AMERICAN NUCLEAR SOCIETY
STANDARDS COMMITTEE

DOCKETED
USNRC

Headquarters:
555 North Kensington Avenue
LaGrange Park, Illinois 60525 USA
Telephone 312/352-6611
Telecopy 312/352-0499
Telex 254635

(15)

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Address the writer at:
Nebraska Public Power District
P.O. Box 499
Columbus, NE 68601
Telephone: (402) 563-5333

OFFICE OF SECRETARY
DOCKETING & SERVICE
BRANCH

DOCKET NUMBER
PROPOSED RULE PR-50
(47 FR 15801)

December 20, 1982

Secretary of the Commission
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attn: Docketing and Service Branch

RE: Notice of Proposed Rule - Codes and Standards for Nuclear Power Plants (47 FR 15801-05, April 13, 1982)

Dear Sir:

On June 10, 1982, pursuant to the foregoing notice, the Nuclear Power Plant Standards Committee (NUPPSCO) of the American Nuclear Society (ANS) submitted comments on the proposed amendments to 10 CFR 50.55a. Subsequently, NUPPSCO held several detailed discussions, including some with the NRC staff, concerning ANS recommendations on how best to incorporate an equipment classification system into the regulatory structure. As a result of those discussions, NUPPSCO offers an updated set of recommendations. This letter supersedes and replaces my letter to you of June 10, 1982 which presented comments on proposed amendments to 10 CFR 50.55a (see above reference).

NUPPSCO believes it would be in the best interest of good regulatory practice to avoid any detailed specification of a classification system in the regulations. Instead, each applicant should use an acceptable classification scheme; such a scheme could be referenced in an appropriate regulatory guide. It is this approach that forms the basis of the following recommendations.

NUPPSCO strongly recommends the adoption of the following two-step process:

1. 10 CFR 50.55a should be revised to invoke the provisions of the ASME Boiler and Pressure Vessel Code, Section III, Division 1, regarding construction of equipment falling within the purview of this portion of the code. This requirement should extend to Classes 1, 2, and 3 and should indicate that the applicant must specify an acceptable classification system upon which the three classes were selected. Attachment 1 is a suggested wording for this revised regulation.

Acknowledged by card.

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add: A. Taboada
1130 SS

2. Regulatory Guide 1.26 should be revised to endorse the ANS classification system, thus establishing this system as an acceptable system as called for in the regulation. This endorsement should invoke Section 3.3 (Classification Rules) of ANSI/ANS 51.1-1983, "Nuclear Safety Criteria for the Design of Stationary Pressurized Water Reactor Plants" and ANSI/ANS 52.1-1983, "Nuclear Safety Criteria for the Design of Stationary Boiling Water Reactor Plants." It is expected that these two documents will be approved and published in April, 1983.

To assist the NRC staff in gaining comment on the revision to Regulatory Guide 1.26, you are hereby granted permission to reference the drafts of ANS 51.1 and ANS 52.1 under the provisions of the existing ANS-NRC staff agreement. These two documents will be identified as the November 1982 drafts and will be sent to you upon completion of editing. The section cited above has been specifically written to be referenced in this fashion and does not depend on the remainder of the information provided in the draft standards. This section can be used by a designer to establish a complete classification system for implementation of the ASME Code without reliance on any other portion of the draft standards.

Implementation of the above two-step process would eliminate any need for NRC to address the comments submitted in my June 10, 1982 letter. However, Attachment 2 contains elements of these same comments which we hereby submit in the event that you decide not to pursue the above recommendations. As the result of receiving clarification from the NRC staff, we have eliminated portions of certain of our original comments as submitted on June 10. At the request of the NRC staff we also have included clarification of certain comments. This has necessitated considerable revision to the original submittal; however, the intended meanings of our comments have not been changed.

NUPPSCO will be happy to provide additional clarification, supporting material, or participate in additional meetings to assist in implementing our recommended process for revisions to 10 CFR 50.55a and Regulatory Guide 1.26.

Sincerely,

L. John Cooper

L. John Cooper
Chairman, NUPPSCO

LJC:db
Attachments - 2
cc: The Honorable Nunzio J. Palladino W/Atts.
William J. Dircks W/Atts.
Victor Stello, Jr. W/Atts.
Harold R. Denton W/Atts.
Frank Schroeder W/Atts.
Robert B. Minogue W/Atts.
Guy A. Arlotto W/Atts.

PROPOSED WORDING FOR 10 CFR 50.55a THAT WOULD SATISFACTORILY ADDRESS ANS COMMENTS ON NRC'S PROPOSED REVISION TO 10 CFR 50.55a DATED 4/13/82

(c) Class 1 Components

(1) Components that are Class 1 shall meet the requirements for Class 1 components in Section III[3,4,5] of the ASME Boiler and Pressure Vessel Code, except as provided in paragraph (c)(3) of this Section. Components shall be designated Class 1 in a manner acceptable to the NRC staff.[7]

(2) The Code Edition, Addenda, and Optional Code Cases[6] to be applied to components identified in paragraph (c)(1) of this section must be determined by the provisions of paragraph NCA-1140, Subsection NCA of Section III of the ASME Boiler and Pressure Vessel Code, but (i) the edition and addenda applied to a component must be those which are incorporated by reference in paragraph (b)(1) of this section; (ii) the ASME Code provisions applied to the pressure vessel may be dated no earlier than the Summer 1972 Addenda of the 1971 edition; (iii) the ASME Code provisions applied to piping, pumps and valves may be dated no earlier than the Winter 1972 Addenda of the 1971 edition; and (iv) ASME Code Cases[6] must have been determined suitable for use by the NRC.

(3) Any acceptance of Codes, Standards, and Code Cases by the Commission for application to components identified in paragraph (c)(1) of this section of nuclear plants with construction permits issued prior to __________*, will continue to be in effect for those plants.

(d) Class 2 and 3 Components

(1) For a nuclear power plant where application for a construction permit is docketed after ________________*, pressure-retaining components within the scope of the ASME Boiler and Pressure Vessel Code that are Class 2 or 3 shall meet the requirements for Class 2 or 3 components respectively in Section III of the ASME Boiler and Pressure Vessel Code. Components shall be designated Class 2 or 3 in a manner acceptable to the NRC staff.[7]

(2) The Code Edition, Addenda, and Optional Code Cases[6] to be applied to the components identified in paragraph (d)(1) of this section must be determined by the rules of paragraph NCA-1140, Subsection NCA of Section III of the ASME Boiler Vessel and Pressure Code, but (i) the edition and addenda must be those which are incorporated by reference in paragraph (b)(1) of this section; (ii) the ASME Code provisions applied to the components may be dated no earlier than the 1980 Edition; and (iii) the ASME Code Cases[6] must have been determined suitable for use by the NRC.

*The effective date of the amendment will be inserted.

(e) (Deleted and space reserved)

(f) (Deleted and space reserved)

[7]Regulatory Guide 1.26 is used as guidance for the acceptability of designating components as Class 1, Class 2, or Class 3.

ATTACHMENT 2
December 20, 1982

REVISED COMMENTS ON THE NEWLY PROPOSED 10 CFR 50.55a RULES BY MEMBERS OF THE AMERICAN NUCLEAR SOCIETY'S NUCLEAR POWER PLANT STANDARDS COMMITTEE

This attachment addresses both the positive and the negative aspects of the consensus opinion reached by members of the American Nuclear Society's Nuclear Power Plant Standards Committee on the newly proposed 10 CFR 50.55a rules.

POSITIVES OF PROPOSED RULES

We agree with the NRC general-objective of requiring application of Classes 2 and 3 portions of the ASME Boiler and Pressure Vessel Code, Section III, and agree that experience in the use of the Code is very favorable. Also, we agree that the rules should include means to authorize alternatives to the requirements of Part 50.55a, if suitable criteria are met.

RATCHETING

While we can see the positive advantages of giving more official recognition to the benefits of utilizing Section III of the ASME Code in an attempt to create an element of stability in the licensing process, we do not agree with the upward ratcheting of requirements brought about by requiring Class 2 for some equipment that has historically been accepted as Class 3. This has a de-stabilizing impact, not only on current designs but also raises questions about backfit. These changes are proposed without value-impact studies and, we think, without adequate justification. NRC should avoid major classification changes of this kind without thorough NRC-industry discussion.

CLASSIFICATION SYSTEM

The new rules draw boundaries establishing which components belong to the requirements of each of the three major groupings, i.e., Classes 1, 2, and 3. This process (classification) is not provided by the Code; rather NCA-2110(c) of Section III generically addresses where the rules of classification may be found, and NCA-2110(d) requires the owner to "be responsible for applying system safety criteria to classify equipment. . ." Classification has long been accomplished by industry standards, i.e., Trial Use and Comment (TU&C) ANSI N18.2-1970, ANSI N18.2-1973, TU&C ANSI N212-1974, ANSI N18.2a-1975, and ANSI/ANS-52.1-1978. For many years, the American Nuclear Society has been working on a new classification system that expands the old system to one that is all-encompassing for structures, systems, and components. The new ANS system utilizes nuclear-safety functions as the means for distinguishing equipment, and includes very sophisticated interface criteria. This new version is a part of the twin standards ANS 51.1 and 52.1, overall criteria standards for PWR and BWR plants, that will replace the above-referenced standards.

The classification rules included in the proposed rulemaking, although intended to address only the scope of ASME Code, Section III applicability, are consistent with neither the old nor the newly proposed industry rules. The old and the new industry rules went through extensive consensus processes, including participation by the NRC. It is for these reasons that NUPPSCO recommends that NRC revise Regulatory Guide 1.26 to endorse the ANS classification system set forth in ANS-51.1 and -52.1.

DETAILED COMMENTS

1. In (c)(2)(i), certain small components of the RCPB may be excluded from Class 1 if, in the event of failure, the reactor can be shut down and cooled in an orderly manner. This is the historic basis for judgment and was a criterion included in ANSI N18.2-1973 and ANSI N212-1974. However, a new requirement has been added, that such downgrading from Class 1 to Class 2 may not be taken unless the makeup system is operable using onsite-emergency power. We think this is an unnecessary addition. If one of these small pressure-boundary components should fail, there remains a high probability that availability of normal power would continue. If normal power is not available, the emergency core cooling system can be used.

2. In (d)(1), there is language having the effect of requiring that all equipment of the RCPB excluded for reasons allowed under (c)(2) shall be Class 2. This is an example of the inappropriate use of the RCPB to define interfaces. Branch lines to or from the reactor coolant system should be allowed to have components that are non-safety-related, even if the branch lines penetrate the containment, provided sufficient protective interface barriers are used (a) between the reactor coolant system and the non-safety-related components; and (b) between containment penetrations and the non-safety-related components. Two examples taken from the new ANS classification system are: (i) a restriction plus two normally open automatic valves in series; and (ii) three normally open automatic valves in series. Each of the automatic valves would be required to meet closure-time requirements such that safety-related functions of the reactor coolant system are not jeopardized.

3. Item (d)(1)(ii) requires that systems or portions of systems important to safety that are designed for reactor shutdown or residual heat removal be Class 2. This wording, paraphrased from Regulatory Guide 1.26, has caused confusion in the past because exceptions on both counts have always been acceptable and licensable. The equipment for introducing or removing neutron absorbing solutions for long-term control or shutdown of the reactor is Class 3. This is reasonable because of the non-emergency time scales applied to the process and the accessability of pumps and mixing tanks outside containment. The Class 3 exception for residual heat removal is applied to equipment that accomplishes the function indirectly, such as by providing cooling water to the secondary side of residual heat removal heat exchangers. The general ease of maintenance for equipment that circulates normally non-radioactive water provides the distinction for equipment in this category. The Class 2 residual heat removal function is applicable to equipment providing cooling directly to the core, as for the primary side of the residual heat removal and the emergency core cooling systems.

4. Item (d)(1)(v) illustrates the difficulty of attempting to define interface criteria by referencing the RCPB. Although the wording was borrowed from Regulatory Guide 1.26, it is, nevertheless, an unrealistic requirement. This case applies to systems, or portions of systems, located outside containment, since there could be no practical application for piping systems that do not penetrate containment. They would either have to connect to (a) the second

4. (Continued)

of two valves, each of which is either normally closed or capable of automatic closure; or (b) the reactor coolant system safety and relief valve discharge piping (as stipulated by the definition of the RCPB). Since the outermost containment isolation valve is, because of GDC #55 requirements, at least the second valve in any RCPB branch penetrating the containment, the requirement of (d)(1)(v) necessitates a total of four valves to interface from the reactor coolant system to a piping system of less than Class 2 components. Beyond this point, (e)(1)(iii) requires two more valves to obtain the interface to a non-safety-related piping system. For more on (e)(1)(iii), see Comment #10.

5. Items (d)(1)(vi), (vii), and (viii), together with detailed Comment #1 above are illustrative of what we mean by our discussion entitled "Ratcheting."

In the case of the auxiliary feedwater system, equipment for this purpose was mostly Safety Class 3 according to ANSI N18.2-1973, and was entirely Safety Class 3 according to ANSI N18.2a-1975 and ANSI/ANS-51.10-1979. We think the original rationale for placing equipment of this system into Safety Class 3 remains valid. Where safety-system equipment circulated fluids that were essentially non-radioactive, repair of failures was deemed to be a lesser problem, due to greater equipment accessibility, than where circulated fluids were highly radioactive during safety-system functioning. Thus, safety-system equipment of this kind is Safety Class 3; whereas, equipment that may contain highly radioactive fluids during the period of safety functioning is Safety Class 2.

The auxiliary feedwater system is, and always was, a key safety system. Unreliability of the system relates to many matters. The largest contributors tend to come from active equipment, such as controls, starters, and motors, but one of the lowest contributors to unreliability is any passive pressure boundary built to Section III of the ASME B&PV Code. Thus, upgrading the pressure boundary of the system from Code Class 3 to Code Class 2 is not a cost-effective way in which to reduce unavailabilities. Based on data from WASH-1400 and numerous other sources, we could expect that losing active components of the auxiliary feedwater system would be orders of magnitude greater than the probability of losing passive-boundary components of the system.

In the case of safety and relief valve discharge systems for BWR plants, equipment for this purpose is classified as Class 3 by ANSI/ANS-52.1-1978 and by the new ANS classification system. Past and current accepted practice has also assigned this equipment to Class 3. Upgrading this equipment to Class 2 is unnecessary and unjustified. This equipment experiences low stresses so its probability of failure is low. Imposing more stringent requirements would have a negligible effect on safety and would not be cost-effective.

The letdown system of the chemical and volume control systems of PWR plants serves to permit (a) volume control of the reactor coolant during heatup;

5. (Continued)

(b) purification of reactor coolant; and (c) the bleed portion of bleed and feed, necessary for the adjustment of boron concentration in the reactor coolant. Of these, the important safety function supported is the ability that bleeding affords, on a long-term basis, to control the reactivity by adjusting the concentration of boric acid in the reactor coolant. In the ANS classification systems, both old and new, an important distinction is made between the Class 2 function of shutting down the reactor quickly, i.e., for an emergency, versus the Class 3 function of controlling the reactivity of the core, on a non-emergency basis. We think this reasonable distinction should be retained. Historically, the NRC has accepted Class 3 for equipment used to supply and adjust the reactor coolant system boric acid levels, and we think it should continue to do so.

6. Confusion is introduced into the introductory statement of (e)(1) in the attempt to define the portion of the classification system previously addressed. This is because the RCPB can contain components of all classes, as explained in Comment #2 above. The statement can be reworded to overcome this problem, but if our recommendation to expunge all classification requirements from the 10 CFR 50.55a rules is accepted, such alternate wording is of little interest.

7. In (e)(1)(i), following "cooling water systems, or portions of these systems . . .designed for. . .residual heat removal from the reactor and from spent fuel storage pool," there is the parenthetical phrase "(including primary and secondary cooling systems)." This is ambiguous. It could mean that if more than one system is used, they both must be Class 3. Or it could mean that, given a single train, the systems of both the primary and secondary side of the heat exchanger(s) must be Class 3. The latter should be the intended case, but it should be clarified.

8. The last part of (e)(1)(i) states: "Those portions of these (cooling water) systems that are required for their safety functions which do not operate during any mode of normal reactor operation and cannot be tested adequately must be classified as Class 2 components." Does this mean that at branches of a component cooling system utilizing mostly Class 3 components there could be required Class 2 automatic valves and connections to certain remote equipment not readily testable? If so, it is not clear what this criterion accomplishes or its necessity. Testing requirements ought to be kept separate from classification.

9. There are two problems with (e)(1)(ii). The first is that the cooling water or seal water systems should be required for safety-related (instead of important-to-safety) equipment in order to make necessary the use of Class 3 components. Secondly, reactor coolant pumps have safety-related pressure boundaries but don't have safety-related pumping functions, except for coastdown. Therefore, a better example would be an ECCS or a residual heat removal pump.

10. Although paraphrased from Regulatory Guide 1.26, we have difficulty with (e)(1)(iii) in interpreting meanings and arriving at rationale. For branch lines of the RCPB that penetrate the containment, the RCPB includes the outermost containment isolation valve. As explained in Comment #4, this valve

10. (Continued)

bounding the RCPB could be the second valve from the reactor coolant system, or could be many valves removed, depending on system requirements within containment. Thus, the number of valves required to permit downgrading to a non-safety-related piping system by the combination of (d)(1)(v) and (e)(1)(iii) can vary from six up to n + 5, where n = the number of valves in the branch line ahead of the outermost containment isolation valve (a minimum value for n is one). Such a requirement would be unreasonable, and we believe it unintended. It illustrates our contention that the use of the RCPB to define interfaces produces confusion instead of clarity.

11. The requirements of (e)(1)(iv) are paraphrased from Regulatory Guide 1.26, but we object to dealing with systems that may contain radioactivity in a manner different from the method of dealing with radioactive waste processing systems. In the case of the latter systems, cost-benefit reviews have shown that it is adequate to apply conventional codes and standards rather than Section III of the ASME Code, e.g., Section VIII of the ASME Code for pressure vessels and ANSI/ASME B31.1 for piping. To overcome the problem of potential failures that could result in significant site boundary doses, radwaste systems are required to use multiple, instead of single, gas-decay tanks. The same approach should be used for classification of equipment in processing systems that handle radioactive materials. They should be required to apply (a) coventional codes and standards of the level applied to radwaste systems; and (b) design care to ensure that offsite doses are not a significant risk. The system-design approach to the problem of offsite doses should yield better results than the application of more stringent classification.

12. Item (e)(1)(vi) requires ASME Class 3 for ventilation systems that perform safety functions. We assume that the reference to ventilation systems is directed to the ductwork for such systems as no construction standards exist for blowers, only performance codes issued by The Air Movement and Control Association. The industry builds ductwork to standards issued by The Sheet Metal & Air Conditioning Contractors National Association of Merrifield, VA not to the ASME Code.

13. In 3., Footnote 3 is referenced as being removed and reserved, but it appears in (c)(1).