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December 19, 2005

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

Subject: Duke Energy Corporation  
Catawba Nuclear Station, Unit 2  
Docket Number 50-414  
Proposed Change to Technical Specification (TS) 5.5.9,  
Steam Generator (SG) Program

Pursuant to 10 CFR 50.4 and 10 CFR 50.90, Duke Energy Corporation is submitting the attached proposed revision to the subject TS requirements. This amendment application proposes a revision to TS 5.5.9 to incorporate changes in the SG tube repair criteria during the End of Cycle 14 Refueling Outage and subsequent outages.

The proposed amendment defines the region of the SG tubes within the tubesheet region that must be repaired. A justification for this proposed amendment has been developed by Westinghouse Electric Company, LLC to identify the specific depth within the tubesheet, below which any type of axial or circumferential stress corrosion cracking can be shown to meet all applicable performance criteria.

Attachment 1 provides a marked copy of the affected TS pages for Catawba, showing the proposed changes. Attachment 2 is a placeholder for reprinted pages of the affected TS pages for Catawba. The reprinted pages will be provided to the NRC following the completion of the technical review of this proposed amendment. Attachment 3 provides the technical justification, No Significant Hazards Consideration Determination, and Environmental Analysis that revising the TS as indicated does not create any safety concerns. In accordance with Duke Energy Corporation administrative procedures and the Quality Assurance Program Topical Report, this proposed amendment has been previously reviewed and approved by the Catawba Plant Operations Review Committee and the Corporate Nuclear Safety Review Board.



APC 1

Enclosure 1 provides the proprietary Westinghouse Electric Company, LLC LTR-CDME-05-180-P, Revision 2, "Steam Generator Tube Alternate Repair Criteria for the Portion of the Tube Within the Tubesheet at Catawba 2." As Enclosure 1 contains information proprietary to Westinghouse Electric Company, LLC, it is supported by an affidavit signed by Westinghouse Electric Company, LLC, the owner of the information. The affidavit sets forth the basis on which the information may be withheld from public disclosure by the Commission and addresses with specificity the considerations listed in paragraph (b)(4) of 10 CFR 2.390 of the Commission's regulations. Accordingly, it is respectfully requested that the information, which is proprietary to Westinghouse Electric Company, LLC, be withheld from public disclosure in accordance with 10 CFR 2.390 of the Commission's regulations. This affidavit, along with a Westinghouse Electric Company, LLC authorization letter, CAW-05-2086, Application for Withholding Proprietary Information from Public Disclosure, is contained in Enclosure 3.

Correspondence with respect to the copyright or proprietary aspects of the items listed above or the supporting Westinghouse affidavit should reference CAW-05-2086 and should be addressed to B.F. Maurer, Acting Manager, Regulatory Compliance and Plant Licensing, Westinghouse Electric Company, LLC, P.O. Box 355, Pittsburgh, Pennsylvania 15230-0355.

Enclosure 2 provides non-proprietary Westinghouse Electric Company, LLC LTR-CDME-05-180-NP, Revision 2, "Steam Generator Tube Alternate Repair Criteria for the Portion of the Tube Within the Tubesheet at Catawba 2."

Duke Energy Corporation requests the proposed amendment be approved by March 7, 2006 to support the completion of the SG tube examination during the End of Cycle 14 Refueling Outage.

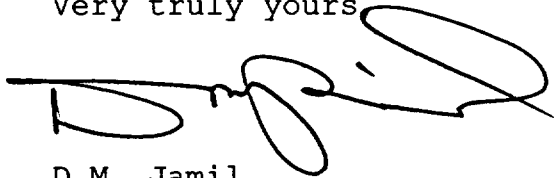
Implementation of this amendment request will not require changes to the Catawba Updated Final Safety Analysis Report (UFSAR).

Pursuant to 10 CFR 50.91, a copy of this proposed amendment is being sent to the appropriate State of South Carolina official.

Should you have any questions concerning this information, please call L.J. Rudy at (803) 831-3084.

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Very truly yours

A handwritten signature in black ink, appearing to read 'D.M. Jamil', with a large, stylized flourish extending to the right.


D.M. Jamil

Attachments and Enclosures

LJR/s

December 19, 2005

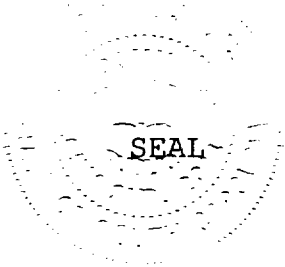
D.M. Jamil affirms that he is the person who subscribed his name to the foregoing statement, and that all the matters and facts set forth herein are true and correct to the best of his knowledge.

  
\_\_\_\_\_  
D.M. Jamil, Site Vice President

Subscribed and sworn to me: 12/19/05  
Date

  
\_\_\_\_\_  
Notary Public

My commission expires: 7/2/2014  
Date



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**ATTACHMENT 1**

**MARKED-UP TS PAGES FOR CATAWBA**

5.5 Programs and Manuals

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5.5.9 Steam Generator (SG) Program (continued)

condition of the tubing during a SG inspection outage, as determined from the inservice inspection results or by other means, prior to the plugging of tubes. Condition monitoring assessments shall be conducted during each outage during which the SG tubes are inspected or plugged to confirm that the performance criteria are being met.

- b. Performance criteria for SG tube integrity. SG tube integrity shall be maintained by meeting the performance criteria for tube structural integrity, accident induced leakage, and operational LEAKAGE.
  - 1. Structural integrity performance criterion: All inservice SG tubes shall retain structural integrity over the full range of normal operating conditions (including startup, operation in the power range, hot standby, and cooldown, and all anticipated transients included in the design specification) and design basis accidents. This includes retaining a safety factor of 3.0 against burst under normal steady state full power operation primary to secondary pressure differential and a safety factor of 1.4 against burst applied to the design basis accident primary to secondary pressure differentials. Apart from the above requirements, additional loading conditions associated with the design basis accidents, or combination of accidents in accordance with the design and licensing basis, shall also be evaluated to determine if the associated loads contribute significantly to burst or collapse. In the assessment of tube integrity, those loads that do significantly affect burst or collapse shall be determined and assessed in combination with the loads due to pressure with a safety factor of 1.2 on the combined primary loads and 1.0 on axial secondary loads.
  - 2. Accident induced leakage performance criterion: The primary to secondary accident induced leakage rate for any design basis accident, other than a SG tube rupture, shall not exceed the leakage rate assumed in the accident analysis in terms of total leakage rate for all SGs and leakage rate for an individual SG. Leakage is not to exceed 150 gallons per day through each SG for a total of 600 gallons per day through all SGs.
  - 3. The operational LEAKAGE performance criterion is specified in LCO 3.4.13, "RCS Operational LEAKAGE."
- c. Provisions for SG tube repair criteria. Tubes found by inservice inspection to contain flaws with a depth equal to or exceeding 40% of the nominal tube wall thickness shall be plugged.

**INSERT** →

(continued)

INSERT for TS 5.5.9c.

The following alternate tube repair criteria may be applied as an alternative to the 40% depth based criteria:

1. For Unit 2 only, the 40% depth based criterion does not apply to defects identified in the portion of the tube below 11 inches from the top of the tubesheet. Defects found in the portion of the tube below 11 inches from the top of the tubesheet do not require plugging.



**ATTACHMENT 2**

**REPRINTED TS PAGES FOR CATAWBA (TO BE PROVIDED TO NRC FOLLOWING  
COMPLETION OF TECHNICAL REVIEW)**

**ATTACHMENT 3**

**TECHNICAL, REGULATORY, AND ENVIRONMENTAL ANALYSIS**

## **1.0 Description:**

This submittal is a request to amend Operating License NPF-52 for Catawba Unit 2. The purpose of this change is to revise TS 5.5.9 to incorporate changes in the SG tube repair criteria during the End of Cycle 14 Refueling Outage and subsequent refueling outages.

Prior to each SG tube inspection, a degradation assessment, which includes a review of operating experience, is performed to identify degradation mechanisms that may be present. A validation assessment is also performed to verify that the eddy current techniques utilized are capable of detecting those flaw types that are identified in the degradation assessment. Based on operating experience from both Catawba Unit 2 and other plants, Duke Energy Corporation is revising the SG tube inspection plan to include a sampling of bulges and overexpansions within the tubesheet region. The sample is based on the guidance contained in Electric Power Research Institute (EPRI) TR-107569, "Steam Generator Examination Guidelines," and TS 5.5.9. This inspection plan will be expanded according to industry guidelines if necessary due to confirmed degradation (i.e., a tube crack). The proposed change modifies the tube repair criteria for portions of the SG tubes within the tubesheet region of the SGs.

The proposed change defines the region of the tube that must be repaired. A justification has been developed by Westinghouse Electric Company, LLC for this amendment request. This justification concluded that: 1) the structural integrity of the primary-to-secondary pressure boundary is unaffected by tube degradation of any magnitude below a tube location-specific depth (designated as H\*), and 2) the accident condition leak rate integrity is bounded by the normal operating leak rate from degradation at or below a depth (designated as B\*), from the top of the tubesheet, including degradation of the tube end welds. Below the more conservative of either H\* or B\*, any type of axial or circumferential stress corrosion cracking can be shown to meet all applicable performance criteria.

## **2.0 Proposed Change:**

TS 5.5.9c presently reads as follows:

"Provisions for SG tube repair criteria. Tubes found by inservice inspection to contain flaws with a depth equal to or exceeding 40% of the nominal tube wall thickness shall be plugged."

TS 5.5.9c is being modified to add the following material:

"The following alternate tube repair criteria may be applied as an alternative to the 40% depth based criteria:

1. For Unit 2 only, the 40% depth based criterion does not apply to defects identified in the portion of the tube below 11 inches from the top of the tubesheet. Defects found in the portion of the tube below 11 inches from the top of the tubesheet do not require plugging."

### **3.0 Background:**

Indications of cracking were reported based on the results from the nondestructive, eddy current examination of the SG tubes during the fall 2004 outage at Catawba Unit 2. The tube indications were reported about 7.6 inches from the top of the tubesheet in one tube, and just above the tube-to-tubesheet welds in a region of the tube known as the tack expansion in several other tubes. Finally, indications were also reported in the tube-end welds, also known as tube-to-tubesheet welds, joining the tube to the tubesheet, with a small number of those indications extending into the tube material. Indications were observed in SGs A, B, and D. There were no indications in SG C. Catawba Unit 2 has Westinghouse designed Model D5 SGs fabricated with Alloy 600TT (thermally treated) tubes.

The findings in the Catawba Unit 2 SG tubes present three distinct issues with regard to future inspections of Alloy 600TT SG tubes which have been hydraulically expanded into the tubesheet:

- 1) indications in internal bulges within the tubesheet,
- 2) indications at the elevation of the tack expansion transition, and
- 3) indications in the tube-to-tubesheet welds, including some extending into the tube.

The technical analysis in support of this amendment request is based on the use of finite element model structural analyses and a bounding leak rate evaluation based on the change in contact pressure between the tube and the tubesheet between normal operating and postulated accident conditions. The results support a license amendment request to eliminate the requirement to repair tubes with indications below a specific depth within the tubesheet. This amendment request constitutes a redefinition of the primary-to-secondary pressure boundary relative to the

original design of the SG and requires the approval of the NRC staff.

Similar TS changes were approved, on a one-time basis, to limit inspections of the Braidwood Unit 2 and Wolf Creek SGs during their Spring 2005 outages. Subsequent approvals were also obtained for use at Byron Unit 2 and Vogtle Unit 2 in their Fall 2005 outages. The major differences between the evaluation done for the Catawba Unit 2 SGs and prior applications are: 1) the evaluation for Catawba Unit 2 supports a permanent TS change, and 2) the evaluation for Catawba Unit 2 involves the determination of tube location-specific depths for repair of tubes with indications within the tubesheet.

#### **4.0 Technical Evaluation:**

The technical evaluation in support of this amendment request is contained in Enclosure 1 of this submittal. Enclosure 1 consists of proprietary Westinghouse Electric Company, LLC LTR-CDME-05-180-P, Revision 2, "Steam Generator Tube Alternate Repair Criteria for the Portion of the Tube Within the Tubesheet at Catawba 2."

In order to preclude unnecessarily plugging tubes in the Catawba Unit 2 SGs, this evaluation was performed to identify the safety significant portion of the tube within the tubesheet necessary to maintain structural and leakage integrity for both normal operating and accident conditions. Tube repair will be limited to identifying and plugging degradation in this portion of the tubes. The limited tubesheet tube repair criteria were developed for the tubesheet region considering the most stringent loads associated with plant operation, including transients and postulated accident conditions. The limited tubesheet tube repair criteria were selected to prevent tube burst and axial separation due to axial pullout forces acting on the tube and to ensure that the steam line break leakage limits are not exceeded. Enclosure 1 provides technical justification for allowing tubes with indications that are below 11 inches from the top of the tubesheet to remain in service.

Constraint provided by the tubesheet precludes tube burst for cracks within the tubesheet. The criteria for tube burst described in NEI 97-06, "Steam Generator Program Guidelines," are satisfied due to the constraint provided by the tubesheet. Through application of the limited tubesheet tube repair scope described herein, the existing normal operating leakage limit provides assurance that excessive leakage (i.e., greater than accident analysis assumptions) will not occur during a postulated steam line break event.

The safety significant portion of the tube is the length of tube that is engaged in the tubesheet from the secondary face that is required to maintain structural and leakage integrity over the full range of SG operating conditions, including the most limiting accident conditions. The evaluation determined that degradation in tubing below the safety significant portion of the tube does not require plugging and serves as the basis for the tubesheet tube repair program.

The basis for determining the safety significant portion of the tube within the tubesheet is based upon evaluation and testing programs that quantified the tube-to-tubesheet radial contact pressure for bounding plant conditions. The tube-to-tubesheet radial contact pressure provides resistance to tube pull-out and resistance to leakage during plant operation and transients. Temperature effects and upward bending of the tubesheet due to primary and secondary differential pressure during normal and transient conditions result in the tube-to-tubesheet contact pressure increasing with distance from the top of the tubesheet. Due to these effects, the tubesheet bore tends to dilate near the top of the tubesheet and constricts the tube near the bottom of the tubesheet. Testing and analyses have shown that tube-to-tubesheet engagement lengths of approximately 3.45 inches to 8.61 inches were sufficient to maintain structural integrity (i.e., resist tube pull-out resulting from loading considering differential pressures of three times the normal operating pressure difference and 1.4 times the limiting accident pressure difference). The variation of the required engagement length is a function of the radial tube location within the tube bundle.

Since the proposed 11-inch tube repair depth traverses below the mid-plane of the tubesheet, the tube-to-tubesheet contact pressure significantly aids in restricting primary-to-secondary leakage as differential pressure increases. Based on engineering judgment, given that there is no significant primary-to-secondary leakage during normal operation, there will be no significant leakage during postulated accident conditions from indications located below the mid-plane of the tubesheet. The rationale for this conclusion is based upon the interaction of temperature and tubesheet bending effects that increases the contact pressure between the tube and the tubesheet.

Primary-to-secondary leakage from tube degradation in the tubesheet area during the limiting accident (a steam line break event) is limited by flow restrictions resulting from the crack and tube-to-tubesheet contact pressures that provide a restricted leakage path above the indications and also limit the degree of potential crack face opening as compared to free span

indications. The leak rate during postulated accident conditions would be expected to be less than that during normal operation for indications near the bottom of the tubesheet (including indications in the tube end welds) based on the observation that while the driving pressure increases by a factor of almost two, the flow resistance increases because the tube-to-tubesheet contact pressure also increases. Depending upon the depth within the tubesheet, the relative increase in resistance could easily be larger than that of the pressure potential. Therefore, the leak rate under normal operating conditions could equal or exceed its allowed value before the accident condition leak rate would be expected to exceed its allowed value. This approach is termed an application of the "bellwether principle". Evaluations were performed to specifically determine relative changes in the leak rate resistance as a function of tube location from the center of the tubesheet and degradation distance from the top of the tubesheet. The assessment enveloped postulated circumferential cracking of the tube or the tube-to-tubesheet weld that is 100% deep by 360° in extent because it is based on the premise that the tube and weld are not present below the analyzed elevations.

No tube repair will be required for the portion of the tube below 11 inches from the top of the tubesheet and any defect that does exist within this region does not require plugging as shown in Enclosure 1.

Therefore, this amendment request will allow the implementation of the following plugging criterion and acceptance criterion for Catawba Unit 2:

- Degradation in the portion of the tube below 11 inches from the top of the tubesheet (including the seal weld) will not require repair.
- Any defect that does exist below 11 inches from the top of the tubesheet is acceptable to remain in service.
- Defects within 11 inches from the top of the tubesheet must be plugged.

The safety significant portion of the tube is the length of tube that is engaged in the tubesheet from the secondary face that is required to maintain structural and leakage integrity over the full range of SG operating conditions, including the most limiting accident conditions. The evaluation contained in Enclosure 1 determined that degradation in tubing below the safety significant portion of the tube does not require plugging and serves as the basis for the tubesheet tube repair program. This evaluation also serves as the evaluation of structural integrity pursuant to TS 5.5.9b.1 for the non-safety significant

portion of the tube. As such, the repair program for Catawba Unit 2 provides a high level of confidence that the structural and leakage criteria are met during normal operating and accident conditions.

## **5.0 Regulatory Evaluation:**

### **No Significant Hazards Consideration Determination**

The following discussion is a summary of the evaluation of the changes contained in this proposed amendment against the 10 CFR 50.92(c) requirements to demonstrate that all three standards are satisfied. A no significant hazards consideration is indicated 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, or
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.

### **First Standard**

*Does operation of the facility in accordance with the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated? No.*

The previously analyzed accidents are initiated by the failure of plant structures, systems, or components. The proposed change that alters the SG tube repair criteria does not have a detrimental impact on the integrity of any plant structure, system, or component that initiates an analyzed event. The proposed change will not alter the operation of, or otherwise increase the failure probability of any plant equipment that initiates an analyzed accident.

Of the applicable accidents previously evaluated, the limiting transients with consideration to the proposed change to the SG tube repair criteria, are the SG tube rupture event and the steam line break event.

During the SG tube rupture event, the required structural integrity margins of the SG tubes will be maintained by the presence of the SG tubesheet. SG tubes are hydraulically expanded in the tubesheet area. Tube rupture in tubes with cracks in the tubesheet region of the tube is precluded by the



constraint provided by the tubesheet. This constraint results from the hydraulic expansion process, thermal expansion mismatch between the tube and tubesheet, and the differential pressure between the primary and secondary side. Based on this design, the structural margins against burst, discussed in the TS are maintained for both normal and postulated accident conditions.

The proposed change does not affect other systems, structures, components, or operational features. Therefore, the proposed changes result in no significant increase in the probability of the occurrence of a SG tube rupture event.

At normal operating pressures, leakage from stress corrosion cracking below the proposed limited tube repair depth is limited by both the tube-to-tubesheet crevice and the limited crack opening permitted by the tubesheet constraint. Consequently, negligible normal operating leakage is expected from cracks within the tubesheet region. The consequences of a SG tube rupture event are affected by the primary-to-secondary leakage flow during the event. Primary-to-secondary leakage flow through a postulated broken tube is not affected by the proposed change since the tubesheet enhances the tube integrity in the region of the hydraulic expansion by precluding tube deformation beyond its initial hydraulically expanded outside diameter.

The probability of a steam line break event is unaffected by the potential failure of a SG tube, as this failure is not an initiator for a steam line break event.

The consequences of a steam line break event are also not significantly affected by the proposed change. During a steam line break event, the reduction in pressure above the tubesheet on the shell side of the SG creates an axially uniformly distributed load on the tubesheet due to the reactor coolant system pressure on the underside of the tubesheet. The resulting bending action constrains the tubes in the tubesheet, thereby restricting primary-to-secondary leakage below the midplane.

Primary-to-secondary leakage from tube degradation in the tubesheet area during the limiting accident (i.e., a steam line break event) is limited by flow restrictions resulting from the crack and tube-to-tubesheet contact pressures that provide a restricted leakage path above the indications and also limit the degree of potential crack face opening as compared to free span indications. The primary-to-secondary leak rate from tube degradation in the tubesheet region during postulated steam line break event conditions will be no more than that allowed during normal operating conditions when the pressure boundary is relocated to the B\* depth. Since normal operating leakage is

limited to 150 gallons per day through any one SG per TS 3.4.13, "RCS Operational LEAKAGE," the associated accident condition leak rate, assuming all leakage to be from lower tubesheet indications, would be limited to 150 gallons per day per SG. This is the value that is assumed in the steam line break dose analysis.

Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

### Second Standard

*Does operation of the facility in accordance with the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated? No.*

The proposed change does not introduce any new equipment, create new failure modes for existing equipment, or create any new limiting single failures. Plant operation will not be altered, and all safety functions will continue to be performed as previously assumed in accident analyses. Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

### Third Standard

*Does operation of the facility in accordance with the proposed amendment involve a significant reduction in the margin of safety? No.*

The proposed change maintains the required structural margins of the SG tubes for both normal and accident conditions. NEI 97-06 and the Catawba TS are used as the bases in the development of the limited tubesheet tube repair depth methodology for determining that SG tube integrity considerations are maintained within acceptable limits. Regulatory Guide 1.121 describes a method acceptable to the NRC for meeting General Design Criterion (GDC) 14, "Reactor coolant pressure boundary," GDC 15, "Reactor coolant system design," GDC 31, "Fracture prevention of reactor coolant pressure boundary," and GDC 32, "Inspection of reactor coolant pressure boundary," by reducing the probability and consequences of a SG tube rupture event. By determining the limiting safe conditions for tube wall degradation, the probability and consequences of a SG tube rupture event are reduced. Safety factors are used for loads for tube burst that are consistent with the requirements of Section III of the American Society of Mechanical Engineers (ASME) Code.

For axially oriented cracking located within the tubesheet, tube burst is precluded due to the presence of the tubesheet. For circumferentially oriented cracking, the analysis provided in support of this proposed amendment defines a length of degradation free expanded tubing that provides the necessary resistance to tube pullout due to the pressure induced forces, with applicable safety factors applied. Application of the limited tubesheet tube repair depth criterion (B\*) will preclude unacceptable primary-to-secondary leakage during all plant conditions.

Therefore, the proposed change does not involve a significant reduction in any margin of safety.

Based upon the preceding discussion, Duke Energy Corporation has concluded that the proposed amendment does not involve a significant hazards consideration.

#### **6.0 Environmental Evaluation:**

Pursuant to 10 CFR 51.22(b), an evaluation of this license amendment request has been performed to determine whether or not it meets the criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9) of the regulations.

Implementation of this amendment will have no adverse impact upon Catawba Nuclear Station; neither will it contribute to any additional quantity or type of effluent being available for adverse environmental impact or personnel exposure.

It has been determined there is:

1. No significant hazards consideration,
2. No significant change in the types, or significant increase in the amounts, of any effluents that may be released offsite, and
3. No significant increase in individual or cumulative occupational radiation exposures involved.

Therefore, this amendment to the Catawba Unit 2 TS meets the criteria of 10 CFR 51.22(c)(9) for categorical exclusion from an environmental impact statement.

#### **7.0 References:**

- 1) Catawba Nuclear Station Technical Specification 5.5.9, with Amendments through 218/212.

- 2) EPRI TR-107569, "Steam Generator Examination Guidelines," Revision 6.
- 3) NEI 97-06, Revision 2, "Steam Generator Program Guidelines," May 2005.
- 4) NRC Information Notice 2005-09, "Indications in Thermally Treated Alloy 600 Steam Generator Tubes and Tube-to-Tubesheet Welds," April 7, 2005.
- 5) NRC Regulatory Guide 1.121, "Bases for Plugging Degraded PWR Steam Generator Tubes," August 1976.
- 6) NRC Generic Letter 2004-01, "Requirements for Steam Generator Tube Inspections," August 30, 2004.

### **8.0 Precedents:**

The following precedents represent similar amendments recently approved by the NRC:

- 1) Braidwood Station, Units 1 and 2 - Issuance of Exigent Amendments RE: Revision of Scope of Steam Generator Inspections for Unit 2 Refueling Outage 11 - (TAC Nos. MC6686 and MC6687), dated April 25, 2005.
- 2) Wolf Creek Generating Station - Issuance of Exigent Amendment RE: Steam Generator (SG) Tube Surveillance Program (TAC No. MC6757), dated April 28, 2005.
- 3) Byron Station, Unit 2 - Issuance of Amendment (TAC No. MC7219), dated September 19, 2005.
- 4) Vogtle Electric Generating Plant, Units 1 and 2 RE: Issuance of Amendments Regarding the Steam Generator Tube Surveillance Program (TAC Nos. MC8078 and MC8079), dated September 21, 2005.

**ENCLOSURE 2**

**NON-PROPRIETARY WESTINGHOUSE ELECTRIC COMPANY, LLC LTR-CDME-05-180-NP, REVISION 2, "STEAM GENERATOR TUBE ALTERNATE REPAIR CRITERIA FOR THE PORTION OF THE TUBE WITHIN THE TUBESHEET AT CATAWBA 2"**