September 26, 2002

MEMORANDUM TO: Samuel J. Collins, Director
Office of Nuclear Reactor Regulation

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SUBJECT: DIFFERING PROFESSIONAL VIEW CONCERNING THE PROPOSED 10 CFR 50.69 RULEMAKING

The purpose of this memorandum is to document my differing professional view concerning the proposed rulemaking to add new section 10 CFR 50.69, "Risk Informed Categorization and Treatment of Structures, Systems, and Components." My specific concern is that the treatment requirements specified for RISC-3 SSCs are not sufficient to provide reasonable assurance of adequate protection of public health and safety.

The staff in NRR has spent over two years developing the 50.69 rule language. This effort included numerous internal staff meetings, review by internal oversight groups, and public meetings with external stakeholders. This effort resulted in the July, 31, 2002, version of the rule published on the NRC web site (posted on August 2). The July 31 version of the rule represented the balance of categorization and treatment requirements necessary to achieve a staff consensus to go forward with the proposed rulemaking. The Division of Regulatory Improvement Programs significantly altered the July 31 version of the rule without any input from the technical reviewers that were involved in the development of the rule for the past two years. Critical portions of the treatment process were eliminated based on the nebulous assertion that the rule language contained too much detail. The accompanying statement of considerations (SOC) indicates that the Commission expects licensees and applicants to satisfy many of the treatment provisions that were eliminated from the July 31 rule language. The current rule language is not consistent with many of the SOC expectations. As discussed in the ensuing paragraphs, portions of the July 31 rule language were eliminated without a valid technical justification.

The following language was deleted from the general treatment requirements for RISC-3 SSCs specified in the July 31 version of 50.69(d)(2):

> *These processes must meet voluntary consensus standards which are generally accepted in industrial practice, and address applicable vendor recommendations and operational experience. The implementation of these processes and the assessment of their effectiveness must be controlled and accomplished through documented procedures and guidelines. The treatment processes must be consistent with the assumptions credited in the categorization process.*

Section III.3.2 of the SOC contains the statement: "Thus, collectively, RISC-3 SSCs can be safety significant and it is important to maintain their design basis functional capability." It is important to recognize that, although on an individual basis RISC-3 SSCs may have low risk significance, collectively RISC-3 SSCs are safety significant. The failure of even a small number of these RISC-3 SSCs could lead to serious safety consequences. Therefore, in order for the staff to conclude that 50.69 provides reasonable assurance of adequate protection of public health and safety, the staff must conclude that the RISC-3 treatment requirements provide an adequate framework for assuring that RISC-3 SSCs maintain their design basis functionality. As stated in Section V.4.4 of the SOC, "It is necessary for a licensee to consider the impact that a change in treatment (as a result of removal of special treatment requirements) might have on the ability of the SSC to perform its design basis function and on the reliability of SSCs." The SOC further concedes that this assessment may be either quantitative or qualitative. This is a weakness in the categorization process. A key cornerstone of the robust categorization process, the sensitivity study, may hinge on individual judgement. Safety-related SSCs are assumed to be highly reliable. A change in unavailability by a factor of 2 to 5, such as recommended in the NEI categorization guidelines (NEI 00-04) for the sensitivity study, still requires that the SSCs remain highly reliable. Monitoring normal operational SSC performance will not provide reliability estimates of SSC performance during design basis events. In order to have reasonable confidence that high reliability of SSCs is achieved for all design basis conditions, the RISC-3 treatment processes must meet standards that are generally accepted in industrial practice along with applicable vendor recommendations, and must be accomplished using controlled procedures. It is difficult to understand why these general requirements were considered too detailed for the rule language. Consensus standards and vendor recommendations are developed considering past performance of SSCs. The consensus standards and vendor recommendations contain essential criteria that is necessary to provide confidence in the functionality of SSCs. If licensees and applicants don't use available consensus standards and don't even follow vendor recommendations, the staff will not have a basis to assess reliability assumptions used in the categorization process.

The following bracketed language was deleted from the design control requirements specified in the July 31 version of 50.69(d)(2)(i):

> *Design functional requirements and bases for RISC-3 SSCs must be maintained and controlled ["including selection of suitable materials, methods, and standards; verification of design adequacy; control of installation and post-installation testing; and control of design changes"]. RISC-3 SSCs must be ["have a documented basis to demonstrate that they are"] capable of performing their safety-related functions...*

Post-installation testing is an essential step in establishing the functionality of newly installed SSCs. Section V.5.2.1 of the SOC contains the statement: "Licensees would be expected to perform sufficient post-installation testing to verify that the installed SSC is operating within expected parameters and is capable of performing its safety functions under design-basis conditions." It is not clear why the requirement for post-installation testing was deleted from the rule language if licensees are expected to perform post-installation testing.

The current rule language does not require licensees and applicants to have any documentation to show that design requirements have been met. This is a significant deficiency in the current rule language. Without documentation, there is no assurance that

SSCs meet their design requirements and, consequently, no assurance that design basis functionality has been maintained. Maintaining documentation to show that design requirements have been met is a relatively simple common sense requirement. It is not clear why this requirement was considered overly prescriptive and removed from the rule language.

The following additional language was removed from the design control provisions specified in the July 31 version of 50.69(d)(2)(i):

> *"Replacements for ASME Class 2 and Class 3 SSCs and parts must meet either: (1) the requirements of the ASME Boiler & Pressure Vessel (BPV) Code; or (2) the technical and administrative requirements, in their entirety, of a voluntary consensus standard that is generally accepted in industrial practice applicable to replacement. ASME Class 2 and Class 3 SSCs and parts shall meet the fracture toughness requirements of the SSC or part being replaced."*

Proposed 50.69(b)(1)(iv) allows licensees to replace ASME SSCs with non-ASME SSCs. This constitutes a change in the design of these components since the ASME Code contains design requirements. As a consequence, it is necessary to establish some criteria for the design of these SSCs. Section III.3.2 of the SOC contains the statement, "For the specific case of repair and replacement of ASME Class 2 and Class 3 SSCs, the Commission concludes that it would be acceptable to allow these SSCs to meet a voluntary consensus standard that is generally accepted in industrial practice..." However, the current rule language does not require these SSCs to meet any standard. The July 31 rule language is necessary to achieve the stated objective in the SOC. Section V.5.2.1 of the SOC also contains the statement, "Another example is a requirement for fracture toughness of particular materials that is part of a licensee's design requirements; such a requirement would continue to apply when repair and replacement of affected components is undertaken." However, the fracture toughness requirements are specified in the ASME Code. If a licensee does not use the ASME Code for replacement SSCs, then fracture toughness requirements will be lost. That is the reason the fracture toughness was addressed in the July 31 rule language. If SSCs do not possess adequate fracture toughness, then multiple brittle failures could occur when the SSCs are challenged by a design basis event such as an earthquake.

The following language was removed from the procurement provisions specified in the July 31 version of 50.69(d)(2)(ii):

> *"Upon receipt, the licensee shall verify that the item received is the item that was ordered."*

The purpose of the rule language is to assure that licensees and applicants maintain some control over procured items. Lack of procurement control could result in the installation of SSCs that are not capable of performing their design basis function. Section V.5.2.2 of the SOC contains the statement: "In addition to appropriately specifying the procurement of the desired component, the licensee/applicant would also be expected to conduct activities upon receipt to confirm that the received component is what was ordered." It is not clear why the requirement was considered too prescriptive for the rule language if the Commission expects of licensees and applicants to confirm that a received item is what was ordered.

The following language was removed from the corrective action provisions specified in the July 31 version of 50.69(d)(2)(iv):

> *"In the case of significant conditions adverse to quality, measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition."*

Without this requirement a licensee or applicant would only have to fix a deficiency without having to determine whether the deficiency has any generic implications. This could lead to the failure to detect multiple SSCs that are not functional due to a generic deficiency. Section V.5.2.4 of the SOC contains the statement: "For example, effective implementation of the corrective action process would include timely response to information from plant SSCs, overall plant operations, and industry generic activities that might reveal performance concerns for RISC-3 SSCs on both an individual and common-cause basis." The current rule language in not consistent with that statement. It is not clear why this provision was removed from the rule language.

In summary, the provisions of the July 31 rule language that were deleted contained high level requirements the technical staff considered necessary to provide reasonable confidence in the functionality of RISC-3 SSCs. The requirements in the current rule language are not sufficient for the staff to conclude that 50.69 provides reasonable assurance of adequate protection of public health and safety.

cc: R. Barrett
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ADAMS ACCESSION NUMBER: ML022690398