

SUPPLEMENTARY INFORMATION TO
LER 83-141/01 T-0

Mississippi Power & Light Company
Grand Gulf Nuclear Station - Unit 1
Docket No. 50-416

Technical Specification Involved: 3.3.8
Reported Under Technical Specification: 6.9.1.12.i

Event Narrative:

The Residual Heat Removal (RHR) System can be operated in several different modes, two of which are Engineering Safety Features (ESF) of the Emergency Core Cooling System (ECCS).

1. The Low Pressure Coolant Injection (LPCI) mode injects a high volume of water at low pressure directly into the core area of the reactor to keep the fuel covered during accident conditions.
2. The Containment Spray modes spray water from the suppression pool into the Containment through two redundant spray nozzle systems in a post-accident condition.

A detailed description of these two primary modes of RHR operation follows:

RHR Loops A, B, and C are automatically initiated in the LPCI mode by high drywell pressure (+2 psig) or low reactor water level (-150").

Containment spray is initiated by a LPCI initiation signal followed by a 10 minute time delay. If, at the end of this time period, the Containment pressure is 9 psig and Drywell pressure is 2 psig, Containment Spray initiates.

The setpoints for the containment spray timers are based on 2 safety analysis limits per the FSAR as follows:

1. A ten (10) minute lower limit (the minimum required time for RHR operation in the LPCI mode) to ensure proper core cooling under specific accident conditions.
2. A thirteen (13) minute upper limit (the maximum time allowable for containment spray to initiate) to ensure not exceeding containment design pressure during accident conditions.

Using the present Technical Specification (Table 3.3.8-2) setpoints for the Division A and B timers ($10.3 \pm .1$ minute and $11.2 \pm .2$ minutes) respectively and the device accuracies, the following nonconservative conditions could occur:

1. Instrument setpoint A of 10.2 minutes minus the instrument calibration accuracy and instrument accuracy (the accuracies are combined using the SRSS method per GE setpoint methodology) and the instrument drift would give a timer actuation time of 9.78 minutes.
2. Assuming LPCI system A as the signal failure and system B is required to operate to initiate containment spray.

System B setpoint of 11.4 (Note that this setpoint is a combined setpoint for the normal system B timer and the additional 90 second timer in the system description) plus the instrument accuracies and drifts (accuracies are combined in the same manner as 1 above) would give a timer actuation time of 12.19 minutes and when this is combined with the Technical Specification spray valve opening time of 1.3 minutes this gives a spray initiation time of 13.49 minutes.

However, General Electric has performed a plant unique drywell to containment bypass leakage and containment spray analysis. This analysis was based on the "worst case" containment pressure transient per the reply to item 19 of the Humphrey concerns, which is the intermediate line break case. The Grand Gulf unique analysis is also based on the Technical Specification allowable drywell to containment bypass leakage of .09 ft² (Section 3.6.2.2). The current tested leak rate is significantly lower than the Technical Specification value; actually less than 20% of the Technical Specification allowable.

The results of the analysis show that 30 minutes after an accident, containment pressure has only increased to 5.4 psig, still well below the trip setpoint of 8.35 psig for containment spray initiation.

Based on this plant unique analysis the containment spray timer setpoint could be increased to as much as thirty (30) minutes without exceeding the containment design pressure. Furthermore, even though the Technical Specification allowable value is equal to the analytical limit, in no accident situation would core cooling requirements have been violated, since the time delay relays closing only completes a core spray permissive logic and containment pressure must be greater than or equal to the containment pressure switch trip point (8.35 psig) for containment spray to actuate. Since this setpoint is not reached for greater than thirty (30) minutes for any postulated LOCA there would not be an automatic RHR diversion from core injection to containment spray in less than ten (10) minutes.

In conclusion, although the current setpoints may lead to a postulated nonconservative condition when compared to the current Technical Specification limit, the analysis demonstrates that the containment pressure is still well within the containment high pressure trip setpoint for containment spray and that core cooling will function per its design requirements. In order to prevent potential Technical Specification/Instrument setpoint conflicts in the future we intend to submit a proposed revision to the Technical Specification for these items with the next normal submittal. Analyses done in support of the Technical Specification change will use postulated Design Basis Accident assumptions and it is possible that the Technical Specification changes will include a reduced allowable drywell to containment bypass leakage. As noted above, the tested bypass leakage is substantially lower than the allowable which allows significant margins for reduction of allowable bypass leakage if necessary.



MISSISSIPPI POWER & LIGHT COMPANY

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NUCLEAR PRODUCTION DEPARTMENT

U. S. Nuclear Regulatory Commission
Region II
101 Marietta St., N.W., Suite 2900
Atlanta, Georgia 30303

Attention: Mr. J. P. O'Reilly, Regional Administrator

Dear Mr. O'Reilly:

SUBJECT: Grand Culf Nuclear Station
Unit 1
Docket No. 50-416
License No. NPF-13
File 0260/L-835.0
Potential for Less
Conservative Containment
Spray Timer Operation Than
Technical Specifications
LER 83-141/01 T-0
AECM-83/0632

During a recent engineering evaluation it was determined that the containment spray timers could operate less conservatively than required by Technical Specification Table 3.3.8-2. Given instrument accuracy, calibration accuracy, and instrument drift, the Division "A" timer actuation time could be less than 10 minutes and the Division "B" timer could exceed 11.7 minutes. This is reported pursuant to Technical Specification 6.9.1.12.1. Attached is LER 83-131/01 T-0 with Supplementary Information. This is a final report.

Yours truly,

L. F. Dale

for L. F. Dale
Manager of Nuclear Services

EBS/SHH:sap
Attachment

cc: (See Next Page)

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MISSISSIPPI POWER & LIGHT COMPANY

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