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U.S. NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20545

Mr. Garry G. Young
Nuclear Engineer
U.S. Nuclear Regulatory Commission
Advisory Committee on Reactor Safeguards
Washington, D.C. 20555

Subject: Proposed Rule, "Fire Protection Program for Nuclear Power Plants
Operating Prior to January 1, 1979."

Dear Garry:

As per your letter of June 10, 1980, I have reviewed the Proposed NRC Rule on fire protection (see subject) and wish to offer the following general and specific comments.

In general, the document appears to address areas of concern related to fire fighting. There exist, however, an apparent lack of systematic approach, multiple restatements of similar (sometimes contradicting) requirements, lack of definitions and other minor shortcomings as listed in the enclosed detailed comments.

There is no clear statement as to the number of simultaneous fires the program must be capable to cope with, although in some sections multiple fires appear to be addressed. Similarly it is not consistently addressing the hazards due to the fire protection activities.

I believe that this document can be improved by extensive editing and rewriting.

Very truly yours,

Zenons Zudans
Senior Vice President, Engineering

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PROPOSED RULE, "FIRE PROTECTION PROGRAM FOR NUCLEAR POWER PLANTS
OPERATING PRIOR TO JANUARY 1, 1979

Detailed Comments

Page 16 - "alternate" needs to be defined: "alternate" to what?
"dedicated" needs to be defined.

Page 17 - "This Appendix does not rescind any requirements set forth in any Safety Evaluation Report for any nuclear power facility" - this statement needs qualifiers as to how to handle the cases where the requirements by this Appendix conflict with those of the SERs.

Page 18 - Line 5 from top would be better if it read: "prevent the safely shutdown and maintenance in shutdown state of the plant."

Line 7 from top word "effort" should be replaced with "system".

Three-part defense-in-depth concept is not defined. Following text allows this concept to be inferred as being

1. Fire Protection
2. Fire Detection, Suppression and Containment
3. Alternate shutdown capability

Rewording of the text should make it clearer.

Paragraph 1.a. conflicts with the fact that this set of rules is for operating plants, hence "plant arrangement" cannot be altered.

In Paragraph 1.b. reference should be made to the hazards due to fire protection activities.

Page 18 - Under Item 2.1, for each standpipe and hose station, areas to be reached from these should be defined and barrier crossings to reach such sites should be examined with respect to possible isolation requirements.

Page 19 - Under Item 2.3, should this requirement be limited to "redundant" safe shutdown systems only?

Detailed Comments (Cont.)

Page 19 - Items 2.f and 2.g should be merged. Note that fire barrier rating should be derived by analysis of heat transfer from heat source to the equipment and the equipment capability to operate as a function of its temperature. Justification for three (3) hours should be given and if any such time is specified, it should represent the minimum required. Instead of allowing "lesser" rating, the fire hazards analysis should be required and the largest of the number of specified here (~3 hrs) and as found by the analysis should be the design basis for the fire barrier.

Items 2.h and 2.i do require definitions for "testing" and "operable."

Item 3., "Alternate" to what? Needs to be defined.

Page 20 - Item C requires that a manual fire fighting capability be provided in all areas.... This could be in contradiction to 2.c unless the text defines "manually actuated fixed fire suppression systems" (Page 18, 2.c) and "manual fire fighting capability" as two different requirements.

Item D is in conflict with Item 2.c (Page 18) in case fire brigade access is restricted.

Item E, first sentence allows choice of one of two alternates: 1) ability to safely shutdown the reactor, b) ability to minimize release. I suggest the "or the" in this sentence to be replaced with "and the". Also the basis for 3 hours should be given and not lesser rating than this minimum allowed (see also comments to Item 2.g).

Page 21 - Item A, does not specify the design criteria for fire protection system. Two (2) hour limit for water supply is not consistent with three (3) hour fire barrier rating. Does this mean that fire fighting is given up after 2 hrs, fire barriers break down in 3 hours leaving one hour for fire fighters to "get out"? Water supply time limit should be based on fire hazards analysis and should satisfy the longest need indicated by such analysis.

Sentence given on lines 13 to 15 is not clear.

This item (Item A, Page 21) could be clarified as to the permissible ways of providing two (2) alternate fire protection water system. Top portion of the text appears to require two (2) dedicated fresh water supplies and two (2) redundant suction, later part of the text permits "other water systems" to be used as fire water supply. Is this in lieu of one of the dedicated fire protection water systems?

Item B. Post indicator valve needs to be defined.

Detailed Comments (Cont.)

Page 22 - Item D. This item appears to imply that multiple fire hazards have to be dealt with simultaneously. There is no explicit requirement as to how many fire sites have to be handled simultaneously anywhere else. This item requires standpipe and hose stations to be placed outside the drywell (for BWR) and adequate hose length provided to reach any location inside the drywell with an effective hose stream. Wishful thinking?

Item E - what is the shelf life of a hose (in the power plant environment)? Should there be a requirement to replace hoses at some time intervals.

Item G appears to limit fire protection to redundant systems only.

Page 23 - Under Item 1b to 1g, time required for site access should be included. Item 1h, instead of "independent" use "not affected by."

Page 24 - Item H, refers to all areas, which contradicts Item A2.c - some areas are not accessible.

Page 26 - Item I, 1.a.(1) appears to imply that each fire fighter will have a specific discrete responsibility. If such is the case it will be difficult to assemble a crew which covers the range of skills required for fire fighting. I suggest that the requirements be such that each member of the crew is trained in all aspects of fire fighting requirements and that specific assignments within any given crew be rotated among the brigade members.

Page 27 - Item (4) should include tests for site access time required.

Item (5) replace "electric fires" with "electric equipment fires."

Item (7) define "proper."

Page 28 - There is no difference between Item (9) and Item (8) [Page 27].

Page 28 & 29 - Item 2. Where and when shall the practice sessions be conducted is unclear. How to do the practice sessions to avoid making brigade unavailable during the session. Similarly, drills under Item 3 may conflict with real duties should the need arise.

Last line, Page 29, define "back shift."

Page 30 - Item e.(2) the fire brigade members in general should be trained to assume various roles in the brigade, for drill purposes specific roles can be assigned. How would fire brigade members be able to control the "ventilation equipment?"

Detailed Comments (Cont.)

Page 31 - Item e.(3) defines one of the minimum requirements for fire drills, Item 3.a (Page 29) requires fire drills to be performed "in the plant," one might interpret this to mean that fire is set in plant for drill purposes!

Page 31 - Item 4, records for fire brigade member training should be kept for four (4) last consecutive years instead of "at least 4 years."

Page 33 - Item 4 the "staff member responsible" should be the "brigade leader."

Item 5, permits for work using open flame should be approved by fire brigade leader.

Item 6, continuous removal would be preferable.

Page 37 - Item Ll., second sentence, replace "independent" with "not affected by."

Page 38 - Item 2b. It is not sufficient to maintain the coolant level in pressurizer for PWRs.

Words "equipment" in line 19 (from top) and line 22 (from top) do not apply to the same piece of equipment. Rewrite to eliminate possibility of misunderstanding.

Page 39 - Item M, see previous comment on 3 hour fire rating of barriers.

Page 40 - Second line from top quotes "plaster covering" as adequate for fire barrier. This is a qualitative statement only since "plaster coverings" exist having a wide range of fire barrier capability. If there is a need to give a sample at all, more quantitative information is needed.

Page 43 - Line 8 from top, use "leader" instead of "commander" for consistency with the rest of the text.

Page 44 - Line f, what does "dropping" mean? Should it be "failure?"