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AUTH.NAME AUTHOR AFFILIATION
KEISER,H.W. Pennsylvania Power & Light Co.
RECIP.NAME RECIPIENT AFFILIATION
MILLER,C.L. Project Directorate I-2

SUBJECT: Responds to 920313 safety evaluation of station blackout, consisting of steps to resolve control room instrument cabinet temp concern.Temp differences between inside & outside of cabinets expected to be less than 10 F.

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PP&L Pennsylvania Power & Light Company
Two North Ninth Street • Allentown, PA 18101-1179 • 215/774-5151

Harold W. Keiser
Senior Vice President–Nuclear
215/774-4194

MAY 13 1992

Director of Nuclear Reactor Regulation
Attn.: Mr. C. L. Miller, Project Director
Project Directorate I-2
Division of Reactor Projects
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

SUSQUEHANNA STEAM ELECTRIC STATION
RESOLUTION TO CABINET TEMPERATURE CONCERN
PLA-3769 FILES A17-20F/R41-2

Reference: *PLA-3745, RESPONSE TO STATION BLACKOUT SAFETY EVALUATION, Dated March 13, 1992.*

Dear Mr. Miller:

This letter provides the Pennsylvania Power & Light Company (PP&L) resolution to the Control Room instrument cabinet temperature concern as stipulated in the above reference.

The NRC Safety Evaluation questioned the capability of the COTTAP computer code to properly model the thermal response of the small volume contained within a control room instrument cabinet. Specifically, the supporting Technical Evaluation Report questioned the 180°F maximum allowable room temperature inside the cabinet, the constant control room temperature of 120°F, and the capability of the COTTAP computer code to calculate the maximum hot spots within the control room cabinets.

PP&L has reviewed its original calculation and concludes that the NRC concerns are valid. This conclusion indicated the need for a new estimate of the control room cabinet temperatures. Calculations of control room and relay room temperatures under a Design Basis Event (DBE) with the loss of HVAC conditions have been performed for Susquehanna SES and reveal in four hours a control room temperature less than 110°F and the "worst case" relay room temperature of 111°F. This calculation takes into consideration the initial control room and relay room temperatures of 80°F and 75°F, respectively. These control room temperature results compare very well with the infinite time, steady state temperature calculation of control room temperatures utilizing the NUMARC methodology. Thus, there is good justification to say the four hour SBO control room temperature will be less than 110°F.

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To determine the internal panel temperature during SBO, data taken during the startup testing program at a similar facility was used and provided an indication of the measured difference between the internal and external control room panel temperatures. This test program revealed these temperature differences being less than but bounded by 10°F. Per Appendix F of the NUMARC Document, this plant similarity provides reasonable assurance that the instrument panels at SSES will behave likewise. Thus, the temperature differences between the inside and outside of the control room instrument cabinets at SSES is expected to be less than 10°F. In order to assure this measured temperature difference, PP&L will perform its own plant specific testing program and obtain actual temperature difference measurements. This testing program is anticipated to be completed within the next 60 days and results will be provided if found contrary to the original assumption. Notification will be provided upon completion of this testing program.

In summary, based on the calculations of control room temperatures (<110°F) and the anticipated internal to external temperature differences (<10°F), the control room instrument cabinet internal temperature during the first four hours of SBO is expected to be less than 120°F. This will be confirmed through plant-specific testing. With the control room cabinet temperature below 120°F, which is below the manufacturers' recommended maximum operating temperatures, instrument operability is assured and cabinet doors do not have to be opened. SSES measured temperature differences of greater than 10°F, do not within themselves necessarily create operating problems during SBO. Further investigation into manufacturers' data may reveal additional margin beyond the specified operating limit. Additionally, the SBO design standard has been revised to ensure that the most limiting maximum operating temperatures will not be exceeded.

I trust the above information will satisfactorily address the NRC's cabinet heat-up concerns on this issue. Questions regarding this response should be directed to Mr. A. K. Maron at (215) 774-7852.

Very truly yours,

H. W. Keiser

cc: NRC Document Control Desk (original)
NRC Region I
Mr. G. S. Barber, NRC Sr. Resident Inspector
Mr. J. J. Raleigh, NRC Project Manager