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DOCKET NUMBER  
PROPOSED RULE **PR-50** (7)  
**(45 FR 36082)**

June 25, 1980



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

Dear Sir:

SUBJECT: Comments on the Fire Protection Proposed Rule (45FR36082-5/29/80)

Yankee Atomic Electric Company appreciates the opportunity to comment on the subject proposed rule. Yankee Atomic owns and operates a nuclear power generating plant in Rowe, Massachusetts. The Nuclear Services Division also provides engineering services for other nuclear power plants in the northeast including Vermont Yankee, Maine Yankee and Seabrook 1 and 2.

We have a number of major concerns dealing with the proposed rule, including its applicability, its schedule, and its overall affect upon fire protection at nuclear power plants. These follow in the body of this letter. In addition, we have attached our detailed comments (Attachment A) on the proposed rule.

We are very concerned about the paragraph in the supplementary information section of the Federal Register which reads as follows:

"There are, however, a few instances where the staff has accepted certain fire protection alternatives that would not satisfy some of the requirements of this proposed rule. The minimum requirements contained in this rule were developed over a 3 year period and, in each of these instances, the staff accepted a proposed alternative before these minimum requirements were established. All licensees will be expected to meet the requirements of this rule, in its effective form, including whatever changes result from public comments."

We suggest that the paragraph discussed above be removed and that a statement be included in the rule itself saying:

"This rule does not apply to any modifications accepted by the staff and resolved in Safety Evaluations issued prior to the effective date of this rule."

L-4-1, Pt. 50

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Acknowledged by card. 6/27/80. mdv.

There are far more than a "few instances" where alternatives were agreed to after a thorough examination of the entire fire protection program at specific plants. These "fire protection alternatives" were reached after considerable discussion with qualified competent fire protection engineers serving as consultants to the NRC fire hazard review teams. These improvements have raised the level of fire protection to a point where the staff feels continued plant operation is safe, as is evidenced in existing Fire Hazard Safety Evaluation Reports. To deny many acceptable alternatives already approved by the staff is counter-productive and unwarranted.

The schedule of implementation of the modifications required by the proposed rule is unreasonable and it is highly unlikely that it can be met by either Yankee Rowe, Vermont Yankee or Maine Yankee. A realistic appraisal of the schedule for the rules' progress through the comment period will point out the absurdity of the November 1, 1980 date.

The schedule for implementation of an alternate or dedicated shutdown system is equally unreasonable. In the cases of both Vermont Yankee and Maine Yankee, both non-SEP plants, the question of the acceptability of a proposed alternate shutdown method is currently being reviewed by the NRC staff. It is unrealistic to require implementation by April 1, 1981 when we currently have no idea whether our proposed alternative is acceptable.

In the case of Yankee Rowe the SEP shutdown criteria have not yet been established. The proposed date for establishment of these criteria by the NRC was August of 1980. The most obvious and effective method of meeting all shutdown criteria is to tie together the requirements for fire protection and SEP shutdowns in one system. In order to accomplish this, the proposed rule should refer to the SEP schedule rather than establish unrelated specific dates.

The separate comments of Commissioners Hendrie and Kennedy suggest an awareness by some members of the Commission that the implementation schedules proposed are unreasonable. We hope that the above discussion expands that awareness to the rest of the Commission members.

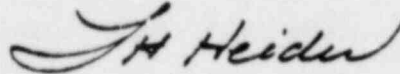
The ACRS subcommittee, in its review of the proposed rule on December 5, 1979, had problems with the overspecification of details in the proposal. NRC rules should specify criteria rather than detailed design and/or implementation procedures. In this proposed rule not only are the criteria set forth, but in many cases the means of meeting those criteria are also specified. We believe the regulations should define only the criteria or objectives, with the licensee permitted some flexibility in developing its programs to meet those objectives.

We hope that we have adequately presented to you our deep concerns regarding the proposed rule's affect on operating nuclear power plants if it is published in its current form. We believe that the benefits of such a rule at this late date, when the operating plants have either agreed to make or have actually made over 95% of their required changes, cannot possibly

outweigh the cost of imposing this proposed rule. This arbitrary method of imposing requirements, which denies all previous agreement, cannot fail to affect future regulatory/plant cooperation. We trust that the commissioners will see the wisdom of our arguments and those of the rest of the industry and either withdraw the proposed rule or substantially modify it.

Very truly yours,

YANKEE ATOMIC ELECTRIC COMPANY

A handwritten signature in cursive script, appearing to read "L. H. Heider".

L. H. Heider  
Vice President

Attachment

PART 50 - DOMESTIC LICENSING OF  
PRODUCTION AND UTILIZATION FACILITIES

1. A new section 50.48 is added to read as follows: §50.48 Fire Protection.

(a) Each operating nuclear power facility shall have a fire protection plan which meets the requirements of Criterion 3 of Appendix A to this part. This fire protection plan ~~should consist of two sections. The first section~~ should describe the overall fire protection program for the facility, identify the various positions within the licensee's organization that are responsible for the program, state the authorities that are delegated to each of these positions to implement those responsibilities, and outline the plan for fire protection, fire detection and suppression capability, and limitation of fire damage. ~~The second section~~ In addition it should describe specific features necessary ~~to for implementation the first section;~~ such as: administrative controls and personnel requirements for fire prevention and manual fire suppression activities; automatic and manually operated fire detection and suppression systems; and means to ensure capability to safely shutdown the plant in spite of fire damage to ~~safety-related~~ ~~or~~ safe shutdown structures, systems or components.

(b) For nuclear power facilities that commenced operation prior to January 1, 1979, appropriate portions of Criterion 3 of Appendix A to this part will be satisfied by meeting the

requirements contained in Appendix R to this part.-<sup>3</sup>

(c) All fire protection modifications ~~identified by the staff~~ as necessary to satisfy criterion 3 of Appendix A to this part, shall be completed on a schedule to be acceptable and approved by the staff. ~~whether contained in Appendix R to this part or in other staff fire protection guidance (except for alternate or dedicated shutdown capability) shall be completed by November 1, 1980 unless, for good cause shown, the Commission approves an extension. For alternate or dedicated shutdown capability, the following implementation schedule will apply:~~

~~(i) Plants not included in the Systematic Evaluation Program (SEP)<sup>2</sup> licensees implementing alternate shutdown capability shall complete implementation by April 1, 1981. Licensees who have previously committed to earlier implementation dates will be expected to meet the earlier dates. Licensees implementing dedicated shutdown capability shall complete implementation by December 1, 1981.~~

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3. ~~The combination of the guidance contained in Appendix A to Branch Technical Position 9-5-1, "Guidelines for Fire Protection for Nuclear Power Plants Docketed Prior to July 1, 1976," as implemented by the staff in its plant specific fire protection program reviews of operating nuclear power plants, and the requirements set forth in Appendix R to this Part define the minimum necessary conditions for demonstration of compliance with General Design Criterion 3 of Appendix A to this Part for nuclear power facilities that commenced operation prior to January 1, 1979.~~

~~licensees shall submit, by August 1, 1980, plans and schedules for meeting these implementation deadlines.~~

~~-(ii) Plants included in the SEP. Licensees implementing alternate shutdown capability shall complete implementation by December 1, 1981, licensees implementing dedicated shutdown shall complete implementation by October 1, 1982. Licensees shall submit, by November 1, 1980, plans and schedules for meeting these implementation deadlines. The Commission may revise the implementation deadlines to earlier dates following completion by the NRC staff of its review of the status of fire protection at SEP plants. The staff review is expected to be completed in August, 1980.~~

#### Basis for Change

The time frame for completing all fire protection requirements is contingent upon a complete understanding of the final requirements. The presently proposed schedule requirements cannot be implemented. In its previous reviews the licensees and the staff had reached agreement on what modifications would be required at specific plants and had also reached agreement on the implementation schedule. As the proposed rule now reads "all fire protection modifications identified by the staff as necessary to satisfy criterion 3 of Appendix A to this part, whether contained in Appendix R to this part or in other staff fire protection guidance (except for alternate or dedicated shutdown capability) shall be completed by November 1, 1980 unless ..." (emphasis added). This, in effect, is an open

ended obligation to meet by November 1, 1980, whatever the staff identifies is necessary at some undefined time in the future. This requirement is arbitrary and capricious.

In addition to an inability to meet the arbitrary established schedule, the proposed technical requirements represent an unprecedented ratchet. The ongoing technical reviews in fire protection by the staff for each plant over the past few years have resulted in major upgrades in fire protection. Safety evaluations have documented the required changes and the utility industry has in good faith made (or committed to make) plant design or administrative changes on a mutually agreed upon schedule. We believe that the agreed upon technical reviews and decisions arising from those reviews should remain in force and not be unilaterally replaced by a single detailed staff preferred design or procedural method.

In summary, we believe the final implementation schedule should be based upon the final rule requirements which in turn should not reopen issues where the staff has reviewed and accepted alternative methods of meeting a requirement. Further, the implementation schedule should be established for each plant in recognition of the importance of the required change as well as resource availability.

2. A new Appendix R to 10 CFR Part 50 is added to read as follows:

APPENDIX R - FIRE PROTECTION PROGRAM FOR NUCLEAR POWER

FACILITIES OPERATING PRIOR TO JANUARY 1, 1979

I. INTRODUCTION AND SCOPE

This Appendix sets forth ~~the minimum~~ acceptable fire protection requirements needed for nuclear power facilities to satisfy Criterion 3 of Appendix A to this part.

This Appendix applies only to licensed commercial nuclear power electric generating stations operating prior to January 1, 1979; it does not apply to production reactors, test reactors, research reactors, or other licensed or unlicensed reactors used for other than electric power production.

~~This Appendix does not rescind any requirements set forth in any Safety Evaluation Report for any nuclear power facility.~~

This Appendix does not apply to any modifications accepted by the staff and resolved in safety evaluations issued prior to the effective date of this rule.

Basis for Change

In previous reviews of fire protection issues, alternative means of meeting the objectives of currently drafted regulatory requirements were proposed by licensees and accepted by the NRC staff. These alternative means were technically justifiable, and involved solutions unique to individual plants. We believe those previously reviewed and accepted methods for meeting the current requirements should continue to be acceptable and should be excluded from review in the currently proposed regulations.



## II. GENERAL REQUIREMENTS

### A. Fire Protection Program

A fire protection program shall be established at each plant. The program shall establish the fire protection policy for the protection of structures, systems, and components ~~-important-to-safety~~ required for safe shutdown at each plant and define the procedures, equipment, and personnel required to implement the program at the plant site.

The fire protection program shall be under the direction of an individual who has been delegated authority commensurate with the responsibilities of the position. The designated individual shall be knowledgeable in ~~-both fire protection matters -and-nuclear-safety-~~

The fire protection program shall extend the concept of defense in depth to fire protection with the following objectives:

1. to prevent fires from starting;
2. to detect rapidly, control, and extinguish promptly those fires that do occur;
3. ~~-to-arrange-the-structures,-systems,-and-components-important-to-safety-so-that~~ to assure that a fire that starts in spite of the fire prevention activities and that is not promptly extinguished by the ~~-fixed-automatic-or-manual~~ fire suppression activities will not prevent the safe shutdown of the plant.

The fire protection program shall consist of an integrated effort of procedures, equipment, and personnel necessary to carry out the three-

part defense-in-depth concept for each fire area containing combustibles and containing or presenting a fire hazard to structures, systems, and components ~~important to safety~~ required for safe shutdown. For each such area, measures for (1) fire prevention; (2) fire detection, suppression and containment; and (3) alternate shutdown capability shall be provided as follows:

1. Fire Prevention

- a. In situ fire hazards shall be minimized ~~by design and plant arrangement~~.
- b. Transient fire hazards associated with normal operation, maintenance, repair, or modification activities shall be ~~identified and minimized. Those transient fire hazards that cannot be eliminated shall be~~ controlled.

2. Fire Detection, Suppression, and Containment

- a. Fire detection ~~systems~~ capability shall be ~~installed~~ provided.
- b. Portable extinguishers and standpipe and hose stations shall be installed.
- c. ~~Manually actuated~~ Fixed suppression systems shall be installed where fire hazards of grouped electrical cables and components are large as determined by the fire hazard analysis and access for the fire brigade is restricted.

d. A site fire brigade shall be established, trained, and equipped.

~~er~~ ~~Automatic suppression systems shall be provided to control large fire hazards or to protect redundant systems or components important to safe shutdown.~~

fe. Fire retardants, heat shields, or local fire barriers shall be provided where physical separation between such systems and fire hazards is not adequate to ensure that ~~automatic and manual~~ fire suppression can limit the fire damage to one division of shutdown systems.

~~gf.~~ Fire barriers surrounding each fire area shall have a 3-hour fire rating unless the fire hazards analysis demonstrates that a lesser rating exceeds the duration of the in situ fire load by at least one-half hour.

~~hg.~~ Fire detection and suppression systems shall be properly designed, installed, maintained and tested ~~by personnel properly qualified by experience and training in fire protection systems.~~

ih. Surveillance procedures shall be established to ensure that fire barriers and ~~automatic and manual~~ fire suppression systems and components are operable.

### 3. Alternate Shutdown Capability

Alternate shutdown capability shall be provided when safe shutdown as defined in the current license cannot be ensured by barriers, ~~and~~

detection ~~and~~ or suppression systems, because of the exposure of redundant safe shutdown equipment, cabling, or components in a single fire area to an exposure fire, fire suppression activities, or rupture or inadvertent operation of fire suppression systems.

B. Loss of Offsite Power

Fire ~~detection~~ and suppression systems protecting systems necessary to achieve and maintain safe plant shutdown shall be capable of functioning with or without offsite power.

C. Manual Fire Fighting

Manual fire fighting capability shall be provided in all areas containing or presenting a fire hazard to structures, systems, or components ~~important to safety~~ required for safe shutdown.

D. Access for Manual Fire Fighting

Access shall be provided to all areas containing or presenting a fire hazard to structures, systems, or components ~~important to safety~~ required for safe shutdown to permit effective functioning of the fire brigade.

E. Fire-Hazard-Analysis

~~The adequacy of fire protection for any particular plant area shall be determined by analysis of the effects of postulated exposure fires involving both in-situ and transient combustibles on the ability to safely shutdown the reactor, or the ability to minimize and control the release of radioactivity to the environment. Separation of redundant systems and~~

~~components by three-hour rated fire barriers or at least 50 feet both horizontal and vertical of clear air space shall be deemed adequate. Lesser ratings or distances shall be justified by analysis or test.~~

Basis for Change

The proposed deletions in the Section II relate mainly to comments in our letter: fire protection requirements should apply to the ability to attain and maintain safe shutdown and not consider other events simultaneous with fires, and the rule should recognize that the plant is already built and in operation and major rearrangements are not viable. Other changes are proposed to delete some of the language which is overly specific or not justified. The instance of allowing only installation, maintenance, or testing by personnel qualified in fire protection is clearly inappropriate. Pumps, motors, valves, and similar equipment need proper upkeep just like similar safety related components; however, this can be accomplished by properly trained craftsmen who have not necessarily received a fire protection "stamp of approval".

With regard to the requirement for the capability to operate fire suppression systems with on-site power, we interpret this to indeed mean capability and not to require automatic switchover to nuclear safety buses nor use of nuclear safety grade wiring and switchgear. The requirement, however, to require this capability for fire detection is not necessary. While it is conceivable that a severe plant fire could cause loss of offsite power (the detection phase would have been accomplished), the simultaneous loss of power coincident with fire should not be a requirement.

Section E relating to fire hazards analysis has already been

completed and submitted to the NRC by all licensees affected by this regulation and as such is not necessary in this regulation. Further, the specification for 50 feet of clear air space separation for systems and components is unattainable, and is an arbitrary and capricious requirement. There is no technical basis for this requirement of 50 feet of clear air space and it has no place in the regulation.

### III. SPECIFIC REQUIREMENTS

#### A. Fire Water Distribution System

~~An underground yard fire~~ A main loop shall distribute fire protection water from the fire water supplies to the ~~automatic and manual~~ fire suppression systems. Two ~~fresh~~ water supplies shall be provided to furnish necessary water volume and pressure to the yard fire main loop. Each supply shall ~~consist of a storage tank, pump, piping, and appropriate isolation and control valves.~~ These supplies shall be separated so that a failure of one supply will not result in a failure of the other supply.

~~Two separate redundant suction from a large body of fresh water will satisfy the requirement for two separated water storage tanks.~~

Each supply of the fire water distribution system shall be capable of providing for a period of two hours the maximum expected water demands as determined by the fire hazards analysis. ~~for safety related areas or other areas that present a fire exposure hazard to safety related areas~~

~~Minimum fire water storage shall be ensured by means of dedicated tanks or by means of a vertical standpipe for other water service when storage tanks are used for combined service water/fire water uses.~~

~~Other~~ Water systems used as a fire water supply shall be permanently connected to the fire main system and shall be capable of automatic alignment to the fire main system. ~~Pumps, controls, and power supplies in these systems shall satisfy the requirements for the main fire pumps. The use of other water systems for fire protection shall not be incompatible with their functions required for safe plant shutdown. Failure of the other system shall not be incompatible with their functions required for safe plant shutdown. Failure of the other system shall not degrade the fire main system.~~

#### Basis for Change

Requirements for the fire water distribution system should delineate minimum requirements and not specify specific designs. As proposed, the regulation would require underground fire main loops supplied by fresh water supplies and would require delineated hardware to meet the requirement. This is a classic over-specification to meet requirements for fire protection. While it could be argued that reliable fire main loops are needed there is no need that this can only be met by underground loops supplied by fresh water sources. Fires can be extinguished with water which is not pedigreed by quality.

Again a general requirement for diversity of water supply may be appropriate; however, there is no contribution to safety by specifying each required component such as "each supply shall consist of a storage tank, pump, piping, etc". Further, it is our opinion that the requirement to ensure a minimum water supply should be functional in nature rather than requiring a specific design as described as "Minimum water storage shall

be ensured by means of dedicated tanks or by means of vertical standpipe for other water service when storage tanks are used for combined service water/fire water uses". In other essential safety issues (including emergency core cooling) the requirements are not specified in such detail.

In summary, we are concerned that the NRC in this proposed regulation would become preoccupied with mandating design details rather than reviewing overall design objectives.

B. Sectional Control Valves

~~Approved visually indicating sectional control valves such as Post Indicator Valves~~ Capability shall be provided to isolate portions of the fire main for maintenance or repair without shutting off the entire system.

Basis for Change

This subsection requires compliance with a specific NRC design rather than an overall design objective. As the NRC is aware, from reviews of many subsystems, there are a number of methods to assure that safety systems (ECCS, shutdown systems, etc.) are available for operation. Any regulatory requirement to require specific measures such as "approved visually indicating sectional control valves" could become issues for litigation which would in no way contribute to safety.

C. Hydrant Block Valves

~~Block valves shall be installed~~ Capability shall be provided ~~in hydrant laterals if necessary~~ to permit isolation of outside hydrants from the yard fire main without interrupting the fire water supply to any area containing ~~or presenting a fire hazard to safety related or safe shutdown~~



equipment.

Basis for Change

The general requirement to permit hydrant isolation is not argued. As in previous sections, the requirement for a specific measure is not justified. This subsection also has requirements related to "safety related equipment" which should in fact relate to safe shutdown requirements.

D. Manual Fire Suppression

Standpipe and hose systems shall be installed so that at least one effective hose stream will be able to reach any location that contains or could present an exposure fire hazard to the safe shutdown. ~~-safety-related equipment- Standpipe and hose stations shall be inside PWR containments and large BWR containments that are not inerted. -For BWR drywells, standpipe and hose stations shall be placed outside the drywell with adequate lengths of hose to reach any location inside the drywell with an effective hose stream-~~

Basis for Change

The purpose of this requirement is to require means for effective fire fighting for fires that could effect safe shutdown. The specific need and location of standpipe and hose stations are plant specific and should be identified in the fire hazard analysis.

E. Hydrostatic Hose Tests

Fire hose shall be hydrostatically tested at a pressure 50 psi above maximum operating ~~service~~ pressure. ~~Hose stored in outside hose houses shall be tested annually. Interior standpipe hose shall be tested every three years.~~

Basis for Change

Testing requirements for hoses or other operational equipment should relate to the anticipated stress that such equipment may be exposed. In our rewrite, we propose a test environment in excess of any operating demands that may occur rather than requiring tests above service pressure which may or may not relate to any expected environment.

F. Automatic Fire Detection

Automatic fire detection ~~system~~ capability shall be installed in all areas of the plant that contain combustibles and safe shutdown ~~or safety~~ related systems or components.

Basis for Change

Requirements for automatic fire detection systems should relate to safe shutdown needs only. Any requirement for "safety-related systems or components" should not be included in regulatory requirements as related to fire protection.

G. Protection of Safe Shutdown Capability

Protective features shall be provided for fire areas that contain cables or equipment of redundant systems ~~important~~ required to achieve

~~11. That fire-retardant-coatings-retard-fire-propagation-but-do not-prevent-organic-cable-insulation-and-jacket-materials-from burning.~~

~~12. That oxygen-is-available-to-support-combustion.~~

~~13. The-failure-of-automatic-fire-suppression-systems.~~

~~14. That-the-response-of-the-fire-brigade-may-be-delayed.~~

~~15. That-room-air-coolers-do-not-provide-adequate-protection-for shutdown-systems-by-removing-heat-generated-by-a-fire.~~

~~The-following-minimum-fire-protective-features-shall-be-provided:~~

~~1. An-early-warning-fire-detection-system.~~

~~2. Manual-fire-suppression-capability.~~

~~3. Fixed-fire-suppression-systems-and-alternate-shutdown-capability as-shown-on-Table-1.~~

#### Basis for Change

The requirement for the protection of safe shutdown capability is unassailable. This is, indeed, the purpose of the entire section II.E. which requires the fire hazards analysis to describe the adequacy of the fire protection systems. The feature to be considered in the designed protection measures as enumerated in the fifteen enumerated statements for "consideration" have in fact already been incorporated in the fire hazards analysis reports already submitted by licensees.

We believe that regulations should contain only regulatory requirements with amplifying suggestions contained in regulatory guides, review guidelines, branch technical positions, NUREG's, or other NRC accepted publication forums. The inclusion of suggested items for consideration, in any regulation, we submit is totally inappropriate and should be deleted.

The minimum fire protective features relating to fire detection, suppression, and alternate shutdown are included elsewhere and, as such is redundant, not appropriate for inclusion in Section G. Further, the inclusion of Table 1, "Fire Protection Features for Safe Shutdown Capabilities", is without merit. Inclusion of decision criteria with subjective terms as "good" or "poor" as determinates for inclusion (or exclusion) of multi-million dollar investments by a utility owner for addition of fire protection hardware is capricious. This particularly true when the regulation specifies by footnote that:

"A fire hazards analysis acceptable to the staff shall be used to determine whether the plant can be shutdown from the Control Room and whether access for manual firefighting is good".

Hence, this language gives the NRC staff unilateral authority to define "good" or "poor," which represents the decision criteria. In addition to the proposed regulation conferring unilateral freedom for the staff to determine whether the plant can be shutdown from the control room and whether access for manual fire fighting is "good," it also poses implementation schedule problems. The licensee is expected to complete all modifications on predetermined schedules; however, there is no indication of when the staff will make its determinations.

In summary, the proposed subsection does not establish any specific fire protection requirements, rather, it offers suggestions on the contents of a fire hazards analysis (which licensees have previously submitted) and provides subjective decision criteria which will be used by the staff.

#### H. Fire Brigade

A site fire brigade trained and equipped for firefighting shall be established. ~~to ensure adequate manual firefighting capability for all areas of the plant containing structures, systems, or components important to safety.~~ The ~~minimum~~ nominal size of the fire brigade shall be ~~at least~~ five members on each shift unless a lesser number is justified. ~~The brigade leader and at least two brigade members shall be operations personnel or have equivalent knowledge of plant safety systems. The fire brigade members qualification shall include an annual physical examination for performing strenuous firefighting activity. The shift supervisor shall not be a member of the fire brigade. The brigade leader shall be competent to assess the potential safety consequences of a fire and advise control room personnel. Such competence by the brigade leader may be evidenced by possession of an operator's license or equivalent knowledge of plant safety systems. Equipment provided for the brigade will consist of at least the following:~~

- ~~i. Personnel protective equipment such as turnout coats, boots, gloves, hard hat, and pressure demand full vision self-contained breathing apparatus with a minimum one-half hour rated capacity and approved by National Institute of Occupational Safety and Health (NIOSH) for firefighting purposes.~~

- ~~2. Manual suppression equipment such as portable extinguishers and standpipe and hose with nozzles suitable for the location.~~
- ~~3. Other systems and equipment necessary for efficient utilization of the brigade, such as emergency lighting in access routes to areas containing safety related systems or components, and emergency communication capability throughout the plant that is independent of the normal communication systems. Emergency communication equipment shall not interfere with other plant equipment or controls.~~

#### Basis for Change

The requirement for fire brigades was established in previous regulatory issuances as requiring sufficient manpower to cope with plant fires for the initial 30 minute period. It was recognized that nominal force size requirements could be altered by plant unique features. The NRC guidance stated:

"The Staff has concluded that the minimum size of the fire brigade shift should be five persons unless a specific site evaluation has been completed and some other number justified."

The currently proposed regulation significantly departs from this guidance and sets forth a specific minimum requirement for size as well as defining which of the plant staff are to be members on the fire brigade. This issue was thoroughly ventilated with the staff over a year ago and we do not believe the proposed regulation is justified.

I. Fire Brigade Training

The fire brigade training program shall ensure that the capability to fight potential fires is established and maintained. The program shall consist of an initial ~~-classroom~~ instruction program followed by periodic re-instruction, practice in firefighting, and fire drills. Individual records of training provided to each fire brigade member, including drill critiques, shall be maintained for at least four years to ensure that each member receives training in all parts of the training program. ~~-These records of training shall be available for review. Retraining or broadened training for fire fighting within buildings shall be scheduled for all those brigade members whose performance records show deficiencies.~~

Note: Our proposed revision does not include a comparative text; however, seven pages of training details are deleted (Section 1 through 3).

Basis for Change

The proposed requirements for fire brigade training is a classic in overspecification. Again while no one would argue that the training program needs to ensure that personnel are trained to fight fires, there is no useful purpose in overspecification which requires only one allowed training outline to meet those requirements. While there are many examples, only one will be chosen to illuminate our point. Section 3.d. states: "At three year intervals, drills shall be critiqued by qualified individuals independent of the licensee's staff. A copy of the written report from such individuals shall be submitted to NRC for evaluation".

Aside from the fact that fire protection consultants would be subsidized and NRC fire protection reviewers would have a continuing need to review paper, we know of no positive benefit from such a requirement. An audit program conducted by an independent expert within the licensee's organization (for example, by the home office) would not meet the language of regulations, yet it might result in better reviews than if conducted under contract by "individuals independent of the licensee's staff". In addition, the requirement to submit reports of such reviews to the NRC for evaluation is mind boggling. The NRC already has the authority to witness such drills, review reports or whatever suits their needs. To perform this function, I&E has assembled hundreds of inspectors with scores more devising inspection strategy. To reach down, through this regulation, and select this facet for submittal and continuing evaluation by the NRC is totally unjustified.

The detailed requirements in most of these seven pages could also evoke similar comments; however, we believe a rereading of the details with our example in mind will lead one to conclude that the proposed language is not suitable for inclusion in a regulation. In fact, the language might be more suitable for issuance as guidance.

#### J. Emergency Lighting

Emergency lighting shall be provided in all areas needed for operation of safe shutdown equipment. ~~and in access routes to all safety related areas and other areas presenting a fire hazard to safety related areas~~ Such emergency lighting may be provided by the normal lighting if it is connected to an emergency bus and the fire hazard analysis shows that it will not be damaged by any fire. Otherwise permanently installed sealed



beam or florescent units ~~with individual 8-hour minimum battery power supply~~ shall be provided.

Basis for Change

Our comments relate to the requirement to have a minimum 8-hour battery rating and requirement for fixed units in "safety-related areas". There is no question that emergency lighting equipment needs to be available; however, we do not see the need for these requirements. Fire brigades, depending on the fire, could provide lighting equipment. If there is a need for additional or replacement lighting within a couple of hours, there will be ample personnel available in that timeframe to provide replacement equipment.

K. Administrative Controls

Administrative controls shall be established to minimize fire hazards in areas containing structures, systems, and components important to safety. These controls shall establish procedures to:

1. Govern the handling and limitation of the use of ordinary combustible materials, combustible and flammable gases and liquids, high efficiency particulate air and charcoal filters, dry ion exchange resins, or other combustible supplies in ~~safety related~~ areas containing equipment for safe shutdown.
2. ~~Prohibit~~ Control the storage of combustibles in ~~safety-related~~ areas containing equipment for safe shutdown or establish designated storage areas and fire protection therefore.
3. Govern the handling of and limit transient fire loads such as

combustible and flammable liquids, wood and plastic products, or other combustible materials in buildings containing ~~safety~~ related safe shutdown systems or equipment during maintenance, modification, or refueling operations.

4. Control the use of ignition sources.

5. Define the strategies for firefighting.

Note: All items of the proposed regulation numbered 4-12 are deleted.

#### Basis for Change

Our comments on this section again relate to the overspecification of administrative requirements. Definition of what is a requirement is not at issue; rather, defining the only permitted way of meeting the requirement is objectionable.

#### L. Alternate Shutdown Capability

If the combination of fire protection features required for safe shutdown includes alternate shutdown capability independent of a specific fire area, both of the following design conditions shall be accommodated; (1) offsite power is available and (2) offsite power is not available.

If there are several such areas, the combinations of systems that provide the shutdown capability may be unique for each critical area. However, the shutdown capability provided for each such area shall be able to achieve and maintain subcritical reactivity conditions in the reactor,

maintain reactor coolant inventory, achieve and maintain hot standby<sup>5</sup> conditions for a PWR (hot shutdown<sup>5</sup> for a BWR) ~~for at least 72 hours;~~ achieve cold shutdown\* ~~conditions within 72 hours;~~ and maintain cold shutdown conditions ~~thereafter.~~ ~~The reactor coolant system process variables shall be maintained within those predicted for a loss of normal ac power.~~ The fission product boundary integrity shall not be affected; i.e., there shall be no fuel clad damage, rupture of any primary coolant boundary, or rupture of the containment boundary.

Note: The performance goals in Section 2 as well as Sections 3 and 4 were deleted.

These shutdown systems need not be designed to (1) seismic Category I criteria; (2) single failure criteria; or (3) cope with other plant accidents such as pipe breaks or stuck valves except where required for other reasons, e.g., because of interface with or impact on existing safety systems.

#### Basis for Change

As the Commission is aware, certain of the plants affected by this proposed regulation are currently being reviewed under the Systematic Evaluation Program. One of the yet to be completed topics in that program is the definition of safe shutdown for these plants. We do not believe that a regulation on fire protection should preempt or redefine safety criteria for safe shutdown. We do agree that the regulation should require a capability to place the reactor in a safe shutdown condition and be capable

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5. As defined in the Standard Technical Specifications.

of maintaining it in that mode. We are not in agreement that the regulation should specify the times for holding in each mode nor the needs to provide the shutdown system functional criteria.

M. Fire Barriers

Fire barriers (floors, walls, ceilings, or other enclosures) separating (1) fire areas or (2) equipment or components of redundant systems important to safe shutdown within an area shall have a fire rating of three hours unless a lower rating is justified by the fire hazard analysis.

Structural steel forming a part of or supporting such fire barriers shall have fire resistance equivalent to that required of the barrier. Such fire resistance shall be provided by protection equivalent to metal lath and plaster covering.

Penetrations in these fire barriers, including conduits, cable trays, and piping, shall be sealed or closed to provide fire resistance rating equivalent to that required of the barrier. ~~-that-have-been-tested-and-approved-by-a-nationally-recognized-testing-laboratory~~

Penetrations for ventilation systems shall be protected by a standard "fire door damper" or provide equivalent protection.

Basis for Change

Our comments on this section pertain to the requirement for testing and approval of door openings and the requirement for standard fire door dampers on ventilation systems. The proposed wording retains the intent of the requirement, but would allow some latitude in demonstrating compliance with the requirement.

N. Fire Barrier Penetration Seal Qualification

This section as written is deleted in its entirety and replaced with:

Penetration seals shall provide the equivalent protection which is afforded by the fire barrier. Evaluation of the penetration seals based upon a design review and relevant test data or qualification test may be made.

Basis for Change

The requirement to have penetration seals qualified by an independent testing laboratory is not justified. Many penetration seals could be adjudged to meet their design requirements through design reviews using relevant test data without requiring a full markup test. We submit that the requirement for markup testing with such detailed requirements as "is subjected to a water fog test using high-velocity fog nozzle having an included angle of spray no larger than 30° and supplied by a hose no smaller than 1 1/2 inches at a pressure of at least 75 psig measured at the base of the nozzle for an application time of at least 2 1/2 minutes per 100 square feet" etc. is a bit much for a regulation.

In summary, we are convinced that many penetration seal designs could be reviewed and found acceptable by knowledgeable fire protection engineers without the need for expensive qualification tests. We believe that solid engineering judgment should be permitted in addition to the prescribed testing requirements.

O. Fire Doors

Fire doors required for safe shutdown shall be self-closing or provided with closing mechanisms and shall be inspected semiannually to verify that automatic hold-open release, and closing mechanisms and latches are operable. Fire doors shall be kept closed unless provided with automatic hold-open, release, and closing mechanisms.

One of the following measures shall also be provided for each door.

1. Fire doors shall be electrically supervised at a continuously manned location; or
2. Fire doors shall be locked closed and inspected weekly to verify that the doors are in the closed position; or
3. Fire doors shall be provided with automatic hold open and release mechanisms and inspected daily to verify that doorways are free of obstructions; or
4. Fire doors shall be kept closed and inspected daily to verify that they are in the closed position.

The fire brigade commander shall have ready access to keys for any locked fire doors.

Areas protected by automatic total flooding gas suppression systems shall have electrically supervised self-closing fire doors.

P. Reactor Coolant Pump Lubrication System

The Reactor Coolant Pump lubrication system shall be protected by

either an oil collection system or an automatic fire suppression system if the containment is not inerted during normal operation.

Oil collection systems shall be capable of collecting lube oil from all potential pressurized and unpressurized leakage sites in the reactor coolant pumps' lube oil systems and draining the oil to a vented closed container. A flame arrestor is required in the vent if the flash point characteristics of the oil present the hazard of fire flash back. ~~Leakage points to be protected shall include lift pump and piping, overflow lines, lube oil cooler, oil fill and drain lines and plugs, flanged connections on oil lines and lube oil reservoirs where such features exist on the reactor coolant pumps. Leakage shall be collected and drained to a closed container that can hold the entire lube oil system inventory. The drain line shall be large enough to accommodate the largest potential oil leak.~~

~~To provide adequate protection for a design basis Safe Shutdown Earthquake (SSE), one of the following should be provided:~~

- ~~1. The lube oil system components whose failure could result in leakage should be designed to withstand an SSE without leakage and the dropping of oil collection system components during an SSE should not cause loss of operability of safety related equipment; or~~
- ~~2. The oil collection system should be designed to withstand an SSE and continue to be able to collect and drain leakage that may occur during an SSE. In this case the oil collection system should be adequate to collect oil from any external lube oil piping not designed to withstand an SSE in addition to leakage~~

~~from points identified above~~

~~If an automatic fire suppression system is selected, either the automatic and manual fire suppression system or the lube oil system components whose failure could result in leakage should be designed to withstand the SSE.~~

#### Basis for Change

The main objective of this subsection should be to provide either a reactor coolant pump lubrication collection system or a fire suppression system to extinguish an oil fire if the containment is not inerted. We believe each licensee should be permitted to design the system suited to its facility. We have retained functional requirements in our proposed rewrite and have deleted the detailed design requirements which specified each collection point and the design requirements. With regard to seismic considerations, many of the operating plants were designed and built prior to the seismic definitions as now used, and are currently undergoing a seismic re-review as part of the Systematic Evaluation Program. In many of these instances the precise analytical parameters for a seismic SSE event have not been defined yet engineering judgments of adequacy can be made on proposed designs.

#### ~~Q. Associated Circuits~~

~~Associated circuits shall be electrically isolated from safety equipment so that hot shorts, open circuits, or shorts to ground in the associated circuit will not prevent operation of the safety equipment.~~

~~If associated circuits are not known to be so electrically isolated,~~



~~they shall be considered safe shutdown circuits. The separation and barriers between trays and conduits containing associated circuits or safe shutdown cables from the redundant division shall be such that a postulated fire involving associated circuits or safe shutdown cables from the redundant division shall be such that a postulated fire involving associated circuits will not prevent safe shutdown.~~

Basis for Change

Associated circuits were not a consideration in the design of many of the older plants for which this fire protection regulation applies. In the time frame for implementation of this regulation, there is not available manpower (in consideration of all the continuing and new generic issues raised by the NRC staff) to define and evaluate all associated circuits as described.