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General Comment

Excerpts from the comment submitted by Mr. Jerald Head on October 8, 2014 for General Electric Hitachi (GEH) [Agencywide Document and Management System (ADAMS) Accession No. ML14283A501] are cited below. The draft regulatory guide should address the technical issues previously raised by GEH on DG-1141.

GEH COMMENT

The Draft DG-1141 appears to impose a requirement of 97.5% probability of single channel trip before the AL is reached. This is inconsistent with the current and previous revisions of RG 1.105 (Revision 3 and earlier) which clearly define the requirement of trip before AL is reached to be 95% probability. The previous 95% probability requirement is the basis of the licensed GEH safety analyses, and the basis of the NRC-approved GEH setpoint methodology (Reference 2).

The GEH safety analysis application methodologies use the same 95/95 definition. This is evidenced by a letter from the NRC to GE (Reference 3) which states, in part, "This procedure provides for a statistical determination of the pressurization transient CPR/ICPR such that there is a 95% probability with 95% confidence (95/95) that the event will not cause the critical power ratio to fall below the MCPR Fuel Cladding Integrity Safety Limit." Thus, 95% is the non-exceedance %/probability. GEH has consistently used this 95/95=95% non-exceedance definition in analysis of Anticipated Operational Occurrences. The 97.5% probability is a different definition of 95% probability/95% confidence level from that already being applied by the NRC.

Note also that basing the setpoint on the 97.5% probability criterion instead of the 95% probability criterion could also decrease the margin between the setpoint and the normal operating limit (OL), and that would

result in an undesirable increase in the spurious trip probability.

These calculations show that basing the LSP on the 97.5% probability criterion rather than the historical 95% probability criterion results in an insignificant increase in probability of tripping before the AL is reached, but could lead to a significant detrimental increase in spurious trip probability. Moreover, the licensed GEH safety analyses are based on LSPs that meet the 95% probability criterion, so no increase in trip probability is required from the safety point of view.

The 97.5% probability criterion is the consequence of using "two-sided" statistics, whereas using "single-sided" statistics would correctly locate the setpoint such that it meets the historical 95% probability requirement for not exceeding the AL. Note that the NRC's statistical handbook (Reference 4, NUREG-1475 Rev 1, "Applying Statistics") indicates that use of single-sided statistics is appropriate for the usual case where the variable approaches a safety related setpoint, or limit, in one direction from the safe side (see description of Critical Power Ratio in example 9.4 of Reference 4. and see Section 9.13 of Reference 4 for a description of how to determine with high confidence the upper limit of the population standard deviation from the standard deviation obtained from a limited size sample).