

TWG #2 PROGRESS REPORT

10/25/2007

COMMENTS ON CCF WHITE PAPER

- Thesis
 - Safety system platforms developed with a systematic process, having extensive fault-free operating history, and operating independent of plant state are not likely to have CCFs that would prevent accomplishment of safety functions
 - Consequently, only functionally diverse safety functions are required to ensure that CCFs do not adversely affect plant safety systems

COMMENTS ON CCF WHITE PAPER

- An example platform operating history was summarized to provide an underlying basis for excluding platforms from CCF considerations
 - Platform in operation for ~20 years
 - Platform has gone through several revisions
 - Latest revision shipped to a plant now under construction after 22 months of factory acceptance testing

COMMENTS ON CCF WHITE PAPER

- Platform hardware components (e.g., CPUs, memory, interface ports, etc.) undergo
 - A formal qualification process that ensures key components have a history of error-free operation
 - This process is intended to identify hidden defects in the platform
- Failure reports are collected and reviewed throughout the operating history of the components to ensure newly discovered failures are factored into the hardware dedication process after product delivery
 - Failures apparently have been identified despite reliance on processes that are intended to prevent failures from being introduced into the platform

CONCLUSIONS

- Extensive qualification processes, extensive fault-free operating history, and operating independent of plant state are necessary for reducing the likelihood of platform-based CCFs
- Apparently, failures have occurred in safety platforms, which indicates that CCFs could occur in digital system platforms
- Consequently, reliance on process, operating history, and operating independent of plant state may not be sufficient for excluding potential platform-based CCFs from consideration when addressing the potential for CCFs in safety systems

CONCLUSIONS

(cont)

- Therefore, diverse safety system functions are not sufficient by themselves for addressing the effects of CCFs in platform-based safety systems

DIVERSITY STRATEGY DEVELOPMENT

- NRC awaiting results from contractor
 - Strategy categories have been identified
 - Failure data must be incorporated into strategies
 - System classifications are being developed to refine strategies
 - Long term results expected in 2008

- The ACRS commended the NRC staff and Industry for the degree of collaboration
- Work with domestic and international organizations to gather operational experience data
- Develop an alternative to the 30-minute criterion for determining processes under which operator manual actions can be taken
- ISG position that CCFs resulting in spurious actuations are not as severe as other CCF events needs to be clarified

- RES activities for operating experience
 - Complete Short-term staff assessment
 - PM assigned to the OECD/NEA COMPSIS project
 - **Collaboration of 12 countries to supply safety failure data and analysis.**
 - Failure information from the INPO EPIX database obtained. More details were obtained from the utility Corrective Action Programs via information requests through NRR as applicable

- RES activities for operating experience (continued)
 - INPO interfacing with RES for gaining access to the COMPSIS data.
 - Initiated task, “Industry Survey for Digital I&C Failures”, to investigate digital I&C failures in safety-critical systems and to document failure modes and occurrence frequencies of digital systems
 - With NRO and NRR, completed a preliminary assessment of Digital I&C Operating Experience

- RES activities for operating experience (continued)
 - Initiated collaboration with EPRI (sharing of Digital I&C Failure data and Operating Experience information) to support an NEI sponsored EPRI analysis of Digital I&C Failures
 - Meeting with EPRI in November to discuss potential areas for formal EPRI/NRC collaboration on Digital I&C Research areas under the RES/EPRI MOU
 - Contacted the INPO Manager of Events Analysis to begin discussions on ways to improve sharing of Digital I&C Operating Experience. A conference call is planned in the next few weeks.