

June 6, 1996

Mr. James M. Taylor
Executive Director for Operations
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Dear Mr. Taylor:

SUBJECT: REGULATORY GUIDANCE DOCUMENTS RELATED TO DIGITAL
INSTRUMENTATION AND CONTROL SYSTEMS

During the 429th and 431st meetings of the Advisory Committee on Reactor Safeguards, March 7-9 and May 23-25, 1996, we reviewed portions of the proposed Standard Review Plan (SRP), Branch Technical Positions (BTPs), and Regulatory Guides related to digital instrumentation and control (I&C) systems. We held discussions with representatives of the NRC staff and its contractor, the Lawrence Livermore National Laboratory (LLNL). In addition, our Subcommittee on I&C Systems and Computers met with the NRC staff and LLNL to discuss these documents on March 6 and May 22, 1996. We also had the benefit of the documents referenced.

The staff requested ACRS to review the SRP Chapter 7 update in the early stages of development to accommodate the schedule set forth in the Digital I&C Task Action Plan. The staff expects to complete development of the SRP Chapter 7 update and associated guidance in September 1996, integrate the recommendations from the National Academy of Sciences/National Research Council (NAS/NRC) Phase 2 study report in October 1996, publish the Draft SRP Chapter 7 and associated guidance for public comment in December 1996, and issue the final SRP and related guidance in May 1997.

The staff is revising the SRP, adding two new sections, developing new BTPs, and preparing six regulatory guides that endorse eight industry standards. The staff presented a safety evaluation report (SER) on an Electric Power Research Institute (EPRI) topical report for electromagnetic/radiofrequency interference (EMI/RFI) design requirements and testing. A planned BTP on commercial off-the-shelf (COTS) software may be replaced by an SER on a topical report being developed by an EPRI working group. We concur with the staff conclusions in the SER associated with the EPRI topical report on EMI/RFI and encourage the staff to complete an SER for the EPRI topical report on COTS.

Considering the fact that the staff is using generally accepted U.S. software engineering practices, it appears that the staff approach is appropriate to update the SRP and associated guidance to codify the current regulatory framework for digital I&C. We

raised several issues (e.g., the linkage between SRP Chapter 7 and other SRP chapters, and graded approaches based on importance to safety) that were subsequently clarified by the staff. The staff agreed to document these clarifications.

We have raised other issues that include the level of detail provided in the regulatory guides and the balance in the guidance between the review of the design process and the assessment of the product. We plan to report on these and other digital I&C issues at a later date.

We plan to review the staff's remaining SRP sections, the BTPs, and the SER on the EPRI topical report on COTS when they become available.

Sincerely,

/s/

T. S. Kress
Chairman

References:

1. U. S. Nuclear Regulatory Commission, Standard Review Plan, Section 7.0, "Instrumentation and Controls" Overview of Review Process," Draft Version 3.0, February 12, 1996
2. U. S. Nuclear Regulatory Commission, Standard Review Plan, Section 7.1, "Instrumentation and Controls" Introduction," Draft Version 7.0, February 14, 1996
3. U. S. Nuclear Regulatory Commission, Standard Review Plan, Section 7.2, "Reactor Trip System," Draft Version 6.0, April 17, 1996
4. U. S. Nuclear Regulatory Commission, Standard Review Plan, Section 7.9, "Data Communications," Draft Version 4.1, April 18, 1996
5. U. S. Nuclear Regulatory Commission, (Proposed) Branch Technical Position HICB-14: "Guidance on Software Reviews for Digital Computer-Based Instrumentation and Control Safety Systems," Version 9.0, February 14, 1996
6. U. S. Nuclear Regulatory Commission, (Proposed) Branch Technical Position HICB-16: "Guidance on the Level of Detail Required for Design Certification Applications Under 10 CFR Part 52," Version 7.0, April 12, 1996

7. U. S. Nuclear Regulatory Commission, Draft Regulatory Guides, transmitted by memorandum dated February 9, 1996, from M. Wayne Hodges, Director, Office of Nuclear Regulatory Research, NRC, to John T. Larkins, ACRS:
 - U. S. Nuclear Regulatory Commission, Draft Regulatory Guide DG-XXXX, Version 2.7.2, "Verification, Validation, Reviews, and Audits for Digital Computer Software Used in Safety Systems of Nuclear Power Plants"
 - U. S. Nuclear Regulatory Commission, Draft Regulatory Guide DG-XXXX, Version 2.0.7, "Configuration Management Plans for Digital Computer Software Used in Safety Systems of Nuclear Power Plants"
8. U. S. Nuclear Regulatory Commission, Draft Regulatory Guides, transmitted by memorandum dated April 26, 1996, from M. Wayne Hodges, Director, Office of Nuclear Regulatory Research, NRC, to John T. Larkins, ACRS:
 - Draft Regulatory Guide DG-XXXX, Version 2.0, "Software Unit Testing for Digital Computer Software Used in Safety Systems of Nuclear Power Plants"
 - Draft Regulatory Guide DG-XXXX, Version 2.0, "Developing Software Life Cycle Processes for Digital Computer Software Used in Safety Systems of Nuclear Power Plants"
 - Draft Regulatory Guide DG-XXXX, Version 2.0, "Software Requirements Specifications for Digital Computer Software Used in Safety Systems of Nuclear Power Plants"
 - Draft Regulatory Guide DG-XXXX, Version 2.0, "Software Test Documentation for Digital Computer Software Used in Safety Systems of Nuclear Power Plants"
9. Memorandum dated January 30, 1996, from F. Miraglia, Office of Nuclear Reactor Regulation, NRC, to E. Jordan, Committee to Review Generic Requirements, NRC, Subject: Request for Endorsement of the Safety Evaluation Report on Electric Power Research Institute Topical Report, TR-102323, "Guidelines for Electromagnetic Interference Testing in Power Plants"

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