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

MAR 07 1989

MEMORANDUM FOR: Chairman Zech
Commissioner Roberts
Commissioner Carr
Commissioner Rogers
Commissioner Curtiss

FROM: Victor Stello, Jr., Executive Director for Operations

SUBJECT: ACRS LETTER ON 10 CFR PART 52

This memorandum responds to SRM 890222. The purpose of this memorandum is to address the three issues that were set forth in the ACRS letter on 10 CFR 52 dated February 15, 1989 (Enclosure 1). The first issue deals with the criteria in 10 CFR 52.47(b)(2) that are used to determine if an advanced design is ready to be certified. The ACRS is concerned that a prospective applicant could conclude from these criteria that they could demonstrate the acceptability of their advanced design solely on the basis of analysis. While that is theoretically possible, it is very unlikely that an advanced design could be certified solely on the basis of analysis. Therefore, we propose to clarify this point with the following modification to the Statement of Considerations (p. 16):

> Therefore the rule requires that the maturity of the passive light-water designs be demonstrated through either analysis, appropriate test programs, experience, or a combination thereof, but most likely not through prototype testing. See § 52.47(b)(2). While analyses may be relied upon by the staff to demonstrate the acceptability of a particular safety feature which evolved from previous experience or to justify the acceptability of a scale model test, it is very unlikely that an advanced design would be certified solely on the basis of analyses. Prototype testing is likely to be required for certification of advanced non-light-water designs because these revolutionary designs use innovative means to accomplish their safety functions, such as passive decay heat removal and reactivity control, which have not been licensed and operated in the United States.

The second issue in the ACRS letter related to the provision in 10 CFR 52.47(b)(2) that would allow certification of an advanced design with a reduced scope provided that testing of the prototype demonstrated that the non-certified portion of the plant cannot significantly affect the safe operation of the

CONTACT: Jerry N. Wilson
RES, X23729

plant. The ACRS states that "unless the design of the non-certified portion of the plant is well defined and considered, the potential adverse effects on safe operation of the plant from the non-certified portion may not be identified by testing of the prototype." Therefore, they recommend against providing the opportunity for justifying a reduced scope of design. We disagree with this view. The final rule requires in 52.47(a)(1) that a representative conceptual design of non-certified portions of the plant be provided so that interface requirements with the certified portion of the design can be sufficiently defined that the final safety analysis and probabilistic risk assessment can be completed. Based on these requirements, coupled with the prototype testing requirements in 52.47(b)(2), we believe the non-certified portions of plants licensed under the rule will be sufficiently well defined to assure that potential adverse effects will be identified. We also believe that some future advanced designs may be able to demonstrate that the balance-of-plant is decoupled from the safe operation of the plant (due to their long response time and passive safety features) and should, therefore, be allowed the additional flexibility currently provided in Part 52. Otherwise, the rule may inhibit innovation in advanced designs.

The final issue raised by ACRS related to the level of detail provided in an application for design certification. The ACRS comments suggested that 10 CFR 52.47(a)(2) should be modified to require submission of procurement specifications and construction and installation specifications. The ACRS believes that this level of information is available for a mature design and that the staff's review of this material can be performed most efficiently and with greater understanding if this large body of information is available in final form. Industry representatives have also stated, in the AIF report entitled, "Standardization of Nuclear Power Plants in the U.S." (Appendix B), dated November 1986, that this level of information should be available for NRC review.

The Standardization Policy Statement called for detailed information consisting of design and procurement specifications. However, in our proposed final rule (SECY-89-036), we only required submission of performance requirements and design information sufficiently detailed to permit the preparation of acceptance and inspection requirements by the NRC, and preparation of procurement and construction specifications by an applicant for a construction permit or a combined license. We made this change because we were concerned that by requiring the submittal of procurement specifications, we would create an unnecessary burden on the staff and prospective applicants. The ACRS responded, in their February meeting, that in order to achieve standard plants and to realize the benefits of standardization, the applicant needs to provide procurement specifications and construction and installation specifications. We agree that a mature design that is ready for certification should contain procurement specifications and construction and installation specifications. However, we believe that this level of information should be available for our audit but not routinely submitted as part of the application for design certification. Therefore, we propose the following revision:

§ 52.47 (a)(2) The application must contain a level of design information sufficient to enable the Commission to judge the applicant's proposed means of assuring that construction conforms to the design and to reach a final conclusion on all safety questions associated with the design before the certification is granted. The information submitted for a design certification must include performance requirements and design information sufficiently detailed to permit the preparation of acceptance and inspection requirements by the NRC, and procurement specifications and construction and installation specifications by an applicant. Before the design is approved, it must be finalized to the point that procurement specifications and construction and installation specifications are completed and available for audit.

We also propose to support this rule change with the following modification to the Statement of Considerations (p. 49):

2. Design Certifications

In the proposed rule, § 52.45 contained material on scope of design and testing of prototypes. This material now appears, in modified form, in § 52.47. The phrase "essentially complete nuclear power plant," which is used in § 52.45, is defined as a design which includes all structures, systems, and components except for site-specific elements such as the service water intake structure and the ultimate heat sink. In addition, it is a design that has been finalized to the point that procurement specifications and construction and installation specifications are completed and available for audit. Procurement specifications will identify the equipment and material performance requirements. Procurement specifications will include the necessary codes, standards, and other acceptance and performance criteria to which the equipment and materials will be fabricated and tested. Construction and installation specifications will identify the criteria and methods by which systems, structures and components are erected or installed in the facility. These specifications will include acceptance, performance, inspection, and testing requirements and criteria.

The third proposal resolves the issue of what level of design information needs to be routinely submitted in an application for design certification. The specific design information to be included in the rule certifying a particular design will be determined during the review of that design. Those procurement specifications and construction and installation specifications, which need to be included in the rule in order to ensure that the benefits of standardization are realized, will be included by reference in the rule certifying that design.

In order to control changes to the detailed design information that supports the certified design, such as the procument specifications and construction and installation specifications, we propose the following revisions:

§ 52.63 (b)(2) The applicant or licensee who references a standard design certification may make changes to the design of the nuclear power facility, without prior Commission approval, unless the proposed change involves a change in the certified portion of the design. The licensee shall maintain records of all changes to the facility and these records shall be maintained and available for audit until the date of termination of the license.

§52.63(c) An applicant for a construction permit, operating license, or combined license whose application references a standard design certification must have available for audit procurement specifications and construction and installation specifications which are complete and consistent with the certified design. These specifications may be acquired by appropriate arrangements with the design certification applicant.

As part of this revision, we will also make conforming changes to §52.57(a) and § 52.79 (b) and the following addition to the Statement of Considerations (P.49):

Theoretically, it would be possible for an applicant whose application referenced a certified design to select designer(s) other than the designer(s) which had achieved certification of the standard design. Section 52.63(c) makes clear that such an applicant would be required to have complete procurement specifications and construction and installation specifications that are consistent with the certified design and available for audit by the NRC staff. It is expected, as a practical matter, that applicants referencing a certified design would select the designer(s) which had achieved certification of the standard design.

The Office of the General Counsel has no legal objection to the proposals in this memorandum.

Victor Stello, Jr.
Executive Director
for Operations

Enclosure: Ltr 2/15/89 ACRS to Zech

cc: OGC
SECY
ACRS

MAR 07 1989

Victor Stello, Jr.
Executive Director
for Operations

Enclosure: Ltr 2/15/89 ACRS to Zech

cc: OGC
SECY
ACRS

DISTRIBUTION: [COM0626]

ARGIB Subj	TKing
circ/chron	JWilson
PDR	TMurley
VStello	LRubenstein
EBeckjord	CMiller
TSpeis	SCrockett
BMorris	HAlderman
ZRosztoczy	

*See attached sheet for previous concurrences.

OFFC	ARGIB/DRA*	ARGIB/DRA*	DRA:DepDir*	DRA:Dir.*	RES:DepDir*	RES:Dir.*	NRR*	EDO
NAME	JWILSON	sy:ng:TKING	ZROSZTOCZY	BMORRIS	TSPEIS	EBECKJORD	TMURLEY	VSTELLO
DATE	/ /89	/ /89	/ /89	/ /89	/ /89	/ /89	/ /89	3/7 /89

OFFICIAL RECORD COPY

Enclosure 1

UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, D. C. 20555

February 15, 1989

The Honorable Lando W. Zech, Jr.
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Chairman Zech:

SUBJECT: FINAL RULE ON STANDARDIZATION AND LICENSING REFORM, 10 CFR PART 52, "EARLY SITE PERMITS; STANDARD DESIGN CERTIFICATIONS; AND COMBINED LICENSES FOR NUCLEAR POWER PLANTS"

During the 346th meeting of the Advisory Committee on Reactor Safeguards, February 9-11, 1989, we reviewed the draft final rule on Standardization and Licensing Reform, transmitted January 26, 1989, which would provide for early site permits, standard design certifications, and combined licenses for nuclear power plants. We had previously reviewed an incomplete draft final rule package on this subject during our 345th meeting on January 12-14, 1989. We also had the benefit of briefings by the NRC staff on the draft final rule during the 345th meeting and during a meeting of our Subcommittee on Improved LWRs on January 10, 1989, and on the draft final rule package during our 346th meeting. The ACRS has provided comments on this subject in reports of August 12, 1986, October 15, 1986, June 7, 1988, and January 19, 1989.

We offer the following comments and recommendations based on our review of the draft final rule and the Statement of Considerations.

Section 52.47 b(2)(i) of the draft final rule establishes the requirements for certification of a standard design which differs significantly from an "evolutionary" light water reactor design, or which utilizes simplified, inherent, passive, or other innovative means to accomplish its safety function. We have several concerns with the provisions of this section as written. We interpret this section to provide for the following:

(1) Certification of a design may be granted without testing if the scope of the design is complete and the analysis of the performance and interdependence of the safety features is found acceptable. We recommend against providing for certification of a design solely on the basis of analysis. The staff indicates that our concerns can be handled by proper modification of the Statement of Considerations.

(2) Certification may be granted for a design whose scope is less than complete if the testing of a prototype demonstrates that the noncertified portion of the plant cannot significantly affect safe

operation of the plant. Our problem with this provision is that unless the design of the noncertified portion of the plant is well defined and considered, the potential adverse effects on safe operation of the plant from the noncertified portion may not be identified by testing of the prototype. We recommend against providing certifications for less than complete scope for these designs.

Our letter of January 19, 1989 on the incomplete final rule package included a recommendation for requiring the submittal of procurement specifications and construction and installation specifications as an appropriate indication of the expected scope and level of information required for effective review of an "essentially complete" design. Requirements for design and procurement type specifications did appear in the Standardization Policy Statement of September 15, 1987, but were not included in the draft final rule. We believe they should be.

It is noteworthy that the requirements which we recommend, appear in the Electric Power Research Institute report, "Advanced Light Water Reactor Utility Requirements Document" (June 1986) and in the Atomic Industrial Forum (AIF) report,"Standardization of Nuclear Power Plants in the U.S." (December 16, 1986). The AIF document also states that, "the degree of design detail necessary for providing an 'essentially complete' design will generally be that detail which is suitable for obtaining specific equipment or construction bids."

Sincerely,

Forrest J. Remick
Chairman

References:

1. Draft Final Rule (undated) for The Commissioners from William C. Parler, General Counsel, Subject: Rulemaking on Early Site Permits, Design Certifications, and Combined Licenses (received January 26, 1989)
2. Incomplete draft final rule package (undated) 10 CFR Part 52, Early Site Permits; Standard Design Certification; and Combined Licenses for Nuclear Power Reactors (received January 3, 1987)