot leg expansion transition or top of the tubesheet, whichever is lower, to the tube end.* Degradation detected between 10.1 inches below the bottom of the hot leg expansion transition or top of the tubesheet, whichever is lower, and the bottom of the hot leg expansion transition or top of the tubesheet, whichever is higher, shall be plugged or repaired on detection.*

ii. Westinghouse Alloy 800 leak limiting sleeve: Plug on detection of any service induced imperfection, degradation, or defect in the (a) sleeve and/or (b) pressure boundary portion of the original tube wall in the sleeve/tube assembly (i.e., the sleeve-to-tube joint).*

7. Unserviceable describes the condition of a tube if it leaks or contains a defect large enough to affect its structural integrity in the event of an Operating Basis Earthquake, a loss-of-coolant accident, or a steam line or feedwater line break as specified in 4.4.5.3c., above.

8. Tube Inspection means an inspection of the steam generator tube from the point of entry (hot leg side) completely around the U-bend to the top support of the cold leg.

9. Preservice Inspection means an inspection of the full length of each tube in each steam generator performed by eddy current techniques prior to service to establish a baseline

* Applies to original steam generators only

condition of the tubing. This inspection shall be performed after the field hydrostatic test and prior to initial POWER OPERATION using the equipment and techniques expected to be used during subsequent inservice inspections.

10. Tube Repair refers to sleeving which is used to maintain a tube in service.* The Westinghouse Alloy 800 sleeve design as described in WCAP-15918-P, Revision 2 is acceptable.*

b. The steam generator shall be determined OPERABLE after completing the corresponding actions (plug or repair* all tubes exceeding the plugging limit and all tubes containing through-wall cracks) required by Table 4.4-2.

4.4.5.5 Reports

a. Within 15 days following the completion of each inservice inspection of steam generator tubes, the number of tubes plugged or repaired* in each steam generator shall be reported to the Commission in a Special Report pursuant to Specification 6.9.2.

b. The complete results of the steam generator tube inservice inspection shall be submitted to the Commission in a Special Report pursuant to Specification 6.9.2 within 12 months following completion of the inspection. This Special Report shall include:

1. Number and extent of tubes and sleeves* inspected.

2. Location and percent of wall-thickness penetration for each indication of an imperfection.

3. Identification of tubes plugged or repaired.*

* Applies to original steam generators only

TABLE 4.4-2

STEAM GENERATOR TUBE INSPECTION

1st SAMPLE INSPECTION			2nd SAMPLE INSPECTION		3rd SAMPLE INSPECTION	
Sample Size	Result	Action Required	Result	Action Required	Result	Action Required
A minimum of S Tubes per S.G.	C-1	None	N/A	N/A	N/A	N/A
	C-2	Plug or repair* defective tubes and inspect additional 2S tubes in this S.G.	C-1	None	N/A	N/A
			C-2	Plug or repair* defective tubes and inspect additional 4S tubes in this S.G.	C-1	None
					C-2	Plug or repair* defective tubes
					C-3	Perform action for C-3 result of first sample
			C-3	Perform action for C-3 result of first sample.	N/A	N/A
	C-3	Inspect all tubes in this S.G., plug or repair* defective tubes and inspect 2S tubes in each other S.G.	All other S.G.s are C-1	None	N/A	N/A
			Some S.G.s C-2 but no additional S.G. are C-3	Perform action for C-2 result of second sample.	N/A	N/A
			Additional S.G. is C-3	Inspect all tubes in each S.G. and plug or repair* defective tubes.	N/A	N/A

$S = 3\frac{N}{n}\%$ Where N is the number of steam generators in the unit, and n is the number of steam generators inspected during an inspection.

* Applies to original steam generators only

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Attachment 6

Commitment Summary for

Implementation of License Amendment for Alloy 800 Sleeves

Enclosure 1 Contains 2.390 Proprietary Information

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Commitment Summary
Implementation of License Amendment for Alloy 800 Sleeves

The following list identifies commitments necessary to implement this license amendment request. Any other actions discussed in the submittal represent intended or planned actions. These other actions are described only as information and are not regulatory commitments.

A process to address these commitments will be in place upon implementation of the amendment, which approves the proposed Technical Specification changes supporting tube repair by leak limiting Alloy 800 sleeves.

1. The sleeves will be installed in accordance with the processes provided by the vendor and described in WCAP-15918-P, Revision 2 which addresses sleeve design, qualification, installation methods, non-destructive examination, and ALARA considerations.

2. A plant-specific document that specifies the allowable location of tube eddy current testing indications in order to perform a successful sleeve installation will be established in accordance with WCAP-15918-P, Revision 2 requirements. This document will be utilized to determine that a tube is an acceptable sleeving candidate.

3. Florida Power & Light Company (FPL) will conservatively assume all installed sleeves will leak for post-accident leakage calculations. The leak rate for each sleeve will be based on the upper 95 percent confidence limit on the mean value of leakage for appropriate temperature and pressure conditions. The total sleeve leak rate will be combined with the total amount of leakage from all other sources for comparison against the limit on accident induced leakage as specified in the UFSAR for the MSLB radiological consequences analysis. This total calculated accident induced leakage will be documented in condition monitoring and operational assessments required to be performed in the FPL Steam Generator Integrity Program.

4. As required by EPRI Technical Report 1003138, post-installation (pre-service) examination will be performed on the full length of 100 percent of leak limiting Alloy 800 sleeve/tube assemblies using Plus Point rotating coil or an equivalent EPRI Technical Report 1003138 Appendix H technique if one becomes available. This examination will establish inservice inspection baseline data and initial installation acceptance data on the primary pressure boundary of the sleeve/SG tube assembly repair.

5. FPL will use the sleeve/plug ratio values contained in Table 10-1 of WCAP-15918-P, Revision 2 to determine the equivalent SG plugging due to installed leak limiting Alloy 800 sleeves, unless more appropriate values become available. The total SG plugging level for each SG will be determined by adding the equivalent SG plugging

percentage due to installed leak limiting Alloy 800 sleeves to the percent of SG tubes plugged.

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Attachment 7

Westinghouse Affidavit

WCAP-15918-P (Enclosure 1) describes the technique for installing the sleeves to repair degraded SG tubes as well as detailing the analyses and testing performed to verify the adequacy of Alloy 800 sleeves for installation in SG tubes as an acceptable repair technique. Westinghouse Electric Company, LLC has determined that portions of this information are proprietary in nature.

The Westinghouse reasons for the classification of this information as proprietary and the signed affidavit are included in this attachment.

(7 Pages)

Enclosure 1 Contains 2.390 Proprietary Information

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CAW-04-1865

AFFIDAVIT

COMMONWEALTH OF PENNSYLVANIA:

ss

COUNTY OF ALLEGHENY:

Before me, the undersigned authority, personally appeared J. A. Gresham, who, being by me duly sworn according to law, deposes and says that he is authorized to execute this Affidavit on behalf of Westinghouse Electric Company LLC (Westinghouse), and that the averments of fact set forth in this Affidavit are true and correct to the best of his knowledge, information, and belief:

J. A. Gresham, Manager
Regulatory Compliance and Plant Licensing

Sworn to and subscribed
before me this 26th day
of July, 2004

Sharon L. Fiori
Notary Public

Enclosure 1 Contains 2.390 Proprietary Information

(1) I am Manager, Regulatory Compliance and Plant Licensing, in Nuclear Services, Westinghouse Electric Company LLC (Westinghouse), and as such, I have been specifically delegated the function of reviewing the proprietary information sought to be withheld from public disclosure in connection with nuclear power plant licensing and rule making proceedings, and am authorized to apply for its withholding on behalf of Westinghouse.

(2) I am making this Affidavit in conformance with the provisions of 10 CFR Section 2.390 of the Commission's regulations and in conjunction with the Westinghouse "Application for Withholding" accompanying this Affidavit.

(3) I have personal knowledge of the criteria and procedures utilized by Westinghouse in designating information as a trade secret, privileged or as confidential commercial or financial information.

(4) Pursuant to the provisions of paragraph (b)(4) of Section 2.390 of the Commission's regulations, the following is furnished for consideration by the Commission in determining whether the information sought to be withheld from public disclosure should be withheld.

(i) The information sought to be withheld from public disclosure is owned and has been held in confidence by Westinghouse.

(ii) The information is of a type customarily held in confidence by Westinghouse and not customarily disclosed to the public. Westinghouse has a rational basis for determining the types of information customarily held in confidence by it and, in that connection, utilizes a system to determine when and whether to hold certain types of information in confidence. The application of that system and the substance of that system constitutes Westinghouse policy and provides the rational basis required.

Under that system, information is held in confidence if it falls in one or more of several types, the release of which might result in the loss of an existing or potential competitive advantage, as follows:

(a) The information reveals the distinguishing aspects of a process (or component, structure, tool, method, etc.) where prevention of its use by any of

Westinghouse's competitors without license from Westinghouse constitutes a competitive economic advantage over other companies.

(b) It consists of supporting data, including test data, relative to a process (or component, structure, tool, method, etc.), the application of which data secures a competitive economic advantage, e.g., by optimization or improved marketability.

(c) Its use by a competitor would reduce his expenditure of resources or improve his competitive position in the design, manufacture, shipment, installation, assurance of quality, or licensing a similar product.

(d) It reveals cost or price information, production capacities, budget levels, or commercial strategies of Westinghouse, its customers or suppliers.

(e) It reveals aspects of past, present, or future Westinghouse or customer funded development plans and programs of potential commercial value to Westinghouse.

(f) It contains patentable ideas, for which patent protection may be desirable.

There are sound policy reasons behind the Westinghouse system which include the following:

(a) The use of such information by Westinghouse gives Westinghouse a competitive advantage over its competitors. It is, therefore, withheld from disclosure to protect the Westinghouse competitive position.

(b) It is information that is marketable in many ways. The extent to which such information is available to competitors diminishes the Westinghouse ability to sell products and services involving the use of the information.

(c) Use by our competitor would put Westinghouse at a competitive disadvantage by reducing his expenditure of resources at our expense.

(d) Each ~~component of proprietary information pertinent to a particular~~ competitive advantage is potentially as valuable as the total competitive advantage. If competitors acquire components of proprietary information, any one component may be the key to the entire puzzle, thereby depriving Westinghouse of a competitive advantage.

(e) Unrestricted disclosure would jeopardize the position of prominence of Westinghouse in the world market, and thereby give a market advantage to the competition of those countries.

(f) The Westinghouse capacity to invest corporate assets in research and development depends upon the success in obtaining and maintaining a competitive advantage.

(iii) The information is being transmitted to the Commission in confidence and, under the provisions of 10 CFR Section 2.390, it is to be received in confidence by the Commission.

(iv) The information sought to be protected is not available in public sources or available information has not been previously employed in the same original manner or method to the best of our knowledge and belief.

(v) The proprietary information sought to be withheld in this submittal is that which is appropriately marked in WCAP-15918-P, Rev. 02 "Steam Generator Tube Repair for Combustion Engineering and Westinghouse Designed Plants with 3/4 Inch Inconel 600 Tubes Using Leak Limiting Alloy 800 Sleeves" (Proprietary), dated July, 2004 for St. Lucie, being transmitted by the Florida Power and Light Company letter and Application for Withholding Proprietary Information from Public Disclosure, to the Document Control Desk. The proprietary information as submitted for use by Westinghouse for St. Lucie is expected to be applicable for other licensee submittals in response to certain NRC requirements for justification of the use of Alloy 800 sleeves in degraded steam generator tubes.

~~This information~~ is part of that which will enable Westinghouse to:

(a) Install Alloy 800 sleeves in degraded tubes in St. Lucie steam generators.

(b) Assist the customer in obtaining NRC approval of a technical specification change.

Further this information has substantial commercial value as follows:

(a) Westinghouse plans to sell the use of similar information to its customers for purposes of meeting NRC requirements for licensing documentation.

(b) Westinghouse can sell support of Alloy 800 sleeve installation.

(c) The information requested to be withheld reveals the distinguishing aspects of a methodology which was developed by Westinghouse.

Public disclosure of this proprietary information is likely to cause substantial harm to the competitive position of Westinghouse because it would enhance the ability of competitors to provide similar licensing services for commercial power reactors without commensurate expenses. Also, public disclosure of the information would enable others to use the information to meet NRC requirements for licensing documentation without purchasing the right to use the information.

The development of the technology described in part by the information is the result of applying the results of many years of experience in an intensive Westinghouse effort and the expenditure of a considerable sum of money.

In order for competitors of Westinghouse to duplicate this information, similar technical programs would have to be performed and a significant manpower effort, having the requisite talent and experience, would have to be expended.

Further the deponent sayeth not.

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PROPRIETARY INFORMATION NOTICE

Transmitted herewith are proprietary and/or non-proprietary versions of documents furnished to the NRC in connection with requests for generic and/or plant-specific review and approval.

In order to conform to the requirements of 10 CFR 2.390 of the Commission's regulations concerning the protection of proprietary information so submitted to the NRC, the information which is proprietary in the proprietary versions is contained within brackets, and where the proprietary information has been deleted in the non-proprietary versions, only the brackets remain (the information that was contained within the brackets in the proprietary versions having been deleted). The justification for claiming the information so designated as proprietary is indicated in both versions by means of lower case letters (a) through (f) located as a superscript immediately following the brackets enclosing each item of information being identified as proprietary or in the margin opposite such information. These lower case letters refer to the types of information Westinghouse customarily holds in confidence identified in Sections (4)(ii)(a) through (4)(ii)(f) of the affidavit accompanying this transmittal pursuant to 10 CFR 2.390(b)(1).

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Enclosure 1 Contains 2.390 Proprietary Information