



UNITED STATES
 NUCLEAR REGULATORY COMMISSION
 WASHINGTON, D. C. 20555
 August 31, 1988

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MEMORANDUM FOR: Frederick J. Hebdon, Chief
 Inspection, Licensing, and Research Integration Branch

FROM: John W. Craig, Chief
 Plant Systems Branch
 Division of Engineering and Systems Technology

SUBJECT: SERVICE WATER/ULTIMATE HEAT SINK TEMPERATURE SURVEILLANCE

The purpose of this memorandum is to request that the information contained in this memorandum be included in the NRC Inspection Manual Interpretation.

As a result of severe summer weather conditions, both Indian Point, Unit 2 and Unit 3 have experienced an unforeseen increase in the temperature of their ultimate heat sink and source of emergency service water (Hudson River). As a result of discussions during the week of August 7, it has come to our attention that there is some confusion or inconsistency regarding verification of the ultimate heat sink temperature.

The Westinghouse Standard Technical Specifications (TS) on the ultimate heat sink (Section 3.7.5) identify as part of the limiting condition for operation the requirement that, "The ultimate heat sink shall be OPERABLE with: b. An average water temperature of less than or equal to ()°F." Under surveillance requirements the TS read, "The ultimate heat sink shall be determined OPERABLE at least once per 24 hours by verifying the average water temperature and water level to be within their limits."

The confusion referred to stems from the language of the standard TS which refers to an "average" water temperature. Some licensee's have interpreted this to mean that an acceptable surveillance temperature of the ultimate heat sink is a "time averaged" temperature based on multiple measurements taken over a 24 hour interval.

The practical effect of such an interpretation is to allow the use of a lower surveillance temperature for compliance with plant TS. When Indian Point, Unit 2 was faced with peak river water temperatures exceeding the TS limit, plant personnel proposed use of the time averaged temperature which effectively reduced the surveillance temperature in order to remain below the LCO limit. Plant personnel at Indian Point, Unit 2 allegedly learned that the plant staff at Indian Point, Unit 3 had avoided similar problems through the use of such an interpretation.

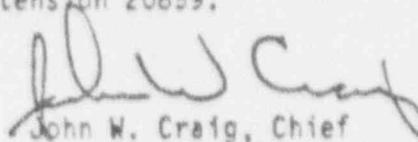
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The use of a time averaged temperature is not acceptable for demonstrating compliance with the TS limits. The reference in the TS to an "average" temperature refers to a volumetric average or average based on the readings of various individual thermocouples taken at the same time. The TS do not allow a time average to effectively dampen peak values occurring due to higher daytime temperatures or tidal effects. The TS limit the temperature to that assumed in accident analysis or design of various components and systems. If the use of a time averaged temperature means that for significant periods of time the ultimate heat sink exceeds the TS limit or greatly exceeds the limit for short periods of time, then for those intervals the plant is operating in an unanalyzed and potentially unsafe condition. Since the ultimate heat sink is the long term mechanism for removal of reactor decay heat and cooling of essential equipment loads it is important to maintain plant operation within design limits. Further, the service water system and ultimate heat sink is often the source of cooling for normal operating heat loads and provides margin against unnecessary plant trips.

We note that standard TS limits on internal containment air temperature also refer to an average temperature, although in this instance the standard TS explicitly require specification of the locations of thermocouples used to determine the volumetric average. Finally, the unintended benefits of diurnal effects are not to be credited in safety considerations as demonstrated by the long standing NRC position that integrated leak rate tests be conducted in such a manner that diurnal effects are eliminated.

If you have any questions regarding this matter, please contact me or Charles Tinkler of my staff on extension 20859.



John W. Craig, Chief
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cc: C. Rossi
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