

February 11, 1988

Docket No. 50-601

Mr. W. J. Johnson
Nuclear Safety Department
Westinghouse Electric Corporation
Water Reactor Division
Box 355
Pittsburgh, Pennsylvania 15230

Dear Mr. Johnson:

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION ON RESAR SP/90

As a result of our review of Section 9.5.1 of the RESAR SP/90 application, entitled Fire Protection, we require additional information in order to complete our review of the fire protection aspects of the design. Enclosed are review questions Q 280.1-280.13.

Please respond to this request within 60 days of the date of this letter. If you have any questions regarding this matter, call me at (301) 492-1120.

Sincerely,

original signed by
Thomas J. Kenyon, Project Manager
Standardization and Non-Power
Reactor Project Directorate
Division of Reactor Projects - III, IV,
V and Special Projects
Office of Nuclear Reactor Regulation

Enclosure:
As stated

cc: See next page

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

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Sincerely,

A handwritten signature in cursive script, appearing to read "T. J. Kenyon".

Thomas J. Kenyon, Project Manager
Standardization and Non-Power
Reactor Project Directorate
Division of Reactor Projects - III, IV,
V and Special Projects
Office of Nuclear Reactor Regulation

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As stated

cc: See next page

Docket No. STN 50-601
RESAR-SP/90

cc:

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Pittsburgh, Pennsylvania 15230

REQUEST FOR ADDITIONAL INFORMATION
SECTION 9.5.1 FIRE PROTECTION
WESTINGHOUSE ADVANCED PRESSURIZED WATER REACTOR DESIGN
RESAR - SP/90 OCTOBER 1986
TASK COMPLETION NO. 141213

280.1 Section 9.5.1.1.d, pages 9.5-3, -4

The staff position reflecting fire protection for redundant safe shutdown trains in advanced reactor designs is that such redundant trains will be completely separated by 3-hour fire rated barriers, or completely separated by a 1-hour fire rated barrier with fire detection and automatic fire suppression throughout the area containing 1-hour fire rated barrier separation. This protection is acceptable for redundant safe shutdown equipment located inside or outside primary containment. The staff does not recognize as acceptable for use in Advanced Reactor Design any methods which rely upon:

- Spatial separation,
- Use only of automatic detection and suppression, or
- Separation by radiant energy shields.

This is consistent with the guidance given in Section C.5 - General Plant Guidelines, Subsection a. Building Design, of Standard Review Plan, NUREG-0800, Branch Technical Position CMEB 9.5-1.

Section 9.5.1.1.d of the SSAR is inconsistent with this position. Provide clarification showing how RESAR SP/90 meets this position or provide justification for not doing so.

280.2. Section 9.5.1.1.e, page 9.5-4

The staff understands that one of the major goals of the APWR is to streamline the review process by eliminating requests for deviation and the subsequent need for staff review of such requests. The last sentence on page 9.5-4 reads, "The design basis fire approach will also be utilized as appropriate to determine if specific deviations [emphasis added] from the fire protection features approach will provide an equivalent level of fire safety." This sentence is not consistent with the above stated goal. Please clarify this issue. (NOTE: It is the staff position that PRA cannot provide the basis for exemptions to requirements).

280.3. Section 9.5.1.3.a, page 9.5-7

The same concerns raised in Question 280.1 above apply here respecting spatial separation and use of one-hour fire rated barriers and fire detection and automatic fire suppression. In addition, we are confused by the wording in the second paragraph concerning the term "fire barriers." The commonly accepted definition of a fire area is a volume in a building that is bounded by barriers of some known fire resistance rating given in terms of hours. Please clarify the last sentence which reads, in part, "Similarly, fire barriers will be provided within a fire area to separate...."

280.4. Section 9.5.1.3, pages 9.5-7,-8

The concerns raised in question 280.1 above reflecting spatial separation, and the concerns raised in question 280.3 above reflecting use of fire barriers within a fire area apply in Subsection a. Separation of Safe Shutdown Equipment. Please clarify this section.

280.5. Section 9.5.1.4.1, page 9.5-8

Please explain how the flame and heat resistant characteristics of the passive fire protection features will be determined, and to what they will be compared.

280.6. Section 9.5.1.4.1.a, page 9.5-9

Should the reference in the second line be to Subsection 9.5.1.3(a) rather than to 9.5.1.4(a) as shown?

280.7. Section 9.5.1.4.1.b and c, page 9.5-11

- See Question 280.1 above for comments on radiant energy shields.
- We have two questions concerning the last sentence in 9.5.1.4.1.b which reads, "Each fire barrier component will be tested or analyzed to assure adequate fire resistance ratings."
 - a. We assume that "component" refers to such things as doors, dampers, penetration seals and cable wraps (we have already stated that radiant energy shields are not acceptable), and that such "components" will be tested in configurations like those to be used in this advanced reactor design. The staff finds this concept acceptable. If "component" refers to individual structural portions of total barriers (i.e. columns and beams or portions of concrete slabs used in the construction of fire wall or ceiling-floor assemblies), then this concept is not acceptable. Clarify what is meant by "component".
 - b. The staff generally does not accept analysis in lieu of full scale testing for determining the adequacy of barrier fire resistance rating. How will such analysis be accomplished to assure that the results will be acceptable in place of actual full scale testing?

This position is consistent with Section C.5.a of BTP CMEB 9.5-1 of the Standard Review Plan, NUREG-0800.

280.8. Section 9.5.1.4.1.d, pages 9.5-11,-12

- a) The second paragraph ("Where door assemblies . . . devices, and hardware.") appears to be an error. Should this be deleted? If not, clarify your position.
- b) The first paragraph at the top of page 9.5-12 is not clear. Specifically:

- What are the qualifications and responsibilities of the person who will review and evaluate each configuration?
- What code or standard does "analyzed" refer to?
- Will the criteria used in these analyses be that in ASTM E-152 and NFPA 80 or will other criteria be used?

280.9. Section 9.5.1.4.2.b, pages 9.5-13, -14

Will each fire pump be equipped for automatic and remote manual start, and manual stop only at the fire pump location (no remote stop capability), or automatic stop capability that conforms to the requirements of National Fire Protection Association Standard No. 20, "Standard for the Installation of Centrifugal Fire Pumps?" Also, NFPA 20 is not referenced along with other NFPA standards at the end of this section. Is this an oversight, or does Westinghouse not intend to follow this standard with respect to their fire pump installations?

280.10. Section 9.5.1.4.3.c.2, page 9.5-17

Why has self-contained breathing apparatus (SCBA) for control room personnel who may have to leave the control room during a fire not been provided? (See Section C.3.c of BTP CMEB 9.5-1 of Standard Review Plan, NUREG-0800.)

280.11. Section 9.5.1.6, page 9.5-20

Why are the words "suggested" rather than "required," and "recommendations" rather than "requirements" used when referring to National Fire Protection Association Standards 20 and 24?

280.12. Section 9.5.1.7.a.2, page 9.5-22

Should the second sentence read, "Upon completion of a task, and at the end of each work shift . . . ?" This will assure clean-up of a work area immediately when a task is completed rather than waiting until the end of a shift. Also, if a task extends into other shifts, the work area will be cleaned up at least at the end of each shift. Please clarify.

280.13. Section 9.5.1.7.d.4, page 9.5-29

The third paragraph states that randomly selected unannounced drills will be critiqued by independent individuals. Who are these individuals and what are their qualifications?