

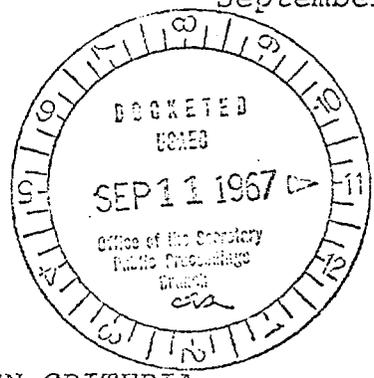
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PROPOSED RULE
PROPOSED RULE FR-50
General Design Criteria

WISCONSIN ELECTRIC POWER COMPANY

231 WEST MICHIGAN STREET
MILWAUKEE, WISCONSIN 53201

September 8, 1967



Secretary
U.S. Atomic Energy Commission
Washington, D.C. 20545

Dear Sir:

AEC "GENERAL DESIGN CRITERIA
FOR NUCLEAR POWER PLANT CONSTRUCTION PERMITS"
FEDERAL REGISTER, JULY 11, 1967

This is in response to the request for comments on the proposed new AEC Design Criteria published in the Federal Register on July 11, 1967.

In general, we find the 70 new Criteria provide an improvement in definition and clarity, but we disagree that the Design Criteria can, at this time, take adequate account of nuclear plant operating experience.

Further, we believe that the Design Criteria should not be incorporated into the Commission Regulations, which have the status of law. Such incorporation would make it more difficult to accommodate desirable or necessary modifications in the Criteria to reflect later developments and operating experience than if the Criteria were to remain advisory.

Our specific comments are as follows:

Criterion 1

The requirement of having the applicant show the sufficiency of codes and standards is an undue burden, improperly placed. The development of codes and standards is a rigorous and detailed process involving, in all cases of our knowledge, the most competent and knowledgeable experts and interests in the respective fields. The

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applicant can hardly duplicate the talents of the various code agencies. If the AEC has questions concerning the adequacy of the many existing codes and standards, we believe these matters should be resolved with the Code Committee having jurisdiction. We believe a licensing procedure should not be the means for resolving such questions, nor should an individual applicant be required to demonstrate the adequacy of a code or standard already approved by the industrial, insurance and, in most cases, statutory authorities.

Criterion 2

Clarification appears necessary to indicate that only a credible combination of natural disasters should be considered in plant accident design. For example, a simultaneous tornado, earthquake, flood, rupture accident and loss of outside power is incredible and, we believe, is not the intent of this Criterion.

Criterion 4

Clarification is required of the meaning of the word "shared." This is particularly significant when it is used with respect to multiple unit plants. A multiple unit plant can have "common", "duplicate" or "multiple" uses or services for specific items of equipment, and all the uses and services can broadly be referred to as "shared." A "common" facility between multiple units, such as a spent fuel pit, seems obviously to be a "shared" facility and does not seem capable of misinterpretation. A "multiple" service appears more complicated and can refer to system designed for a specific duty at one time which can be utilized for a totally different and unrelated service at another time, such as a system used in a refueling cavity that can also be used with the plant at power. The Criterion should leave no doubt as to its meaning.

Criterion 5

The requirement that records should be kept for "essential components of the plant" is too broad and requires restrictive definition. We agree that it is necessary to maintain records on critical components where later analysis is limited by activation or inaccessibility. The reactor vessel and its internals, we believe, would clearly fall in this category. Beyond the reactor vessel

and its adjacent inaccessible constructions, we believe the necessity for records diminishes. Where free access and complete analysis after assumed failure is possible, we believe the analysis will provide all the information required and the original records are generally of little, if any, value. At most, the obtaining and maintaining of comprehensive records should be required within the primary pressure boundary equipment only.

Criterion 8

The word "prompt" or "fast" should be added to describe "overall power coefficient." The Commission is familiar with numerous reactors that are or have been operating successfully in this country and abroad with overall positive power coefficients. The effect of this Criterion on present and future reactor development could be seriously restrictive.

Criterion 9

The word "uncontrolled" should be added after the word "significant(ly)," since many reactors are deliberately designed with leakoffs for process and other equipment reasons.

Criterion 11

We strongly oppose the implication that an alternate control station should be provided for nuclear plant operations. We also believe this Criterion should be revised to delete the requirement to meet 10 CFR 20 in accident conditions and to require consideration for control room integrity and occupancy under credible accident or fire conditions. With appropriate design criteria and application of modern nuclear plant equipment arrangement and materials, a control room fire in an operating plant that would preclude control room occupancy for an indefinite period is incredible. Fire fighting equipment, gas masks and other protective apparatus together with emergency procedures can be adopted, and perhaps should be a requisite, so that control room occupancy is maintained under all conditions.

The control room is the best surveillance and manipulating center from which to effect and maintain safe shutdown with the complement of licensed supervisors and operators available. Since the control room will, by

procedures, be the central marshalling point for personnel functioning with respect to all accidents, its occupancy, together with the occupancy of other coupled and similarly sensitive areas, should be assured by design and by security procedures so that no credible fire problem nor other credible cause exists to preclude occupancy of this area as needed.

An alternate control station or stations would dilute shutdown efforts, provide the possibility of uncoordinated and even opposing actions and would jeopardize the prompt and coordinated effort needed to control the fire or other cause endangering control room integrity.

Criterion 13

Clarification is required since "monitoring" of the concentration of soluble reactivity control poisons is not possible by presently known metering, and periodic sample and test procedures must be employed. Therefore, monitoring of "all conditions" is not possible, nor is it necessary, in our opinion, to assure safety. The words "reasonably be anticipated" should also be clarified to show that accident conditions are not included.

Criterion 16

"Monitoring the reactor coolant pressure boundary" implies that devices interlacing the pressure boundary will be required. This is impractical and unnecessary. Leakage detection is better and more reasonably accomplished by radioactivity monitors, humidity indicators, or drain monitors applied to the surrounding envelope for containment of the pressure boundary system.

Criterion 20

In several of the Criteria, the endorsement of "different principles" for protective channels or equipment or systems is evident. "Different principles" should not be employed where an inferior channel or system results. In many cases "different principles" can detract from safety. For instance, there is presently only one best "principle" for monitoring pressurizer water level; and the use of gage glass and television monitor application to fulfill the "different principle" Criterion would actually result in a less secure primary pressure system.

Criterion 25

The words "active components of" should be added between "testing" and "protection systems."

Criterion 28

The word "from" following the word "subcritical" should be changed to "at." "Acceptable fuel damage limits" appears in this case to refer to protection of the health and safety of the public and should be changed to reflect this.

Criterion 29

The same comments on "acceptable fuel damage limits" as on Criterion 28 above, are applicable to this Criterion.

Criterion 35

It appears that an allowable stress level at any temperature has been omitted. Without this stress level, below which brittle fracture does not occur, reactor heat-up becomes impossible. We believe the allowable stress level should be about 5,000 psi.

Criterion 39

We are opposed to the inclusion of the off-site power system in this Criterion. The Design Criteria has assumed that the off-site power system can be interrupted and therefore has required emergency, on-site capability to provide power for the engineered safeguards systems. The on-site power capability is specified to be of adequate capacity, independent, redundant and testable to serve the engineered safeguards on loss of the off-site power supply, whether that off-site power interruption is caused by failure of a single active component or of a series of components.

Criterion 44

The same comment as on Criterion 4 is applicable to this Criterion. Item (b) of this Criterion appears to make the use of duplicate, multiple, common or shared equipment impermissible, even though such uses might improve safety. Interpreted literally, a common or "shared" injection line penetration into a main coolant loop could conceivably "initiate a loss-of-coolant" accident and therefore its use would apparently not be allowed, although this is, we believe, not intended.

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Criterion 45

Inspection of "water injection nozzles" in many cases is impossible on a reasonably complete and non-destructive basis. Further, the failure of a safety injection penetration or nozzle is assumed in accident analysis; hence inspection could at most be quite limited.

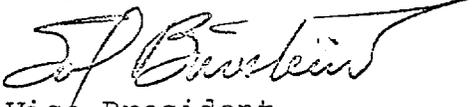
Criterion 56

The words "at any time" should be replaced with "periodically," since, in many cases, testing "at any time" is virtually impossible. Experience with such items as expansion bellows and proven penetration seal designs suggests that such a stringent requirement is not necessary.

Criterion 69

The word "credible" should be added after "if" and before "accidents."

Very truly yours,


Vice President

Sol Burstein

AEC PUBLISHES GENERAL DESIGN CRITERIA
FOR NUCLEAR POWER PLANT CONSTRUCTION PERMITS

The AEC is publishing for public comment a revised set of proposed General Design Criteria which have been developed to assist in the preparation of applications for nuclear power plant construction permits.

In November 1965, the AEC issued an announcement requesting comments on General Design Criteria developed by its regulatory staff. These criteria were statements of design principles and objectives which have evolved over the years in licensing nuclear power plants by the AEC.

It was recognized at the time the criteria were first issued for comment that further efforts were needed to develop them more fully. The revision being published today reflects extensive public comments received from twenty groups or individuals, suggestions made at meetings with the Atomic Industrial Forum, and review within the AEC.

The regulatory staff has worked closely with the Commission's Advisory Committee on Reactor Safeguards on the development of the criteria and the revision of the proposed criteria reflects ACRS review and comment.

The General Design Criteria reflect the predominating experience to date with water reactors, but they are considered to be generally applicable to all power reactors. The proposed criteria are intended to be used as guidance to an applicant in establishing the principal design criteria for a nuclear power plant. The framework within which the

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criteria are presented provides sufficient flexibility to permit applicants to establish design requirements using alternate and/or additional criteria. In particular, additional criteria will be needed for unusual sites and environmental conditions and for new or advanced types of reactors. In each case an applicant will be required to identify its principal design criteria and provide assurance that they encompass all those facility design features required in the interest of public health and safety.

The criteria are designated as "General Design Criteria for Nuclear Power Plant Construction Permits" to emphasize the key role they assume at this stage of the licensing process. The criteria have been categorized as Category A or Category B. Experience has shown that more definitive information has been needed at the construction permit stage for certain of the criteria; these have been designated as Category A.

Development of these criteria is part of a longer-range Commission program to develop criteria, standards, and codes for nuclear reactor plants. This includes codes and standards that industry is developing with AEC participation. The ultimate goal is the evolution of industry codes and standards based on accumulated knowledge and experience as has occurred in various fields of engineering and construction.

The provisions of the proposed amendment relating to General Design Criteria are expected to be useful as interim guidance until such time as the Commission takes further action on them.

The proposed criteria, which would become Appendix A to Part 50 of the AEC's regulations, will be published in the Federal Register on _____ . Interested persons may submit written comments or suggestions to the Secretary, U. S. Atomic Energy Commission, Washington, D. C. 20545, within 60 days. A copy of the proposed "General Design Criteria for Nuclear Power Plant Construction Permits" is attached.