



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

CAROLINA POWER AND LIGHT COMPANY

BRUNSWICK STEAM ELECTRIC PLANT UNITS 1 AND 2

MARK I CONTAINMENT PROGRAM

1.0 INTRODUCTION

By letter dated August 31, 1984, the Carolina Power and Light Company (CP&L) submitted an addendum to the Brunswick Plant Unique Analysis Report (PUAR) on the Mark I Containment Modification Program. This addendum detailed the analytical approach taken to resolve the safety/relief valve (SRV) second lift loading concerns at Brunswick. It showed that the SRV discharge lines and supports, the torus internal structures, and the torus shell, as modified by the Mark I Containment Program, are acceptable under SRV load cases C3.2 and C3.3. The methodology employed in the analysis is the same as that reviewed and approved by NRC in NUREG-0661.

2.0 EVALUATION

The original PUAC proposed to eliminate SRV load cases C3.2 and C3.3 by lowering the MSIV isolation water level trip and modifying the SRV logic. However, due to the complexity and corresponding difficulty of installation, testing and maintenance of the modifications, CP&L instead performed analyses to prove that the Mark I Containment Modifications on SRV discharge lines and their supports, internal structures, and torus shell will offer adequate resistance to the second SRV lift loads concurrent with a LOCA.

The primary concern of load case C3.2 is the potentially large high frequency loading on the containment, while the primary concern of load case C3.3 is the potentially large water clearing thrust loads on the SRV discharge piping. This is reflected on the torus shell pressure and SRV air bubble induced drag loads calculated for load case C3.2, and SRV discharge line thrust loads calculated for load case C3.3. Appropriate SRV lines were selected so that most significant loadings would be considered.

3.0 CONCLUSION

Since results obtained from using approved analytical techniques show that subsequent SRV actuations concurrent with a LOCA will not overstress the SRV piping and their supports, the torus internal structures or the torus shell, the staff concludes that SRV load cases C3.2 and C3.3 have been adequately addressed and resolved.

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