

The NRC staff has reviewed the licensee's analysis and, 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 amendments request involves no significant hazards consideration.

*Attorney for licensee:* Jay E. Silberg, Esquire, Shaw, Pittman, Potts and Trowbridge, 2300 N Street, NW., Washington, DC 20037.

*NRC Section Chief:* Richard J. Laufer.

*Carolina Power & Light Company, Docket Nos. 50-325 and 50-324, Brunswick Steam Electric Plant, Units 1 and 2, Brunswick County, North Carolina*

*Date of amendments request:* November 12, 2002.

*Description of amendments request:* The proposed amendments would revise the Technical Specifications, as necessary, to support an expansion of the core flow operating range (i.e., Maximum Extended Load Line Limit Analysis Plus (MELLLA+)). As part of the MELLLA+ implementation, Carolina Power & Light Company would implement the Detect and Suppress Solution-Confirmation Density (DSS-CD) approach to automatically detect and suppress neutronic/thermal-hydraulic instabilities.

*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:

10 CFR 50.91(a) states "At the time a licensee requests an amendment, it must provide to the Commission its analysis about the issue of no significant hazards consideration using the standards in § 50.92." The following provides this analysis for the MELLLA+ operating range to a minimum core flow rate of 85% of rated with 120% of the original licensed thermal power.

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

The expansion of the core operating range discussed herein will not significantly increase the probability or consequences of an accident previously evaluated.

The probability (frequency of occurrence) of a DBA [design-basis accident] occurring is not affected by the operating range expansion, because the plant continues to comply with the regulatory and design basis criteria established for plant equipment (ASME [American Society of Mechanical Engineers] code, IEEE [Institute of Electrical and Electronics Engineers] standards, NEMA [National Electrical Manufacturers Association] standards, Regulatory Guides, etc.). An evaluation of the probabilistic safety

assessments concludes that the calculated core damage frequencies do not significantly change due to the MELLLA+ operating range expansion. Scram setpoints (equipment settings that initiate automatic plant shutdowns) are established such that there is no significant increase in scram frequency due to the MELLLA+ operating range expansion. No new challenge to safety related equipment results from the MELLLA+ operating range expansion. The changes in consequences of hypothetical accidents, which occur from operation in the MELLLA+ region, are in all cases insignificant. The MELLLA+ accident evaluations do not exceed any NRC-approved acceptance limits. The spectrum of hypothetical accidents and abnormal operational occurrences has been investigated, and will meet the plant's currently licensed regulatory criteria. In the area of core design, for example, the fuel operating limits such as Maximum Average Planar Linear Heat Generation Rate (MAPLHGR) and Safety Limit Minimum Critical Power Ratio (SLMCPR) are met, and fuel reload analyses will show plant transients meet the criteria accepted by the NRC as specified in [GE Nuclear Energy, "General Electric Standard Application for Reactor Fuel," NEDE-24011-P-A and NEDE-24011-P-A-US, (latest approved revision)]. Challenges to fuel (ECCS [emergency core cooling system] performance) are evaluated, and shown to still meet the criteria of 10 CFR 50.46, Appendix K, Regulatory Guide 1.70, and UFSAR [Updated Final Safety Analysis Report] Section 6.3. Challenges to the containment have been evaluated, and the containment and its associated cooling systems meet 10 CFR 50 Appendix A Criterion 38, Long Term Cooling, and Criterion 50, Containment. Radiological release events (accidents) have been evaluated, and shown to meet the regulatory limits of 10 CFR 50.67.

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

The MELLLA+ operating range expansion will not create the possibility of a new or different kind of accident from any accident previously evaluated. Equipment that could be affected by MELLLA+ has been evaluated and no new operating mode, safety related equipment lineup, accident scenario, or equipment failure mode was identified. The full spectrum of accident considerations, defined in the UFSAR, has been evaluated, and no new or different kind of accident has been identified. The MELLLA+ operating range expansion uses fully developed technology, and applies it within the capabilities of existing plant equipment. The technology includes NRC approved codes, standards and methods applied in accordance with existing regulatory criteria.

3. Will the change involve a significant reduction in a margin of safety?

The MELLLA+ operating range expansion will not involve a significant reduction in a margin of safety. The calculated loads on all affected structures, systems and components have been shown to remain within design allowables for all design basis event categories. No NRC acceptance criterion is exceeded. The margins of safety currently

included in the design of the plant are not affected by the MELLLA+ operating range expansion. Because the plant configuration and response to transients and hypothetical accidents do not result in exceeding the presently approved NRC acceptance limits, operation in the MELLLA+ region does not involve a significant reduction in a margin of safety.

*Conclusion:* A MELLLA+ operating range expansion to a minimum core flow rate of 85% of rated with 120% of original licensed thermal power has been investigated. The BSEP [Brunswick Steam Electric Plant] licensing requirements have been evaluated and it has been demonstrated that this MELLLA+ operating range expansion can be accommodated:

- Without a significant increase in the probability or consequences of an accident previously evaluated,
- Without creating the possibility of a new or different kind of accident from any accident previously evaluated, and
- Without exceeding any presently existing regulatory limits or acceptance criteria applicable to the plant, which might cause a reduction in a margin of safety.

Having made negative declarations regarding the 10 CFR 50.92 criteria, this assessment concludes that an operating range expansion to a minimum core flow rate of 85% of rated with 120% of original licensed thermal power does not involve a Significant Hazards Consideration.

10 CFR 50.91(a) states "At the time a licensee requests an amendment, it must provide to the Commission its analysis about the issue of no significant hazards consideration using the standards in § 50.92." The following provides this analysis for the DSS-CD long-term stability solution.

(1) Will the change involve a significant increase in the probability or consequences of an accident previously evaluated?

The proposed change will implement DSS-CD as the long-term stability solution. The DSS-CD solution is designed to identify the power oscillation upon inception and initiate control rod insertion to terminate the oscillations prior to any significant amplitude growth. The DSS-CD provides protection against violation of the Safety Limit Minimum Critical Power Ratio (SLMCPR) for anticipated oscillations. Compliance with General Design Criteria (GDC) 10 and 12 of 10 CFR part 50, Appendix A is accomplished via an automatic action. The DSS-CD introduces an enhanced detection algorithm that detects the inception of power oscillations and generates an earlier power suppression trip signal exclusively based on successive period confirmation recognition. The existing Option III algorithms are retained (with generic setpoints) to provide defense-in-depth protection for unanticipated reactor instability events.

A developing instability event is suppressed by the DSS-CD system with substantial margin to the SLMCPR and no clad damage, with the event terminating in a scram and never developing into an accident. In addition, the DSS-CD solution defense-in-depth features incorporate all the