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General Comment

GE Hitachi Nuclear Energy

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Comments: NRC Draft Regulatory Guide (DG) 1335, "Criteria for Accident Monitoring Instrumentation for Nuclear Power Plants" (December 2017)

NRC-2017-0237

GE Hitachi Nuclear Energy (GEH) appreciates the opportunity to comment on DG-1335. DG-1335 is a proposed Revision 5 to Regulatory Guide (RG) 1.97. The comments below concern the guidance regarding common cause failure of accident monitoring instrumentation for NRC consideration before issuing Revision 5 to RG 1.97.

Comments:

The comments below are focused on the Staff Regulatory Guidance in DG-1335, Section C. Section C indicates certain NRC regulatory positions associated with NRC endorsement of IEEE Std. 497-2016, "IEEE Standard Criteria for Accident Monitoring Instrumentation for Nuclear Power Generating Stations."

Item C.7 specifies that the design of instrumentation should incorporate diversity and defense-in-depth as part of addressing common cause failure (CCF). Item C.7 refers to Clause 6.2 of IEEE Std. 497-2016, which is quoted below:

6.2 Common cause failure

Design of Type A, Type B, and Type C instrumentation shall address common cause failures, as described in IEEE Std 379-2014 and IEEE Std 603-2009/IEC 62340:2007 consistent with the plant's LBD. For instrumentation using digital devices, guidance to address common cause failures can be found in IEEE Std 7-4.3.2-2015/IEC 60880:2006.

Considerations:

Section C.7 restates Clause 6.2 of IEEE Std. 497-2016 (quoted above). However, the restatement in DG-1335 includes the incorrect version of IEEE Std. 379-2014 (referring to 2016 instead). The restatement should be corrected to be consistent with Clause 6.2 and with the latest version of IEEE Std. 379.

Clause 6.2 of IEEE Std. 497-2016 quoted in DG-1335 Section C.7 refers to IEEE Std. 379-2014 and to IEEE Std. 603-2009 for describing the design of Types A, B, and C instrumentation addressing common cause failures (CCF). Clause 6.2 refers to the guidance in IEEE Std. 7-4.3.2-2016/IEC 60880:2006 to address common cause failures for digital devices. Section C.7 indicates that NUREG-0800, Chapter 7, Branch Technical Position 7-19, "Guidance for Evaluation of Diversity and Defense-in-Depth in Digital Computer-Based Instrumentation and Control Systems," is an alternative to Clause 6.2 references. IEEE Std. 379-2014 (Section 5.5) asserts that CCF is out of scope for that standard. IEEE Std. 603-2009 (Section 5.16) simply points to IEEE Std. 7-4.3.2 for digital systems. Thus, the guidance appears to indicate that a licensee or applicant would conclude that it should use BTP 7-19 as the guidance and not as an alternative. The NRC should clarify the intent (but see the comment below).

DG-1335 Section C.7 refers to BTP 7-19 as guidance for addressing CCF of Type/Category A, B, or C accident monitoring functions. However, the criteria in BTP 7-19 do not appear to be directly applicable to accident monitoring instrumentation. While there is discussion in BTP 7-19 (Rev. 7, August 2016) regarding monitoring instrumentation and manual actions (see Section 3.10), the acceptance criteria in Section 3.1 through 3.9 would appear to be "Not Applicable." Thus, the guidance is unclear how the criteria of BTP 7-19 should be applied to accident monitoring instrumentation regarding CCF. The NRC should consider if guidance in BTP 7-19 should be expanded.