TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

June 17, 1983

Director of Nuclear Reactor Regulation
Attention: Ms. E. Adensam, Chief
Licensing Branch No. 4
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Ms. Adensam:

In the Matter of the Application of) Docket Nos. 50-390
Tennessee Valley Authority) 50-391

Reference: Letter from E. G. Adensam, NRC, to H. G. Parris dated March 25, 1983

In response to the referenced letter, we do not believe that adding T_{cold} or T_{avg} instrumentation in the auxiliary control room (ACR) adds any safety benefits in shutting down the plant from the ACR. We have performed a startup test on Sequoyah unit 1 (and will on Watts Bar unit 1) which demonstrated that the plant was safely cooled down from the ACR.

Item 1 in the enclosure to the referenced letter acknowledges that, during natural circulation conditions, the saturation temperature corresponding to the secondary side steam generator pressure, T_{sat}, will approximate T_{cold}, but further suggests that "the converse cannot be assumed" due to the inherent lag in temperature response between the primary and secondary systems.

While a lag in temperature response exists between the primary and secondary systems, the interruption of natural circulation can be detected with the existing instrumentation in the ACR. A loss of natural circulation in one loop will result in an increased delta-T between T_{hot} and T_{sat} in the other loops.

Section III.L.2.d of Appendix R to 10 CFR 50 states that the process monitoring function shall be capable of providing direct readings of the process variables necessary to perform and control a plant cooldown. Since it has been demonstrated at Sequoyah that a safe, controlled cooldown can be performed without the use of T_{cold} indication, we believe the existing ACR instrumentation meets these requirements of Appendix R and can perform the functional requirements set forth in Appendix R.

Item 3 in the enclosure to the referenced letter recommends that T_{cold} indication, in conjunction with RCS pressure indication, be used to provide a direct indication relative to the plant's pressure/temperature limits as they pertain to pressurized thermal shock considerations and the low temperature overpressure protection as outlined in Appendix G of 10 CFR 50.

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Since pressurized thermal shock considerations are unique to accident situations, the ACR was not designed to mitigate accidents caused by pressurized thermal shock. This concern is addressed in section III.L.6 of Appendix R which states that "shutdown systems installed to ensure postfire shutdown capability need not be designed to meet category I criteria, single failure criteria or other design basis accident criteria."

During a reactor coolant system cooldown from the ACR, the steam generator pressure will be adjusted to the desired corresponding T_{cold} temperature using the steam generator PORV controller. The saturation temperature, T_{sat}, is the coolest possible temperature that could be encountered during RCS cooldown. This fact was reflected in the results of the ACR cooldown test performed at Sequoyah where T_{cold} was observed to be slightly higher than T_{sat} but tracking was done with T_{sat} at all times during the plant cooldown. The use of T_{sat} as a conservative indication of T_{cold} ensures that plant cooldown will occur at a controlled rate and the Appendix G limits will not be exceeded.

In addition, T_{avg} would be of no value in the ACR because, for the instrument to function properly, the forced flow from the reactor coolant pumps is necessary.

Therefore, since T_{cold} or T_{avg} is not needed for the operator to verify natural circulation, set a reactor cooldown rate, or any other Appendix R function, we believe that adding T_{cold} or T_{avg} indication in the ACR would be of no value and would constitute an unnecessary expense.

We believe the ACR instrumentation meets all requirements of Appendix R and can perform all functional requirements set forth in Appendix R.

If you have any questions concerning this matter, please get in touch with D. P. Ormsby at FTS 858-2682.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L. M. Mills

L. M. Mills, Manager
Nuclear Licensing

Sworn to and subscribed before me
this 17th day of June 1983

Paulette N. White

Notary Public
My Commission Expires 9-5-84

cc: See page 3

cc: U.S. Nuclear Regulatory Commission
Region II
Attn: Mr. James P. O'Reilly, Regional Administrator
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30303