

Westinghouse
Electric Corporation

Water Reactor
Divisions



Nuclear Technology Division

Box 355
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January 20, 1981
NS-TMA-2371

Mr. Darrell G. Eisenhut, Director
Division of Licensing
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Phillips Building
7920 Norfolk Avenue
Bethesda, Maryland 20014

Ref: 1) NS-TMA-2357, 12/23/80
2) NS-TMA-2358, 12/23/80
3) NS-TMA-2359, 12/23/80

ATTN: Lawrence E. Phillips, Core Performance Branch, DSI

Dear Mr. Eisenhut:

References 1, 2 and 3 each transmitted fifteen (15) copies of the proprietary reports and five (5) copies of the non-proprietary reports on the Westinghouse reactor vessel level instrumentation system. The purpose of this letter is to transmit the remainder of the non-proprietary reports as committed in the referenced letters.

Enclosed are:

1. Forty (40) copies of "Summary Report, Westinghouse Reactor Vessel Level Instrumentation System for Monitoring Inadequate Core Cooling" (7300 System) December 1980 (Non-Proprietary).
2. Forty (40) copies of "Summary Report, Westinghouse Reactor Vessel Level Instrumentation System for Monitoring Inadequate Core Cooling" (Micro-processor System), December 1980 (Non-Proprietary).
3. Forty (40) copies of "Summary Report, Westinghouse Reactor Vessel Level Instrumentation System for Monitoring Inadequate Core Cooling" (UHI Plant), December 1980 (Non-Proprietary).

In addition, page 4-32 was inadvertently omitted in all copies of the reports transmitted in the referenced letters. Since this page is common to all versions of the report, sixty (60) copies of page 4-32 are also enclosed for your use with the previous transmittals.

Very truly yours,

T. M. Anderson, Manager
Nuclear Safety Department

DPD/bek
Enclosures

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is realized. The RVLIS may not accurately trend with vessel level during the initial start of UPI. During this short period of time, the cold water being injected will mix with the steam in the upper plenum causing condensation to accumulate. This condensation will form faster than the system response. The system will equilibrate after a short period of time. Upon equilibrating, the system will continue to accurately trend reactor vessel level. For the vast majority of small-breaks, the condition of upper plenum injection does not cause a significant impact. For the remainder, the impact is very small and within tolerable limits.

As discussed elsewhere in this section, the time when ambiguous indications due to accumulator injection and upper head pressurizer behaviour is brief. The situation corrects itself and the RVLIS resumes giving a good indication of the trend in level. Both situations result in an indication of vessel level that is low. The operator must know that a brief period of erratic RVLIS indication may occur when accumulators are injecting. This effect is partially real in that the vessel level may depress for a moment when accumulator injection occurs. Unlike accumulator injection, the operator will not know when the indicated vessel level is being affected by the upper head pressurizer phenomena. However, no premature indication of ICC will occur since the core exit thermocouples will still read saturation temperature.

During periods when the void distribution in the vessel is changing rapidly, there may be a large change in two-phase mixture level with very little change in mass inventory in the vessel. This could happen if the reactor coolant pumps (RCPs) were tripped when the mixture in the vessel was highly voided. This could cause the mixture level to drop from the hot leg elevation to below the top of the core. The operator would expect this to happen based on the fact that the RVLIS reading was within the narrow range indication. The operator should know in general that, for a brief period of time after tripping the RCPs, transient RVLIS response will occur.