Florida
Power
CORPORATION
Crystal River Unit 3
Docket No. 50-302

March 21, 1996
3F0396-19

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

Subject: Technical Specification Change Request No. 203, Revision 2

Reference:
A. FPC to NRC letter, 3F0595-05 dated May 31, 1995
B. NRC to FPC letter, 3N0494-21 dated April 26, 1994
C. FPC to NRC letter, 3F1295-03 dated December 5, 1995
D. NRC to FPC letter, 3N1095-21 dated October 24, 1995
E. FPC to NRC letter, 3F0396-15 dated March 17, 1996

Dear Sir:

Florida Power Corporation (FPC) hereby submits Revision 2 to Technical Specification Change Request No. (TSCRN) 203 requesting amendment to Operating License No. DPR-72. The initial request (Reference A) was submitted as the last required action of a related Confirmation of Action Letter (Reference B). Reference E was Revision 1 to TSCRN 203. This request supersedes Reference E in its entirety. This revised TSCRN is limited in scope compared to Reference A and focuses on a specific strategy for dealing with a single degradation mechanism (Inter-Granular Attack or IGA) in a limited region of the Crystal River 3 (CR-3) once through steam generators (OTSGs). FPC and the NRC have also agreed that it is appropriate for this request to be limited to one cycle in duration. Thus, as part of this request, the TSCRN and the proposed replacement pages are provided and appropriately annotated to reflect this limited duration.

This amendment request is necessary to allow restart from our current refueling outage. Previous efforts to resolve this issue were ongoing when the unit was prematurely shut-down for an unrelated reason. FPC developed steam generator NDE

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plans for this outage to reflect our current licensing basis, feedback we had received from the NRC, current industry practices, and the results of our previous examinations. As a result of subsequent discussions with NRC staff, we have further modified our plans to include additional NDE efforts, conservative repair of tubes outside the region addressed in this TSCRN and additional analysis of NDE results. These efforts have led to a change to two of our proposed criteria (1.5V is being lowered to 1.25V and the related 0.75V to 0.65V). Nevertheless, even with these changes in NDE result definitions and repairs performed during this outage no further expansion of overall bobbin scope is required.

In order to provide additional assurance of tube leakage integrity, FPC will perform in-situ pressure testing of a number of tube indications this outage to provide additional assurance of leakage integrity for tubes left in service as a result of the amendment. FPC will test thirteen tube segments containing one or more indications of interest. In-situ tests will be done at the pressures suggested by Generic Letter 95-05, with adjustment for differences between the test conditions and operating conditions and additional margin to address variability in tube material properties (nominally 3125 psig). Specific tube numbers and key attributes of the indications selected are provided in the attached technical information supporting the amendment request.

FPC has evaluated the requirements of 10 CFR 50.91; sections a(5) and (6) and considers it appropriate for this request to be treated as either an emergency or exigent change request under the rules. Failure to issue the amendment in an expedited fashion will delay the restart of the unit from our current refueling outage and it could not have reasonably been avoided by previous licensee action. FPC and the NRC have been working toward resolution of an appropriate technical specification amendment since May 1995. FPC has responded promptly to all requests for additional information from NRC staff. Prior resolution was not reached due to the complexity of the issues involved, differences between FPC's approach and generic industry efforts to manage recirculating steam generator degradation (due to the unique character of our OTSG degradation), and the evolving industry/NRC interactions on steam generator tube integrity. In particular, the submittal of TSCRN 203 preceded issuance of Generic Letter (GL) 95-05 which provided an Industry Guideline for voltage based repair criteria for Westinghouse steam generator tubes affected by outside diameter stress corrosion cracking. The guidelines contained within GL 95-05 have been used as a reference for NRC staff review of TSCRN 203. In addition, the uniqueness of TSCRN 203 as the first Industry submittal for disposition of IGA indications and the first submittal to utilize both a voltage and a size based strategy, has necessitated a longer review time than expected. FPC notes that the public has had ample opportunity to participate in the review of this issue since the Proposed Determination of No Significant Hazards associated with Reference A was published. Reference A requested substantially more change than this current request. Thus, the public's right to participate in the consideration of this request has been met. Nevertheless, a current "Sholly Evaluation" is attached. It remains the same as that provided with Reference E which added one issue to that provided with Reference A.

There are several attachments to this letter. FPC is providing additional specific technical information on the docket to resolve some NRC staff questions. It is our intent to have supplied all of the information necessary to support this amendment request in these attachments. Details of how each of these are relied upon is contained in the 'Evaluations of the Request' (Attachment 4).

The original technical report attached to Reference A was provided as FPC proprietary. FPC no longer considers this necessary. We appreciate your continued attention to this amendment request.

Sincerely,

P. M. Beard, Jr.
Senior Vice President
Nuclear Operations

cc: Regional Administrator, Region II
Senior Resident Inspector
Project Manager

ATTACHMENTS

1. Affidavit
2. Certificate of Service
3. Technical Specification Change Request Description
4. Reasons For and Evaluation of Request
5. Sholly Evaluation of Request
6. Proposed Changes to TS Pages (including BASES)
7. Technical Report in Support of TSCRN 203
8. Statistical Evaluation to Support Leakage Integrity Criteria
9. Analyst and Acquisition Variability from 10R ECT Testing
10. Growth Rate Data Evaluation from 10R ECT Inspection (First Span Only)
11. EPRI NDE Center Data and CR-3 Volume/Depth Revised Data
12. In-Situ Pressure Testing Discussion

ATTACHMENT 1

AFFIDAVIT

STATE OF FLORIDA

COUNTY OF CITRUS

P. M Beard, Jr., states that he is the Senior Vice President, Nuclear Operations for Florida Power Corporation; that he is authorized on the part of said company to sign and file with the Nuclear Regulatory Commission the information attached hereto; and that all such statements made and matters set forth therein are true and correct to the best of his knowledge, information, and belief.

P. M. Beard, Jr.
Senior Vice President
Nuclear Operations

Subscribed and sworn to before me, a Notary Public in and for the State and County above named, this 21st day of March, 1996.

LYNNE S. SMITH

Notary Public (print)

Notary Public (signature)

LYNNE S. SMITH
MY COMMISSION # CC 514380
EXPIRES: December 18, 1999
Bonded Thru Notary Public Underwriters

ATTACHMENT 2

CERTIFICATE OF SERVICE

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

IN THE MATTER	)	
	)	DOCKET NO. 50-302
FLORIDA POWER CORPORATION	)	

CERTIFICATE OF SERVICE

P. M. Beard, Jr. deposes and says that the following has been served on the Designated State Representative and Chief Executive of Citrus County, Florida, by deposit in the United States mail, addressed as follows:

Chairman,
Board of County Commissioners
of Citrus County
Citrus County Courthouse
Inverness, FL 34450

Administrator,
Radiological Health Services
Department of Health and
Rehabilitative Services
1323 Winewood Blvd.
Tallahassee, FL 32301

A copy of Technical Specification Change Request No 203, Revision 2.

FLORIDA POWER CORPORATION

P. M. Beard, Jr.
Senior Vice President
Nuclear Operations

SWORN TO AND SUBSCRIBED BEFORE ME THIS 21st DAY OF MARCH, 1996

LYNNE S. SMITH
Notary Public (print)

Notary Public (signature)

LYNNE S. SMITH
MY COMMISSION # CC 514380
EXPIRES: December 18, 1999
Bonded Thru Notary Public Underwriters

ATTACHMENT 3

TECHNICAL SPECIFICATION CHANGE REQUEST DESCRIPTION

FLORIDA POWER CORPORATION
CRYSTAL RIVER UNIT 3
DOCKET NO. 50-302/LICENSE NO. DPR-72
TECHNICAL SPECIFICATION CHANGE REQUEST NO. 203, REVISION 2
FIRST SPAN IGA OTSG EDDY CURRENT INDICATION DISPOSITION

LICENSE DOCUMENT INVOLVED: Technical Specifications (TS)

PORTIONS: Technical Specification 3.4.12
Technical Specification 5.6.2.10
Technical Specification 5.7.2.c

DESCRIPTION OF REQUEST:

This request proposes a strategy for dispositioning Inter-granular Attack (IGA) indications in tubes between the secondary face of the Lower Tube Sheet (LTS) and the first tube support plate (simply referred to as 'within the first span') of the Once Through Steam Generators (OTSGs) for the next operating cycle only. The strategy adds acceptance criteria based upon the indications' morphology, bobbin coil amplitude, and axial and circumferential dimensions. This addition is necessary because the current technical specifications do not address IGA. This disposition strategy has been qualified for use through the NDE and destructive (tube pull) efforts conducted previously at CR-3.

First span indications with a bobbin coil amplitude greater than 1.25V will be repaired. First span indications with a bobbin coil amplitude less than or equal to 1.25V will undergo motorized rotating pancake coil (MRPC) inspection to determine the morphology of the indication. Indications exhibiting a volumetric morphology will undergo an MRPC sizing evaluation to determine the axial and circumferential extent. First span volumetric (IGA) indications with all of the following characteristics will be allowed to remain in service:

a bobbin coil amplitude $\leq$ 1.25 volts; and

axial extent $\leq$ 0.25 inches; and

circumferential extent $\leq$ 0.6 inches.

Tubes with first span IGA indications which exceed any one of the above criteria will be repaired. First span IGA indications that have previously been evaluated with MRPC and that have a bobbin coil amplitude $\leq$ 1.25V, will not be subsequently re-examined unless the bobbin coil amplitude has increased by a value of $\geq$ 0.3 volts from the previous inspection.

The following specific changes to the Technical Specifications are proposed to support or reflect implementation of the criteria described above. Backshading is provided to clearly identify changes from the existing Technical Specifications (not previous revisions of this request). Each page is annotated to reflect being valid only for the next operating cycle.

A. TS 3.4.12, Item d, page 3.4-22. We are proposing reducing allowed primary to secondary leakage through steam generators to a value consistent with previous staff approvals such that this LCO would read as follows:

150 gpd primary to secondary LEAKAGE through any one steam generator (OTSG).

B. TS 5.6.2.10.2, page 5.0-14, above the NOTE. Since both bobbin and MRPC are now addressed in the technical specifications, the changes we are proposing are intended to make clear that the expansion is limited to address bobbin coil NDE efforts. We are proposing to add the words "bobbin coil" prior to "sample inspection" such that this sentence would read as follows:

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

C. TS 5.6.2.10.2, page 5.0-14, NOTE (which modifies the expansion category definition). We are proposing to insert criteria indicative of potential growth in a first span IGA indication. The proposed NOTE would read as follows:

In all inspections, previously degraded tubes whose degradation has not been spanned by a sleeve must exhibit a significant increase in the applicable imperfection size measurement (≥ +0.3V bobbin coil amplitude increase for first span IGA indications or >10% further wall penetration for all other imperfections) to be included in the below percentage calculations.

D. TS 5.6.2.10.4.a.2, page 5.0-16, second sentence. We are proposing re-wording the imperfection criteria to address first span IGA such that this item would read as follows:

Imperfection means an exception to the dimensions, finish, or contour of a tube from that required by fabrication drawings or specifications. Any indication below all degraded tube criteria specified in item 4 below may be considered as imperfections.

E. TS.6.2.10.4.a.4, page 5.0-16. We are proposing adding IGA attributes to the existing "degraded tube" definition. We are proposing values approximately half of the repair limits much like the existing definitions use 40% TW for defective and 20% TW for degraded. This item would read as follows:

Degraded Tube means a tube containing a first span IGA indication with a bobbin coil amplitude ≥ 0.65V, an axial extent of ≥ 0.13 inches, or a circumferential extent of ≥ 0.3 inches, or other imperfections ≥ 20% of the nominal wall thickness caused by degradation except where all such degradation has been spanned by the installation of a sleeve.

F. TS 5.6.2.10.4.a, new page 5.0-16A. We are proposing adding a new vocabulary term for first span IGA indications as 5.6.2.10.4.a.7. This will necessitate adding a new page to accommodate the additional information. The TS would read as follows:

First span IGA indication means a bobbin coil indication located between the lower tubesheet secondary face and the first tube support plate confirmed by MRPC to have a volumetric morphology characteristic of IGA.

G. TS 5.6.2.10.4.a.7 and 8 on new page 5.0-16A, and 5.6.2.10.4.a.9, page 5.0-17. It will be necessary to renumber definitions to reflect insertion of new 'first span IGA indication' vocabulary term.

H. TS 5.6.2.10.4.a.7, renumbered to 5.6.2.10.4.a.8, on added page 5.0-16A. We are proposing adding a first span IGA criteria to the plugging/sleeving limit such that this definition would read as follows:

Plugging/Sleeving Limit means the extent of degradation beyond which the tube shall be restored to serviceability by the installation of a sleeve or removed from service because it may become unserviceable prior to the next inspection. The limit for first span IGA indications is a bobbin coil amplitude of 1.25V, an axial extent of 0.25 inches, or a circumferential extent of 0.6 inches. The limit for indications other than first span IGA is equal to 40% of the nominal tube or sleeve wall thickness. No more than five thousand sleeves may be installed in each OTSG.

I. TS 5.7.2.c.2, new page 5.0-29. We are proposing revising and adding to the existing reporting requirements. We are proposing adding a requirement to notify the NRC prior to MODE 4 rather than within 15 days and changing another reporting time-frame from 12 months to 90 days. A new item 3 to address inspection results associated with the first span of the OTSG and re-number item 5.7.2.c.3 to 5.7.2.c.4. These changes will necessitate the creation of a new page 5.0-29A. This section would read as follows:

Following each inservice inspection of steam generator (OTSG) tubes, the NRC shall be notified of the following prior to plant ascension into MODE 4:

1. Number of tubes plugged and sleeved,

2. Crack-like indications in the first span,

3. An assessment of growth for first span IGA indications, and

4. Results of in-situ pressure testing, if performed.

The complete results of the OTSG tube inservice inspection shall be submitted to the NRC within 90 days following the completion of the inspection. The report shall include:

1. Number and extent of tubes inspected,

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

3. Location, bobbin coil amplitude, and axial and circumferential extent (if determined) for each first span IGA indication, and

4. Identification of tubes plugged and tubes sleeved.

Results of OTSG tube inspections that fall into Category C-3 shall be reported to the NRC prior to resumption of plant operation. This report shall provide a description of investigations conducted to determine cause of the tube degradation and corrective measures taken to prevent recurrence.

ATTACHMENT 4

REASONS FOR AND EVALUATION OF REQUEST

REASON FOR REQUEST:

Current OTSG TS inspection acceptance criteria are depth-based or percent through-wall (TW) criteria. TS specify the plugging/sleeving limit (i.e., repair limit) used as the criterion for removing steam generator tubes from service to be an imperfection depth equal to or greater than 40% of the nominal wall thickness. This criterion is based on a structural evaluation of a simplified model of tubes with uniform wall thinning where actual wall metal loss is experienced. However, based upon CR-3 pulled tube examination results, degradation present in the first span is due to sulfur-related intergranular attack (IGA) with little if any wall metal loss experienced. The lack of wall metal loss and the very small volume of the indications significantly affects the eddy current signal produced by the IGA, hindering the accuracy of assessment of the through wall depth by conventional bobbin coil phase angle technique.

Additionally, burst testing of pulled tubes and subsequent analytical work demonstrated that for very small volume indications, a percent through wall greater than the current technical specification repair limit of 40% can be tolerated without noticeable reduction in the structural or leakage integrity of tubing. Therefore, FPC chose to develop supplemental methods to disposition these small volume IGA indications located in the first span of the OTSGs. Two tube pull campaigns have supported the development of these criteria. Because the proposed disposition strategy is based on multi-dimensional assessment of indications, including measurable eddy current parameters of voltage, axial extent, and circumferential extent, FPC has determined that the proposed disposition strategy provides a higher confidence level that unacceptable flaws will be removed from service than the current Technical Specification through wall based repair limit.

EVALUATION OF REQUEST:

The approach used by FPC to evaluate the proposed disposition strategy is consistent with Regulatory Guide (RG) 1.121 and with that taken in past FPC submittals on this subject. Attachment 1 to Reference A ("TSCRN 203 Technical Report") contained the basis for the proposed first span, small volume eddy current indication disposition strategy. This basis document has been developed from an analysis provided previously and reflects additional knowledge and experience gained by FPC as a result of previous examinations, tube pulls, and various industry and Owners Group initiatives.

For ease in presentation and review of this revised amendment request, the technical basis document previously submitted via Reference A is included with this submittal as Attachment 7. (Note: Attachment 7 also contains data applicable to wear indications, but the presence of wear in some correlations does not affect the results.) Additional information, beyond that contained in the detailed technical basis document and submitted with this revised amendment request has been provided previously (Reference C). Therefore, all information that we understand the NRC will be relying on has been previously docketed or included with this letter.

Structural Adequacy of the Tubing

Section 4.1, 4.2, and 4.3 of Attachment 7 provide the technical basis which demonstrates the structural adequacy of tubes which will remain in service as a result of implementation of the proposed disposition strategy for first span IGA indications.

Two tube pull campaigns have been performed at CR-3 to obtain samples of tubing with IGA. Five sections of tubing with a combined total of approximately 127 indications were subjected to burst testing to evaluate structural integrity. All burst well above RG 1.121 limits. Burst data for one tube section was particularly relevant to demonstrating structural integrity of OTSG tubing as it relates to the proposed amendment request. Tube section 68-46-3 contained a defect in the lower tube sheet region which exhibited an axial extent of 0.228 inch with 75% TW penetration. Despite the relatively large size of this indication in comparison to all other IGA indications identified, the burst pressure for the tube section was 7000 psi, which is still substantially greater than the RG 1.121 limit of 4050 psi.

In 1994, MPR Associates performed a linear elastic fracture mechanics analysis to calculate the maximum acceptable axial and circumferential indication size for CR-3 tubing based on assuming 100% TW penetration. The MPR analysis conservatively modelled CR-3 volumetric indications as planer defects with no credit taken for ligaments between micro-cracks. The MPR analysis concluded that the maximum allowable axial indication would be limited to 0.25 inch and the maximum allowable circumferential indication would be limited to 0.60 inch. In 1995, Packer Engineering reviewed the MPR calculation and used limit load analysis to model the high ductility and toughness of steam generator tubes. Based on the Packer Engineering analysis it was determined that the axial size limit for OTSG tubing should be 0.33 inch. To further support the conclusions reached by the MPR and Packer Engineering analyses, Structural Integrity Associates, Inc., was contracted to perform an independent review of both the MPR and Packer Engineering analyses. The Structural Integrity Associates review determined that while both approaches are conservative, the MPR approach had greater built-in conservatism with the work performed by Packer Engineering more appropriately modeling the allowable OTSG axial flaw size. In consideration of the conservatism in the MPR calculation, FPC proposes an axial extent limit of 0.25 inch.

Qualification of MRPC for sizing the axial and circumferential extent of IGA indications was performed and is presented in Section 3.2.2 of Attachment 7. As part of the qualification study, clip plot sizing was performed on 27 IGA indications from CR-3 pulled tubes and 8 indications on Laboratory grown IGA samples. Actual size of the indications was later determined by destructive examination. The MRPC qualification study demonstrated that, in every case, MRPC systematically conservatively oversizes indications.

Leakage Integrity Assessment

Section 5.2.1 of Attachment 7 provides the results of an MPR calculation performed to determine the minimum "ligament" or wall thickness required to ensure no leakage occurs due to IGA indications. The maximum allowable percent through wall penetration associated with the minimum ligament was 87% TW. Independent review of the MPR calculation was performed by both APTECH Engineering and Structural Integrity Associates, Inc.

Since no fully qualified method currently exists for assessing percent through wall indication of small volume IGA indications, a statistical analysis has been performed by APTECH Engineering to assess the probability that an indication with a percent through wall penetration greater than 87% will be left in service by the proposed IGA disposition strategy. The results of the APTECH statistical analysis are provided as Attachment 8. A two part correlation was necessary to relate IGA indication TW depth to voltage since no direct correlation could be demonstrated. However, the APTECH analyses demonstrated that the application of statistical techniques to the two part data correlation produced results which were unrealistic. The APTECH analyses developed uncertainties based upon two separate data sets. These data sets were based upon CR-3 pulled tubes and laboratory grown IGA. Applying these uncertainties to the best estimate curve obtained from the two part correlation produced a disposition limit of 1.5 volts to ensure leakage integrity. As further demonstration of the impracticality of using a two part correlation for determining uncertainties APTECH showed that wear data (highly correlated) also resulted in significant uncertainty.

Working from an upper voltage limit of 1.5 volts, uncertainties involved in bobbin voltage measurement were considered to arrive at the proposed 1.25 volt leakage repair limit. Since no OTSG probe wear standard currently exists, the effect of probe wear and analyst uncertainty was studied during performance of Refuel 10 eddy current examination. In review of bobbin examination results, it was determined that a single probe had been used for full length inspection of over 1000 tubes. This is an unusually high number of runs without probe change out, so it provided the opportunity to evaluate probe performance both at the beginning of probe life and at a point beyond its normally expected performance life. 326 indications were selected for bobbin re-examination using the same calibration standards for set up and the same acquisition and analysis procedures used to evaluate the indications on their first runs. A comparison of the change in bobbin voltage from the original run to bobbin voltages obtained with the new probe were evaluated. This same data was also evaluated as a function of probe life for the first examination. As shown in Attachment 9, the variability at the beginning of probe life is essentially the same as that observed at the end of probe life, with a standard deviation of 0.08 V which indicates that probe wear alone does not appear to significantly affect OTSG bobbin voltages. The variability observed in bobbin voltages at the beginning of probe life indicates that other factors associated with the ECT hardware may be more of a controlling factor in voltage variation from inspection to inspection. As part of the same study, an analysis of analyst variability was performed. As shown on Attachment 9, essentially no variability was observed from inspection to inspection. Results of the Refuel 10 study were considerably less than those discussed in Section 3.4.2 of Attachment 7.

Based on the uncertainties observed in the Refuel 10 study, the proposed voltage limit for CR-3 indications is reduced to 1.25 volts. This voltage limit represents a significant reduction in the originally proposed 2.5 volt limit from Attachment 7 and provides a high confidence level that indications with greater than 87% through wall penetration will not remain in service.

As part of a defense-in-depth approach, FPC has also agreed to reduce the limit on primary-to-secondary leakage from 1 gpm through both OTSGs to 150 gpd from any one steam generator. Main steam line N-16 monitors were also placed in service on a trial basis at CR-3 in August 1995. A modification package for permanent installation of the N-16 monitors is now in progress. Reduction of the primary to secondary leakage limit, combined with the ability to detect very small amounts of leakage early will ensure timely unit shutdown in the event leakage should occur.

In-situ pressure testing will also be performed prior to restart from Refuel Outage 10 to bound first span IGA indications left in service as a result of the proposed disposition strategy. A detailed discussion of in-situ pressure test plans, including test pressure and sample selection is provided later in this evaluation.

No significant changes in operating conditions are planned between startup from Refuel Outage 10 and shutdown for Refuel Outage 11, including cycle length and water chemistry. A 24 MWt power level upgrade is planned during Cycle 11 which is projected to result in a change in T_{hot} of less than 1^0 F. The proposed disposition strategy is limited to the first span of the OTSGs, which is equivalent to the RSG cold leg. Therefore, no change in the status of indications from that observed during Refuel Outage 10 is expected as a result of the temperature increase.

Growth Rate Studies

Section 4.4 of Attachment 7 provides the results of three independent growth studies performed on CR-3 first span IGA indications. The studies, performed by the EPRI NDE Center, Babcock and Wilcox Nuclear Technologies (BWNT), and Packer Engineering, Inc. each concluded there to be little or no growth for the period of time examined. Although no probe wear standard was used during acquisition of the data included in the growth studies, no significant effect on growth study conclusions is expected. As discussed previously, a study was performed during Refuel Outage 10 to assess the affect of probe wear on bobbin voltages. As demonstrated by the results of the study, probe wear does not appear to be the most significant factor in the variability of bobbin voltage from inspection to inspection. Less variability due to probe wear in OTSG tubing is likely related to the examination of straight tubes with minimal amounts of tube support plate denting as compared to probe wear observed at some recirculating steam generators where the probe path is more torturous.

Figures 4-5 through 4-8 of Attachment 7 provided a visual representation of indication growth based on comparison of bobbin voltage from RF8 inspection in 1992 to RF9 inspection in 1994. Since bobbin examination is now complete for RF10, the same visual representation is provided as Attachment 10 to support the no growth conclusions reached in previous studies. Based on no growth of

indications, end of cycle leakage and burst probabilities would be essentially equivalent to beginning of cycle probabilities.

The proposed disposition strategy includes a criteria (+0.5V in Attachment 7 and +0.3V in the current request) which ensures the no growth conclusion is validated on both an individual indication basis and as a population of indications. The 0.3V growth trigger provides a limit which is consistent with the statistical uncertainties associated with analyst and acquisition variability, while providing an assessment against previously degraded indications which does not predefine a percentage of tubing to be degraded. Individual indications which exhibit a 0.3 volt increase in bobbin signal will be MRPC re-examined to assess their continued acceptability for service. They will also be included as degraded tubes in the calculation to determine bobbin coil sample inspection requirements (i.e. C-1, C-2, or C-3). Reporting requirements have also been included which address overall growth of the total population of first span IGA indications following each eddy current campaign prior to unit restart.

In-Situ Pressure Test Plans

Guidelines provided in Section 2 of GL 95-05 (Page 3 of 18) address main steam line break considerations and primary system safety valve setpoints relative to determination of appropriate pressures for performance of In-situ pressure testing. Although CR-3 Technical Specification require that the power-operated relief valve be operable during power operation, CR-3 conservatively chose to establish an in-situ test pressure based on safety valve setpoint. This is conservative because calculated CR-3 main steam line break worst case pressure differential is significantly less than safety valve setpoint and is consistent with the pressure used to calculate the minimum ligament necessary to prevent leakage. The relief valve setpoint at CR-3 is 2575 psi including the 3% adjustment for valve accumulation. For conservatism, a 2600 psi value is assumed. This pressure has been adjusted for temperature effects between test conditions and normal operating conditions increasing the test pressure to 2825 psi. An additional 10% increase in pressure will also be added to account for uncertainty in the various material properties. Based on these considerations, 3130 +/- 20 psi is proposed as the test pressure for CR-3 in-situ testing. This pressure is well above the main steam line break and feedwater line break maximum differential pressure for CR-3 and represents 80% of Code minimum for yield stress of tubing material. This test pressure is also consistent with the manufacturer's preservice hydrotesting of tubes to prove acceptability for service.

A sample of thirteen (13) tubes with 19 indications of interest will be tested. In reality, due to the close proximity of first span IGA indications and the length of tube tested, a higher number of indications will be tested. Identification of the sample selected with a description of the indications to be tested and the reason for selection is provided in Attachment 12. This in-situ test sample, combined with information obtained from destructive examination of CR-3 pulled tubes also provided in Attachment 12, bounds the indications which will remain in service during Cycle 11.

ATTACHMENT 5

SHOLLY EVALUATION OF REQUEST

SHOLLY EVALUATION OF REQUEST:

Florida Power Corporation has reviewed the requirements of 10CFR50.92 as they relate to the proposed method for dispositioning "first span IGA" OTSG tube eddy current indications and determined that the proposed change does not involve a significant hazards consideration. In support of this conclusion the following analysis was provided with the Reference E and is resubmitted as applying to this revision equally well:

1. The proposed change will not significantly increase the probability or consequences of an accident previously evaluated. The relevant accidents are excessive leakage or steam generator tube rupture (as a consequence of MSLB or otherwise).

   RG 1.121 establishes a standard method for demonstrating structural integrity under worse-than-DBE conditions. The existing TS is based on this RG. The first span, IGA disposition strategy continues to rely on this guidance. Current TW sizing techniques would allow defects greater than the current TS limit of 40 % to remain in service since these techniques do not accurately measure percent wall penetration for small volume indications. The proposed disposition strategy based on measurable eddy current parameters of voltage, axial extent, and circumferential extent has been shown to provide a higher confidence that unacceptable flaws are removed from service. Therefore, the probability of a Steam Generator Tube Rupture (SGTR) is not increased and may well be decreased by implementation of this S/N disposition strategy.

   The probability of OTSG tube leakage during normal operation or accident conditions is not adversely affected by the proposed first span IGA disposition strategy. Operating history indicates essentially no primary to secondary leakage through the OTSG tubes at CR-3. Growth rate studies imply this trend could be expected to continue. However, for conservatism the OTSG leakage limit has been reduced from 1 gallon per minute through all OTSGs to 150 gallons per day through any one OTSG. This change is consistent with the guidance provided in Generic Letter 95-05. Small volume indications which might leak during worse-case FWLB conditions are addressed in the RG 1.121 evaluation. The disposition strategy ensures these indications are removed from service as part of the inservice inspection. Once detected, the proposed criteria are at least as effective in determining those indications which should be removed from service as are the existing TS limits.

   The first span IGA disposition strategy is an integral part of an overall effort to better address these and similar phenomena in OTSGs.

2. The proposed change will not create the possibility of a new or different kind of accident from any accident previously evaluated.

   The key "new or different" accidents addressed in this and similar proposals is the potential for MSLB-induced multiple SGTR or excessive primary-to-secondary leakage during such events. While these events are addressed in CR-3 Emergency Operating Procedures (EOPs), they are beyond those licensed for the facility.

SHOLLY EVALUATION OF REQUEST (continued)

However, as noted above, the probability of a MSLB-induced multiple SGTR is reduced by more effective screening and plugging/sleeving criteria. The probability of detection and identification of tubes which should be removed from service is maintained or improved by the first span IGA disposition strategy. The likelihood of adverse effects from plugging sound tubes is reduced. The operation of the OTSG or related structures, systems or components is otherwise unaffected.

3. The proposed change will not involve a significant reduction to any margin of safety.

The margins of safety defined in RG 1.121, including the required pressure used in the structural analysis, are retained. The probability of detecting degradation is unchanged since bobbin coil methods will continue to be the primary means of initial detection. The probability of leakage remains acceptably small. The proposed first span IGA disposition strategy is an enhancement to the inservice inspection of OTSG tubing that will provide a higher level of confidence that tubes exceeding the allowable limits are repaired while sound tubes are left in service. Based upon results of the various growth rate studies, the probability of an accident at the end of cycle is essentially the same as the beginning.

ATTACHMENT 6

PROPOSED CHANGES TO TS PAGES

AND

BASES