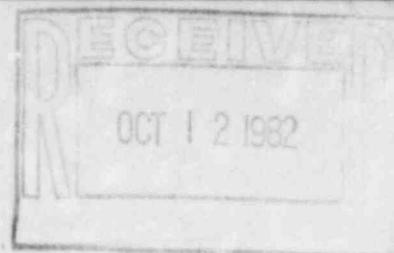




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Q-3-A35.07
3-A1.01.04

54-382

Mr. G. L. Madsen
Reactor Projects Branch, Region IV
U. S. Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 1000
Arlington, Texas 76012

SUBJECT: Potential Reportable Deficiency #86, "Disparity in Ultimate Heat Sink Tornado Case Test Results"

REFERENCE: W3I82-0020, Documentation of Telephone Communications, W. A. Cross to W. A. Crossman/L. Martin dated 8/30/82

On Monday August 30, 1982 a disparity in Ultimate Heat Sink Preoperational Test results for the tornado loading case was reported as Potential Reportable Deficiency #86. This letter is to inform you that after further evaluation, this specific problem is not considered to be reportable pursuant to the requirements of 10CFR50.55(e).

BACKGROUND

The Waterford 3 Ultimate Heat Sink (UHS) consists of dry and wet cooling towers and water stored in the wet cooling tower (WCT) basin. One of the design bases of the UHS is to dissipate heat removed by the Component Cooling Water System and the Auxiliary Component Cooling Water System from the reactor and its auxiliaries to permit safe shutdown of the unit coincident with a loss of offsite power, multiple tornado missiles and a single active failure.

On each train three of the five dry cooling tower (DCT) cells are missile protected. The remaining DCT cells and the WCT cells are unprotected from certain missiles. Under the assumptions of the tornado missile scenario described above, the plant must rely on one train of the protected DCT's (3 cells) and one train of the WCT's acting in a natural circulation mode. It has been determined that this configuration will, in fact, provide sufficient heat removal capability to allow safe shutdown of the plant under these design basis conditions.

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EVENT

Each train of the Essential Services Chilled Water System (ESCWS) consists of: one water chiller, one chilled water pump, one expansion tank, instrumentation and controls, and piping and valves (FSAR 9.2.9). The ESCWS furnishes chilled water to air handling systems which cool spaces containing equipment required for safety-related operations. Heat is rejected from the ESCWS to the Component Cooling Water System which rejects its heat to the Ultimate Heat Sink, specifically the WCT basin. Calculations have shown that in order to ensure that safety-related plant areas cooled via the ESCWS are maintained at or below 104°F the CCW return temperature from the WCT basin must be less than 105°F.

The cooling towers were recently tested for performance under the design basis tornado missile conditions. During this test it was observed that the WCT basin water temperature rose to 118°F and stabilized there. It has been determined that this would cause temperatures in certain safety-related areas to exceed their design ambient temperatures.

The areas involved, their design ambient temperature (DAT), and their post tornado peak temperatures are as follows:

<u>Area</u>	<u>DAT (F°)</u>	<u>Post Tornado Peak Temperature (F°)</u>
CCW Heat Exchanger Room	104	109
CCW Pump Room	104	115
Emergency FW Pump Room (Motor Driven)	104	113
Shutdown Cooling Heat Exchanger Room	104	111

EVALUATION

No areas containing sensitive safety-related electrical equipment, such as, the Switchgear Room, Control Room, or Relay Room exceeded their design ambient temperatures under this tornado-missile scenario. The concern focused on the environmental qualification of the equipment in the four (4) rooms as described above. The safety-related equipment in these areas, was specified to operate in an environment with temperatures of 104°F.

Mr. G. L. Madsen

October 6, 1982

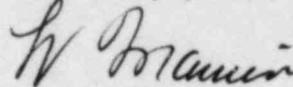
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Worthy of mention is the fact that there are conservatisms in the Environmental Qualifications analysis. It should also be noted that for the first 24 hours after the tornado event the plant is maintained in hot standby conditions via the Emergency Feedwater System. Only after 24 hours when plant cooldown commences does the environment in these rooms exceed the 104°F DAT and then only for a brief period of time compared to a 40 year operating lifetime. These temperature excursions were forwarded to the Ebasco Environmental Qualification Task Group for analysis. Their analysis consisted of evaluating the environmental effects of operating these rooms at their average normal operating temperatures plus the brief minor temperature excursion described above versus operating at the design ambient temperature of 104°F for forty years. The conclusion is that the latter is more conservative for the equipment located in these areas and that the qualified life of equipment present in these areas would not be significantly impacted.

CONCLUSION

The concern this situation presented was not for the ability to safely shut down. The heat dissipation capacity of the three operable Dry Cooling Tower cells and the Wet Cooling Towers in natural circulation were sufficient for that purpose. Based on the above evaluation the event is not considered significant nor has any impact on the Waterford 3 Environmental Qualification Program. Thus this event is not reportable under 10CFR50.55(e).

Very truly yours,



L. V. Maurin

LVM/WAC:keh