

November 26, 1986

Docket No. 50-395

DISTRIBUTION

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Dear Mr. Nauman:

Subject: V. C. Summer Nuclear Station - Appendix R Reanalysis

By letters dated May 29, September 4, and November 1, 1985 and April 23, 1986, you submitted information relative to your Appendix R reanalysis. We have reviewed your request that both the reactor coolant hot leg and cold leg temperature indication need not be available in the control room to monitor natural circulation cooling for four fire areas/zones in the plant.

We find that your request is acceptable. Our safety report is enclosed.

Sincerely,



Jon B. Hopkins, Project Manager  
PWR Project Directorate #2  
Division of PWR Licensing-A  
Office of Nuclear Reactor Regulation

Enclosure:  
As stated

cc: See next page

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Mr. D. A. Nauman  
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Virgil C. Summer Nuclear Station

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VIRGIL C. SUMMER NUCLEAR STATION  
SAFETY EVALUATION OF DEVIATION  
FROM SECTION III L.2.D OF APPENDIX R  
DOCKET NO. 50-395

INTRODUCTION

By letters dated May 29, September 4 and November 1, 1985 and April 23, 1986, South Carolina Electric and Gas Company (SCE&G), the licensee for Virgil C. Summer Nuclear Station requested a deviation from Section III.L.2.d of Appendix R to the extent that both reactor coolant hot leg (T-hot) and cold leg (T-cold) temperature indication need not be available in the control room to monitor natural circulation cooling, for four fire areas/zones in the plant. The staff's evaluation of the licensee's request is addressed below.

EVALUATION

Section III.L.1 of Appendix R states, in part, that during the post-fire shutdown, the reactor coolant system process variables shall be maintained within those predicted for a loss of normal ac power. Section III.L.2.d of Appendix R states, in part, that as a performance goal, the process monitoring functions shall be capable of providing direct readings of the process variables necessary to perform and control the shutdown functions. In the context of this evaluation, the shutdown function of interest is the capability to monitor for the attainment and continuation of natural circulation cooling. However, the licensee has stated that there are four fire areas/zones for which T-cold indication cannot be assured. The licensee contends that, under the circumstances, T-cold indication is not mandatory and, therefore, has requested the above stated deviation from Section III.L.2.d of Appendix R.

By letter dated April 23, 1986 the licensee provided additional justification for not having to assure that both the T-hot and T-cold instrumentation in the

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control room remains functional in the event of a fire in the following fire areas/zones:

- (1) Fire Area IB-3 (Train A Battery charger and Main Distribution Panel Room),
- (2) Fire Area IB-4 (Train B Battery charger and Main Distribution Panel Room),
- (3) Fire Zone RB 1.1.1 (West side of reactor building at 412-foot elevation) and
- (4) Fire Zone IB 25.4 West Penetration Room adjacent to reactor building Fire Zone 1.1.

In this regard, the licensee has noted that the requested deviation only affects four fire areas/zones (of more than sixty in the plant), and that a fire in any of them does not require control room evacuation. The licensee contends, therefore, that ample supplemental information is available to verify natural circulation cooling. For example, steam generator pressure can be used to determine the saturation temperature (T-sat) which is a suitable alternative to T-cold, and which, therefore, can be used to monitor natural circulation cooling in the reactor coolant system.

There are also redundant core subcooling monitors which provide indication of the margin to saturation at the core subcooling monitor panel in the control room (and at the main control board outside the control room). The margin to saturation provides indication of natural circulation cooling, and is based on reactor coolant system pressure (used to determine a corresponding saturation temperature) and incore temperature, T-hot or T-cold. For considerations of this evaluation, the unavailability of T-cold is not detrimental to using the subcooling monitors for monitoring natural circulation flow. Additionally, the difference between incore temperature and T-hot will be available at the monitor panel, for indication of natural circulation cooling in the reactor coolant loop(s) of interest.

Conclusion

The staff has evaluated the licensee's justification for using incore thermocouple readings and steam generator pressure indication in the control room, in lieu of T-cold indications, for natural circulation monitoring capability. For the four subject fire areas/zones the supplemental information available to the operators in the control room is sufficient to monitor the reactor coolant system with natural circulation cooling in one or more steam generator loops. Therefore, the staff concludes the requested deviation from the requirements of Section III.L.2.d of Appendix R is acceptable.