

CATEGORY 1

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ACCESSION NBR: 9706040289 DOC. DATE: 97/05/28 NOTARIZED: NO DOCKET #
 FACIL: 50-335 St. Lucie Plant, Unit 1, Florida Power & Light Co. 05000335
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SUBJECT: Communicates util plans for eddy current testing of replacement SGs for Unit 1. Concludes that SRs of Unit 1 TS 3.4.5 not applicable to preservice insp of replacement SGs.

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May 28, 1997

L-97-140
10 CFR § 50.36

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

Re: St. Lucie Unit 1
Docket No. 50-335
Steam Generator Eddy Current Testing

The purpose of this letter is to communicate to the NRC Florida Power & Light Company's (FPL) plans for eddy current testing of replacement steam generators for St. Lucie Unit 1. This letter documents FPL's conclusion that the Surveillance Requirements of St. Lucie Unit 1 Technical Specification 3.4.5 are not applicable to the preservice inspection of replacement steam generators and do not apply until the first inservice inspection after 6 effective full power months but before 24 calendar months. Instead, OPERABILITY of replacement steam generators is based on a 100% in-shop baseline inspection.

Background

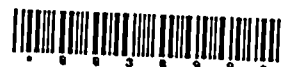
As a result of the plugging of approximately 25% of the tubes in the original St. Lucie Unit 1 steam generators, the unit's steam generators will be replaced during an outage beginning in October 1997. The replacement steam generators, which have been manufactured by Babcock & Wilcox of Canada (BWC), have been 100% eddy current tested in the fabrication shop to verify their integrity, quality, and to provide a baseline for future reference. The eddy current tests conducted at the factory employed technology similar to that used for in situ eddy current testing of in-service steam generators. The eddy current tests were performed by personnel with training and qualification requirements similar to those of personnel who would perform similar testing at the St. Lucie Plant site. Data analysis, review and verification is the same and is independent of the eddy current testing location.

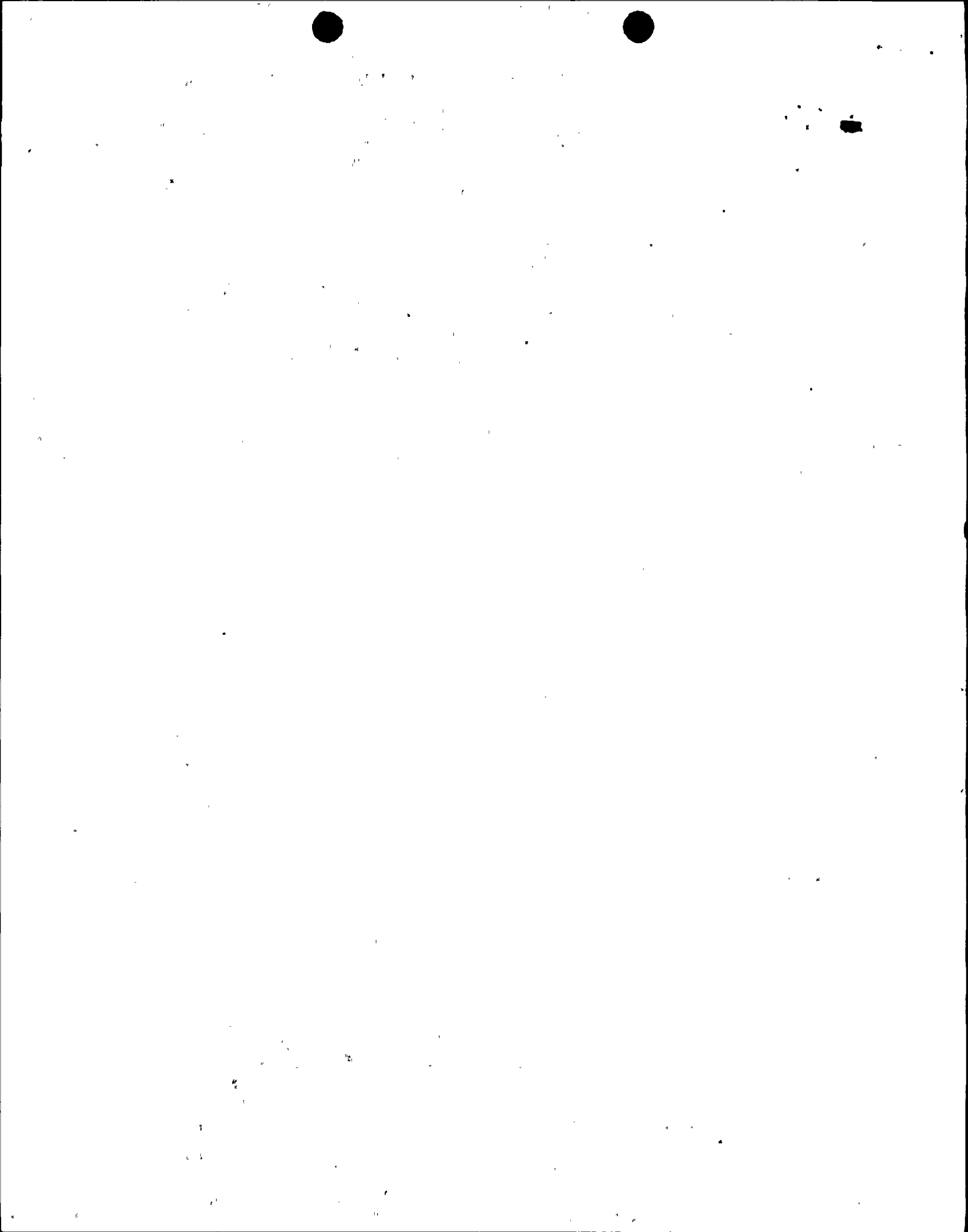
Eddy current testing in the fabrication shop reduced the radiation exposure of plant personnel, since testing will not need to be performed in the reactor containment building. The eddy current tests performed in the fabrication shop confirmed the integrity and regulatory compliance of the tubes in the replacement steam generators. Further, the tubes in the replacement steam generators are made of thermally treated Alloy 690, a corrosion resistant material commonly used in recirculating steam generators.

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Regulatory Requirements

St. Lucie Unit 1 Technical Specification 4.4.5.1 requires that:

Each steam generator shall be determined to be OPERABLE during shutdown by selection and inspecting at least the minimum number of steam generators specified in Table 4.4-1.

Technical Specification Table 4.4-1 requires steam generator inspection as follows:

TABLE 4.4-1

MINIMUM NUMBER OF STEAM GENERATORS TO BE
INSPECTED DURING INSERVICE INSPECTION

Preservice Inspection	No			Yes		
	Two	Three	Four	Two	Three	Four
No. of Steam Generators per Unit						
First Inservice Inspection	All			One	Two	Two
Second & Subsequent Inservice Inspections	One ¹			One ¹	One ²	One ³

Table Notation:

1. The inservice inspection may be limited to one steam generator on a rotating schedule encompassing 3 N % of the tubes (where N is the number of steam generators in the plant) if the results of the first or previous inspections indicate that all steam generators are performing in a like manner. Note that under some circumstances, the operating conditions in one or more steam generators may be found to be more severe than those in other steam generators. Under such circumstances the sample sequence shall be modified to inspect the most severe conditions.
 2. The other steam generator not inspected during the first inservice inspection shall be inspected. The third and subsequent inspections should follow the instructions described in 1 above.
 3. Each of the other two steam generators not inspected during the first inservice inspections shall be inspected during the second and third inspections. The fourth and subsequent inspections shall follow the instructions described in 1 above.
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Regulatory Guidance

The St. Lucie Unit 1 Technical Specification BASES state:

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 generators tubes is based on a modification of Regulatory Guide 1.83, Rev. 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.

As stated in the BASES, the St. Lucie Unit 1 steam generator inspection program is based upon NRC Regulatory Guide 1.83 (RG 1.83), *Inservice Inspection of Pressurized Water Reactor Steam Generator Tubes*, (Revision 1, July 1975). RG 1.83 addresses both new and in-service components. Since the replacement steam generators are new components, their pre-service inspection is appropriately addressed in RG 1.83, as discussed below.

Regulatory Guide 1.83

Section B. of RG 1.83 states, in applicable part:

The usual shop examination of tubing can be considered to serve as an adequate baseline examination. An onsite preservice inspection of the steam generator tubing should be performed in the absence of a documented shop or field examination.

Section C.3., *Baseline Inspection*, subsection a., of R. 1.83 states:

All tubes in the steam generators should be inspected by eddy current or alternative techniques prior to service to establish a baseline condition of the tubing.

Section C.4., *Sample Selection and Testing*, states:

Selection and testing of steam generator tubes should be made on the following basis:

- a. The preservice inspection should include all the tubes in the steam generators.

Section C.6., *Inspection Intervals*, states:

- a. The first inservice inspection of steam generators should be performed after 6 effective

full power months but before 24 calendar months.

Discussion

As discussed above, a 100 percent in-shop baseline inspection of the replacement steam generators was performed by BWC; therefore, the onsite preservice inspection of the steam generator tubing which should be performed in the absence of a documented shop or field examination is not required. The acceptance criteria for the in-shop eddy current testing were more stringent than NRC guidelines (e.g., BWC limits wall thickness reductions to no more than 15% versus 20% per NRC guidelines). Also, the first refueling outage for St. Lucie Unit 1 post-steam generator replacement is scheduled for Fall 1999, which will be after 6 effective full power months but before 24 calendar months of operation with the replacement steam generators.

Technical Specification 4.4.5.1 establishes the inservice inspection requirements that apply after a steam generator has been placed in service and operated. In the absence of specified preservice requirements in the Technical Specifications, the recommendations in RG 1.83 should be applied.

Conclusion

FPL has concluded that the preservice testing of the replacement steam generators meets all regulatory requirements. Additionally, FPL has concluded that the Surveillance Requirements of Technical Specification 3.4.5, Steam Generators, do not apply to preservice replacement steam generators and do not require inservice inspection prior to operation in excess of 6 effective full power months. Therefore, the replacement steam generators may be declared OPERABLE, as required by the Technical Specifications, following appropriate post-installation startup testing.

FPL plans to begin the St. Lucie Unit 1 steam generator replacement outage on or about October 20, 1997. In order to assure timely submittal of a proposed license amendment for Technical Specification 4.4.5.1, if the NRC deems it is required, FPL respectfully requests NRC concurrence with, or feedback on, the conclusions we have reached in this letter by July 18, 1997. Please contact us if further discussion on this topic is required. This letter contains no regulatory commitments.

Very truly yours,



J. A. Stall
Vice President
St. Lucie Plant

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

