



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

NOV 29 1984

MEMORANDUM FOR: Victor Stello, Chairman
Committee to Review Generic Requirements

FROM: Robert B. Minogue, Director
Office of Nuclear Regulatory Research

SUBJECT: PROPOSED REGULATORY GUIDE (IC127-5), "CRITERIA FOR
PROGRAMMABLE DIGITAL COMPUTER SYSTEMS SOFTWARE IN
SAFETY-RELATED SYSTEMS OF NUCLEAR POWER PLANTS"

Enclosed for consideration by the Committee to Review Generic Requirements are 15 copies of Proposed Regulatory Guide (IC127-5), "Criteria for Programmable Digital Computer Systems Software in Safety-Related Systems of Nuclear Power Plants," dated June 6, 1984, and the Value/Impact Statement which is attached to the guide. Also enclosed are 15 copies of ANSI/IEEE-ANS-7-4.3.2-1982, "Application Criteria for Programmable Digital Computer Systems in Safety Systems of Nuclear Power Generating Stations," which is endorsed by the guide; 15 copies of the public comments; 15 copies of the Discussion of Public Comments; 15 copies of the staff comments; and 15 copies of the CRGR Summary.

This guide is being developed at the request of NRR to help fill a void in guidance pertaining to the use of programmable digital computer systems in safety-related systems of nuclear power plants. It will improve safety by providing a higher level of assurance that the software used in programmable digital computer systems accurately and completely represents the safety requirements. For example, it will ensure that programming errors that implicitly include a set of potentially adverse instructions not intended by the programmers (analogous to "sneak circuits" in hardware) are discovered and eliminated. It also can have application to the SPDS and other systems important to safety. Errors detected during the design phase through the verification process provided by this guide will, from a cost point of view, be orders of magnitude less expensive than if they are not detected until the operations phase.

Robert B. Minogue

Robert B. Minogue, Director
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Enclosures: As stated

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SUMMARY OF PROPOSED REGULATORY GUIDE FOR CRGR REVIEW

OFFICE OF NUCLEAR REGULATORY RESEARCH

DATE: July 2, 1984

RES TCF NO.: IC 127-5

RES TASK LEADER: A. S. Hintze

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Title of Proposed Action: Proposed Regulatory Guide (IC 127-5), "Criteria for Programmable Digital Computer Systems Software in Safety-Related Systems of Nuclear Power Plants"

Statement of the Problem: The use of programmable digital computers in safety-related systems is becoming more prevalent. Guidance for using computers for such application, particularly as it pertains to software development, has not yet been provided to applicants and licensees.

Objective: Since there has been an industry standard published which addresses development of programmable digital computer software, this guide is to endorse that standard and provide licensees and applicants with the NRC position with regard to its use.

Consequences: If no action is taken applicants and licensees would have no staff guidance on designing, validating and implementing computer software for safety-related systems. Any such guidance would require dissemination on a case-by-case basis.

Decision Rationale: The guide should be issued to inform licensees and applicants of the current staff position and to reduce staff effort during the review process.

Implementation: The implementation will be forward-fit. However, licensees and applicants may voluntarily use the guide in discussions with the staff regarding operating licensee applications currently pending or modifications to operating licenses.