

October 13, 1995

The Honorable Shirley A. Jackson  
Chairman  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

Dear Chairman Jackson:

SUBJECT: NATIONAL ACADEMY OF SCIENCES/NATIONAL RESEARCH COUNCIL  
STUDY ON "DIGITAL INSTRUMENTATION AND CONTROL SYSTEMS IN  
NUCLEAR POWER PLANTS, SAFETY AND RELIABILITY ISSUES" -  
PHASE 1

During the 425th meeting of the Advisory Committee on Reactor Safeguards, October 5-7, 1995, we reviewed the National Academy of Sciences/National Research Council (NAS/NRC) Phase 1 report on Digital Instrumentation and Control Systems in Nuclear Power Plants, Safety and Reliability Issues. The NAS/NRC Committee Chairman described the results of the Phase 1 report. We also had the benefit of the documents referenced.

The objective of the Phase 1 study was to define the important safety and reliability issues concerning hardware, software, and human-machine interfaces that arise from the use of digital instrumentation and control technology in nuclear power plant operations. The report identifies eight key issues: six technical and two strategic. It notes that these issues are common to other industries where software is required for dependable operation of systems. The report succinctly presents the issues that the NAS/NRC Committee found to be important.

We agree that the issues identified in the Phase 1 report will be important considerations as digital technology is used more extensively in nuclear power plants. In the past, we have called attention to the effects of environmental stressors. The NAS/NRC Chairman stated that the NAS/NRC Committee considered, but decided not to raise this issue to the level of a "key technical issue." We continue to believe this is an important issue that the staff must address as it develops its regulatory guidance for digital systems. However, this is part of the broader issue of environmental qualification of safety-related equipment and does not need to be a key issue of the Phase 2 study.

We have concerns regarding a potential conflict between the Phase 2 completion schedule and the staff's schedule for issuing the Standard Review Plan (SRP) and associated regulatory guides. We believe it is important that the SRP and other regulatory guidance

benefit from the insights in the Phase 2 report.

Sincerely,

/s/

T. S. Kress  
Chairman

References:

1. Report dated 1995, from the Committee on Application of Digital Instrumentation and Control Systems to Nuclear Power Plant Operations and Safety, Board on Energy and Environmental Systems, Commission on Engineering and Technical Systems, National Research Council, Subject: Digital Instrumentation and Control Systems in Nuclear Power Plants, Safety and Reliability Issues - Phase 1
  2. Memorandum dated December 2, 1993, from Ivan Selin, Chairman, NRC, to NRC Commissioners, Subject: Computers in Nuclear Power Plant Operations
  3. Letter dated July 14, 1994, from T. S. Kress, Chairman, ACRS, to Ivan Selin, Chairman, NRC, Subject: Proposed National Academy of Sciences/National Research Council Study and Workshop on Digital Instrumentation and Control Systems
  4. Letter dated August 23, 1994, from Ivan Selin, Chairman, NRC, to T. S. Kress, Chairman, ACRS, regarding ACRS letter of July 14, 1994 on National Academy of Sciences/National Research Council Proposal for a Study and Workshop on the "Application of Digital Instrumentation and Control Technology to Nuclear Power Plant Operations and Safety"
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