

correlation between the old margins of safety established by meeting 10 CFR Part 100 and those established by the proposed change. The staff concludes, however, that meeting 10 CFR 50.67 and RG 1.183 limits would result in doses that would be within the 10 CFR Part 100 limits. Therefore, it is concluded that a reduction in margin of safety, if any, would not be significant.

Based on this review, it appears that the three standards of 10 CFR 50.92(c) are satisfied. Therefore, the NRC staff proposes to determine that the amendment request involves no significant hazards consideration.

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**Duke Energy Corporation, et al., Docket Nos. 50-413 and 50-414, Catawba Nuclear Station, Units 1 and 2, York County, South Carolina**

*Date of amendment request:* February 25, 2003, as supplemented June 9, 2003.

*Description of amendment request:* The proposed amendments require a Steam Generator (SG) Program that defines a performance based approach to maintaining SG tube integrity. The SG Program includes performance criteria that define the basis for tube integrity and provides reasonable assurance that SG tubing will remain capable of fulfilling its safety function of maintaining reactor coolant pressure boundary (RCPB) integrity. The proposed amendments add a new Technical Specification (TS) for SG Tube Integrity (3.4.18) and revise the TSs for Reactor Coolant System (RCS) Operational Leakage (3.4.13), SG Tube Surveillance Program (5.5.9), and SG Tube Inspection Report (5.6.8).

*Basis for proposed no significant hazards consideration determination:* As required by 10 CFR 50.91(a), the licensee has provided its analysis of the issue of no significant hazards consideration, which is presented below:

Operation of the facility in accordance with the proposed amendments:

1. Would not involve a significant increase in the probability or consequences of an accident previously evaluated.

The proposed changes require a SG Program that includes performance criteria that will provide reasonable assurance that the SG tubing will retain integrity over the full range of operating conditions (including startup, operation in the power range, hot standby, cooldown, and all anticipated transients included in the design specification) and design basis accidents.

The SG performance criteria are based on tube structural integrity, accident induced leakage, and operational leakage.

The structural integrity performance criterion is a new requirement. It is included in the proposed SG Program administrative TS 5.5.9.

The accident induced leakage criterion is a new requirement. It is included in the proposed SG Program administrative TS 5.5.9.

The operational leakage criterion is equivalent to the existing requirement. Its limit is part of the proposed RCS Operational Leakage TS 3.4.13.

A SG tube rupture event is one of the design basis accidents analyzed as part of Catawba's licensing basis. In the analysis of a SG tube rupture event, a bounding primary to secondary leakage rate equal to the operational leakage rate limit in the licensing basis plus the leakage rate associated with a double-ended rupture of a single tube is assumed. For other design basis accidents, the tubes are assumed to retain their structural integrity (*i.e.*, they are assumed not to rupture). These analyses assume that primary to secondary leakage through each SG is 150 gallons per day.

The accident induced leakage criterion introduced by the proposed changes accounts for tubes that may leak during design basis accidents. The accident induced leakage criterion limits this leakage to no more than the value assumed in the accident analysis. The SG performance criteria proposed as part of these TS amendments identify the standards against which tube integrity is to be measured. Meeting the performance criteria provides reasonable assurance that the SG tubing will remain capable of fulfilling its specific safety function of maintaining RCPB integrity throughout each operating cycle and in the unlikely event of a design basis accident. The performance criteria are only a part of the SG Program required by the proposed changes to TS 5.5.9. The program, defined by NEI [Nuclear Energy Institute] 97-06, "Steam Generator Program Guidelines," includes a framework that incorporates a balance of prevention, inspection, evaluation, repair, and leakage monitoring.

*Probability of an Accident*

The TS proposed by these license amendments define the actions required upon failure to maintain SG tube integrity and the surveillances necessary to verify that tube integrity is maintained. The proposed administrative TS contain performance criteria, repair criteria, repair methods, maximum SG inspection intervals, and reporting requirements. The set of TS proposed is a significant improvement over the existing SG TS.

In addition, the SG Program required by these amendments includes provisions important in satisfying the TS requirements. The topics addressed by the SG Program include:

- SG performance criteria, including an operational leakage limit,
- SG repair criteria and repair methods,
- SG inspection intervals, and
- Performance based SG inspections that include pre-inspection degradation

assessments, condition monitoring assessments, operational assessments, and non-destructive examination technique requirements.

These SG Program provisions establish requirements that are an improvement as compared to the requirements in the existing TS. As an example, the SG Program requires an operational assessment that defines the maximum SG inspection interval that provides reasonable assurance that the performance criteria will continue to be met at the next inspection. The actual inspection interval is always chosen to be less than the interval determined by the operational assessment. The existing TS have no similar requirement. As a result, the function and integrity of the tubes are maintained with greater assurance and the probability of a SG tube rupture is decreased.

*Consequences of an Accident*

The consequences of design basis accidents are, in part, functions of the dose equivalent  $I^{131}$  in the primary coolant and the primary to secondary leakage rates resulting from an accident. Therefore, limits are included in the plant TS for operational leakage and for dose equivalent  $I^{131}$  in primary coolant to ensure the plant is operated within its analyzed condition.

The analysis of the associated design basis accidents assumes that the initial primary to secondary leak rate is 150 gallons per day in each SG (except for the ruptured SG in a SG tube rupture), and that the reactor coolant activity levels of dose equivalent  $I^{131}$  are at the TS values before the accident. The TS limits, license conditions, and other controls on  $I^{131}$  are unchanged by these amendment requests. These other controls include License Amendments 159 and 151 for Catawba Units 1 and 2, respectively, and the Catawba license amendment request submittal dated May 9, 2002, which is presently being reviewed by the NRC.

In addition, the proposed amendments include a new performance criterion for accident induced leakage that requires that the primary to secondary leakage resulting from an accident other than a SG tube rupture not exceed the value assumed in the dose analyses (150 gallons per day through each SG).

Since the proposed operational leakage limit is equivalent to the existing value, and since the proposed amendments include a new performance criterion for accident induced leakage, the proposed amendments will not increase the consequences of an accident.

From the above discussion, it is concluded that the proposed amendments do not affect the design of the SGs, their method of operation, or primary coolant chemistry controls. The proposed approach updates the existing TS and enhances the requirements for SG inspections. The proposed TS changes do not adversely impact any other previously evaluated design basis accident and represent an improvement over the existing TS. Therefore, the proposed changes do not affect the consequences of a SG tube rupture accident and the probability of such an accident is reduced. In addition, the proposed changes do not affect the consequences of other accidents.