Elimination of Marginal Safety Requirements

Task 1, Methodology Development

Letter Report

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1.0 INTRODUCTION

Based on their increased knowledge, regulatory experts recognize that the current set of nuclear regulatory requirements (RRs) may include some that are of marginal importance to safety. In the past, improved understanding of safety has led to modification or deletion of some requirements. For example, the requirement for review of an applicant's financial qualifications was deleted from the review of the operating license application in September 1984, and the requirement for certain pipe whip restraints (to account for leak before break) was deleted in the October 1987 revision of General Design Criterion 4.

Because of this potential for change, the Nuclear Regulatory Commission's annual "Policy and Planning Guidance 1987" states that existing RRs should be reviewed to see if some requirements could be eliminated without compromising safety, safeguards, or environmental protection [1]. In support of this objective, the Regulatory Development Branch within the Office of Nuclear Reactor Research contracted Battelle Columbus Laboratory (BCL) to identify RRs that would be potential candidates for modification or deletion. The results of BCL's study are reported in "Effectiveness of LWR Regulations in Limiting Risk Task 24" [2].

The Nuclear Regulatory Commission (NRC) initiated this project to develop, from BCL's list of potential candidates for modification or deletion, a set of candidate RRs whose modification or deletion would be of marginal importance to safety[1] [3].

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[1] The phrase "of marginal importance to safety" means little or no effect on public safety.

BCL's report lists approximately 43 "Regulatory Positions" as candidates for "Potential Action." Regulatory Position is defined in Reference 2 as follows.

> "All text which describes regulatory requirements or methods which licensees and applicants for license may use to satisfy requirements (e.g., 10 CFR, Standard Review Plan, Regulatory Guides, Generic Letters, industry standards)"

Thus, the 43 regulatory positions consist of regulations in 10 CFR Parts 50 and 100, Regulatory Guides, and sections of the Standard Review Plan (SRP). Many of the regulatory positions address individual parts, sections, or paragraphs within a part of 10 CFR. Because of the wide spectrum of "regulatory text" making up the regulatory positions, any regulatory text is considered a regulatory requirement (RR) for this report.

An example of a regulatory position from the BCL report is shown in Table 1. The regulatory position contains the following RRs:

- 10 CFR 50 Appendix J, "Primary Reactor Containment Leakage Testing"
- SRP 6.2.6, "Containment Leakage Testing"

For each of the 43 regulatory positions, the report proposes one or more potential actions, including elimination, clarification, updating, conversion, relocation, replacement, or expansion. The potential actions in Table 1 are update and convert.

In this letter report, a methodology is proposed for selecting RRs for which the associated potential actions are expected to be of marginal importance to safety and of benefit to the licensees and the NRC. The selected RRs are recommended as candidates for regulatory changes by the NRC. The selected RRs are referred to as candidate regulatory requirements (CRRs) in this report.

The results of two trial applications of the methodology are also provided, one in relation to Appendix R to 10 CFR Part 50, "Fire Protection," and the other to 10 CFR 50.71(e), "Maintenance of records, making of reports. FSAR Update."

Table 1. Example of a Regulatory Position in the BCL Report

Regulatory Position: 10CFR50 Appendix J Primary Reactor Containment
Leakage Testing
SRP 6.2.6 Containment Leakage Testing

Potential Action: Update/Convert

Comments: Appendix J was originally adopted in 1973 to support 10CFR50.54(o) and General Design Criteria 50 through 57. Licensees must demonstrate that their plants satisfy the containment leakage testing requirements of Appendix J as a condition of the operating license. Three types of tests are defined:

Type A - an integrated leak test at not less than design basis pressure
Type B - tests for local leaks around containment penetrations
Type C - tests for local leaks in containment isolation systems.

The Appendix codifies the relevant ANSI Standard N45.4-1972, specifies other acceptable test methods, sets requirements for scheduling tests, specifies test parameters, establishes acceptance criteria, and defines procedures for validating and reporting test results.

The principal thrust of the potential actions is to bring practices for containment leak testing more in line with recent insights from probabilistic risk assessments. A secondary consideration is that the significant amount of detail in this Appendix makes it better suited as a RegGuide than a regulation. There is also continuing concern within the industry about the significant costs of containment leak testing.

Appendix J has been recognized as a candidate for major revision since results of early risk assessments showed risk to be dominated by accidents involving core damage and major breaches of containment (as opposed to the relatively intact containment integrity typified by Appendix J). A prior detailed review of this subject (NUREG/CR-4330) done according to NRC value-impact guidelines concluded that a 100-fold increase in allowable leak rates could be permitted without significant adverse effects on public safety. No rule change resulted from this finding. The NRC did modify Appendix J in 1988 to permit use of the Mass Point method of leak detection, a practice which had previously required exemptions. Still the major issues of test type, test frequency, and allowable leak rates remain unchanged.

2.0 OBJECTIVE

The objective of the proposed methodology is to provide guidance for selecting a set of regulatory requirements from the list of regulatory positions in the BCL report whose modification or elimination would be beneficial to the nuclear community (the NRC and the licensees), and would have only a marginal effect on the safety of existing and future nuclear power plants.

3.0 APPROACH

The first step in the methodology is a procedural screen. (See Figure 1.) The purpose of this screen is to eliminate from further consideration those RRs on the BCL list for which a potential action would increase the licensing burden on the licensee or the NRC, and those RRs already being considered for modification by the NRC. The elimination criteria are defined in Chapter 4.0, STEP 1, Procedural Screen.

To determine the value (i.e., the importance to safety) of a potential action, it is important to understand the origin and initial motivation for the creation of a RR; the evolution of the requirement; and its relationship to other RRs. The information necessary for this understanding will be assembled and documented in STEP 2 of the analysis for each RR that survives STEP 1. STEP 2 will also identify each unique potential action within the "potential action" to further focus the analysis.

Each potential action will then be analyzed to determine whether it is a likely candidate for action, i.e., elimination or modification, based on a safety evaluation (STEP 3) and an impact analysis (STEP 4). For the purposes of this analysis, the value of a potential action is defined as its effect on the safety of existing or future plants. The value of a potential action will be classified as either "of marginal importance to safety" or "of importance to safety."

STEP 3 will include an analysis of dependencies among the RRs to identify links among RRs and to assure that the effects of a potential action on other RRs are understood. Only those potential actions found to be of marginal importance to safety will be passed to
STEP 4.

In STEP 4, a set of generic attributes will be used to evaluate the impact of each potential action. The impacts associated with a potential action include the burdens

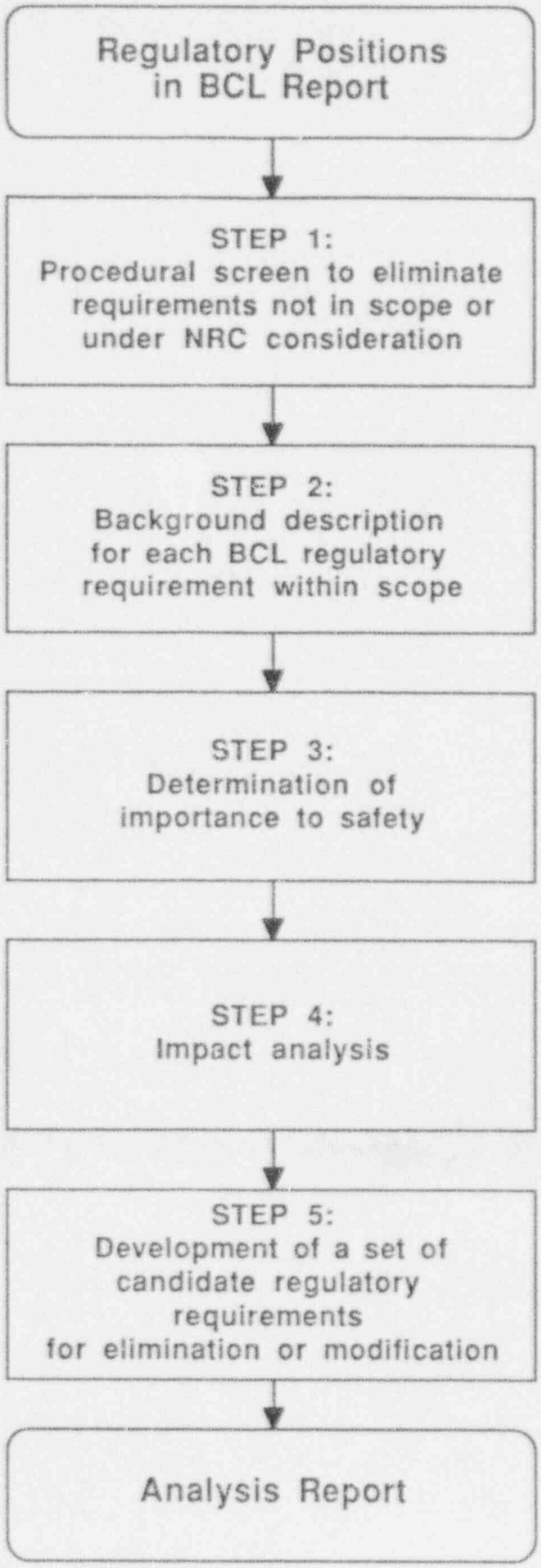

FIGURE 1. BASIC METHODOLOGY FOR SELECTING A SET OF CANDIDATES FOR ELIMINATION OR MODIFICATION

and benefits to the NRC and licensees. The impacts will be assigned a high, medium, or low weight. (A high weight means significant monetary or administrative savings.)

In STEP 5, all potential actions found to be of marginal importance to safety will be ranked by their assigned weights. A final dependency check among the RRs and the potential actions similar to the check in STEP 3, will also be performed. The purpose of the final dependency check is to assure that all dependencies among the RRs and the potential actions are considered and understood. From the ranked list, a set of potential actions will be recommended to the NRC as candidates for regulatory changes that would have a minimal impact on safety and would be of benefit to the nuclear community.

Two trial applications were used to test the feasibility and effectiveness of STEPS 1 through 4 of the methodology. STEP 4, Impact Analysis, was qualitatively examined for the trial applications. A more definitive use of the weights (high, medium, and low) will be possible once more potential actions have been evaluated and relative comparisons can be made. STEP 5 was not tested because it involves ranking more than one potential action found to be of marginal importance to safety. The two trial applications are documented in Appendix A.

4.0 METHODOLOGY

Figure 1 presents the methodology proposed for deriving a set of RRs that are candidates for modification or elimination. The methodology consists of five basic steps. The purpose and content of the analysis steps are described below.

STEP 1. Procedural Screen

The first step, Procedural Screen, consists of evaluating the RRs recommended by BCL against two criteria 1) scope of analysis, and 2) NRC activity. A RR will be dropped from further analysis if it is found to be outside the scope of this project or if it is already under consideration for action by the NRC.

<u>Scope of Analysis</u>
An RR in the BCL list is not within the scope of this project if the potential action is to expand the requirement (increase the licensing effort by the licensees and the NRC), unless the expansion of one RR is accompanied by the modification or elimination of another requirement. The net effect must benefit the nuclear community and have only a marginal impact on safety.

In general, no new actions will be proposed to replace those in the BCL list. Also, if a potential action is dropped from consideration for being out of the scope of the project, the reason for this action will be documented and will be brought to the NRC Project Officer's attention for concurrence.

NRC Activity
A potential action for an RR in the BCL list will undergo only a limited analysis if the NRC is in the process of undertaking that action. The limited analysis will only provide an estimate of the potential effect of the action on the level of safety of nuclear power plants. A potential action may be dropped from further analysis if the NRC is taking that action and is near resolution. In either case, the results of a limited analysis or the decision to drop an RR from further analysis will be reported to the NRC Project Officer.

STEP 2. Background Description

The identification of candidate requirements for elimination or modification is likely to depend not only on the content of the RR, but on its context, which is not identified in the BCL list. The background description of each RR, which provides input to STEP 3, will typically include the following information to help identify the context.

Rulemaking Motivation
The background and historical basis of each RR, including the Statement of Considerations if the requirement is in the form of a regulation, will be examined. Related regulations, Regulatory Guides, and SRP Sections will be identified and examined.

Requirements for Licensees
The requirements with which licensees must comply are summarized.

Intent of the Requirement
The primary purpose of the requirement is summarized and the current requirements are compared with the initial motivation for rulemaking.

Appendix A includes an example of a background description for each trial application.

STEP 3. Determination of Importance to Safety

The next analysis step is the determination of whether the potential actions associated with each RR are of marginal importance to safety. If the potential action for a requirement is found to be of marginal importance to safety, i.e., the level of safety will be reduced very little or not at all, the requirement will be passed on to the next analysis step.

All RRs will first be examined to identify those for which a clear decision can be made with little or no further analysis. The basis for such decisions will be documented.

For the remaining RRs, the determination of importance to safety will be made separately for each RR and potential action associated with that requirement. The decision of whether a potential action for a RR is of marginal importance to safety will be the result of the collective analysis of a team of people with diverse regulatory experiance, and will be based on the following:

1. review of the Statement of Considerations to define the safety basis of the RR at the time of its inception (including any subsequent changes);

2. determination of the safety basis as it exists today and comparisons with the Statement of Considerations;

3. judgment based on the regulatory and safety-engineering expertise of the analysis team;

4. results of probabilistic risk analyses, where applicable; and

5. relationship (interdependencies) of the requirement to other requirements.

As a minimum, the analysis team will consider the following attributes of RRs in its decision-making process.

<u>Obsolescence</u>
This attribute addresses technical and regulatory obsolescence of the requirement.

Technical obsolescence means that the RR is based on technical grounds that are superseded by improvements in technology, research results, and operating experience.

Regulatory obsolescence means that the RR addresses issues that are no longer of importance to the regulation of the nuclear industry, either because they are covered by more recent RRs, or because they apply only to existing plants. (For example, TMI requirements might be replaced by other existing or proposed RRs that apply to new plants without relaxing or eliminating the RRs for existing plants.) When considering the obsolescence issue, attention will be given to whether the RR provides a necessary basis for enforcement at older plants of unique design.

Ambiguity/Complexity
This attribute refers to ambiguity or unnecessary complexity in a RR. Simplification of the requirement might include clarifying the language, providing cross-references to other pertinent RRs, or moving a RR to another part of 10 CFR (e.g., moving financial requirements out of 10 CFR 50).

Inconsistency
This attribute refers to any inconsistencies, conflicts, or redundancies with other RRs.

The basis for the conclusions regarding importance to safety will be documented.

STEP 4. Impact Analysis

A qualitative impact analysis will be used to determine whether a potential action found to be of marginal importance to safety has a potentially beneficial impact. This analysis, which evaluates the benefits and burdens to the NRC and to licensees resulting from a potential action, will be similar to the analysis method presented in NUREG/CR-3568, "A Handbook for Value-Impact Assessment" [4].

A generic set of attributes will be used in the impact analysis. Because of the variety of the RRs on the BCL list, the generic attributes may not be sufficient for or applicable to all RRs. Therefore, the set of generic attributes will be modified as necessary on a case-by-case basis. In addition, insights gained during the later steps in the methodology may require revision of earlier decision criteria. Therefore, the analysis will be iterative.

The generic impact attributes address the benefits and burdens associated with a potential action. The generic attributes include the following.

Short-term burden to the NRC
A short-term burden to the NRC is the cost associated with implementing a proposed change. This cost could be considerable, particularly if there is intervention that prolongs the implementation process.

Short-term burden to licensees
A short-term burden to licensees is the cost associated with responding to a change. Even though the cost may not be high, a licensee may not want to change programs already in place. (The short-term burden to licensees may be anticipated by the analysis team or may be expressed by the licensees at the public workshop that is part of this project. Comments by licensees will be considered in the analysis after the workshop.)

Long-term benefit to the NRC
A long-term benefit to the NRC would be cost savings in its regulatory activities after any initial costs associated with a change.

Long-term benefit to licensees
A long-term benefit to licensees would be cost savings resulting from the changes.

The effect that a potential action may have on the stability of the regulatory process will also be considered. This attribute refers to any legal implications that may prevent regulatory action or make action difficult. Consideration of this attribute includes the regulatory environment (whether or not the regulatory climate is or will be amenable to the potential action) and the possible public response to an action (e.g., inquiries or intervention).

Each potential action for a RR will be assigned a weight of high, medium, or low for each impact attribute. The assignments will be based on the previous analysis findings and the judgment of the analysts.

The analysis of each potential action for each attribute will be documented.

STEP 5. Development of a Set of Candidate Regulatory Requirements for Elimination or Modification

The RRs for which the potential action would have a marginal impact on safety will be ranked according to the greatest benefit to the NRC and the licensees, which will be determined using the impact attribute weights. A final dependency analysis will be performed to ensure that the potential actions do not increase the importance to safety of other potential actions.

5.0 TRIAL APPLICATIONS

The purpose of the trial applications, documented in Appendix A, was to test the feasibility and effectiveness of the proposed methodology. Two federal regulations were chosen for this purpose from the list of regulatory positions in the BCL report [2].

1. 10 CFR 50, Appendix R, "Fire Protection Program for Nuclear Power Facilities Operating Prior to January 1, 1979"

2. 10 CFR 50.71(e), "Maintenance of records, making of reports. FSAR Update"

These two regulations were chosen because the members of the analysis team suspected that Appendix R might be a candidate for elimination, while 10 CFR 50.71(e) might be a candidate for modification but not elimination.

For the purpose of testing the methodology, it was not necessary to perform an analysis as detailed as that required for the actual application, nor to research the subject as thoroughly Therefore, the experience and the judgment of the members of the analysis team were often used in place of thoroughly researched facts. An example is the assignment of weights (STEP 4), which is discussed in only general terms and is based solely on regulatory experience.

STEP 5 was not tested because the relative ranking of RRs by their weights, assigned in STEP 4, is straightforward. Also, the final dependency analysis will be similar to that performed in STEP 3.

6.0 INITIAL OBSERVATIONS

The trial application of the proposed methodology to two regulatory positions on the BCL list shows the feasibility and effectiveness of the proposed methodology. The trial application also shows that the methodology is flexible enough to allow analysts to use their regulatory experience in making determinations.

Application of the proposed methodology to the action proposed by BCL for Appendix R resulted in some general insights of importance to the project. If the NRC desires to reduce the bulk of formal regulations without affecting safety, one general approach is worth further consideration. Appendix R, like several other sections or appendices to 10 CFR, is a compilation of specific requirements that licensees implement to meet the intent of another, more general requirement of the regulations. In many cases, these specific requirements were incorporated into the regulations to force further action by licensees when their plants were already licensed and operating. That is, the more detailed requirements were issued to require backfitting of safety requirements to restore required safety margins, based on increased knowledge. If all plants are now in compliance with these specific requirements, it is possible that continued compliance can be assured even if the detailed requirements are moved to subordinate documentation, such as the SRP or regulatory guides. This general line of reasoning, which could be applied to certain portions of the regulations such as Appendix C, Appendix J, Appendix K, Appendix R, and others, will be further evaluated later in this project.

7.0 REFERENCES

1. U.S. Nuclear Regulatory Commission, "Policy and Planning Guidance 1987," NUREG-0885 Issue 6, September 1987.

2. Battelle Columbus Laboratory, "Effectiveness of LWR Regulations in Limiting Risk Task 24," Final Report (Draft), May 1989.

3. U.S. Nuclear Regulatory Commission, "Eliminating or Modifying Selected Regulations Without Compromising Safety," SECY-89-254, August 23, 1989.

4. U.S. Nuclear Regulatory Commission, "A Handbook for Value-Impact Assessment," NUREG/CR-3568, December 1983.

APPENDIX A

TRIAL APPLICATION OF THE METHODOLOGY TO FEDERAL REGULATIONS

APPENDIX A.1

10 CFR 50 Appendix R
Fire Protection Program
for
Nuclear Power Facilities
Operating Prior to January 1, 1979

APPENDIX A 2

10 CFR 50.71(e)
Maintenance of records, making of reports.
FSAR Update

APPENDIX A.1

10 CFR 50 Appendix R
Fire Protection Program
for
Nuclear Power Facilities
Operating Prior to January 1, 1979

BATTELLE CONCLUSIONS

Potential Action: Convert/Update

The Battelle report makes the following conclusions regarding Appendix R.

> The highly detailed nature of these requirements leads some to suggest that Appendix R would be more appropriate as a RegGuide than a regulation. Most existing reactors have complied or received exemptions. Much of Appendix R has been incorporated into SRP 9.5-1, so duplication exists. Retaining Appendix R in 10 CFR 50 assures the regulatory staff of a continuing source of enforcement authority.
>
> New plants are expected to comply with Appendix R without exception, though the regulation does not mention this explicitly. There is some concern that for new plants Appendix R is necessary but insufficient, thus meriting some additional modification (e.g. increased separation distances). Resolution of this matter is achieved during the review process for new plants.

TRIAL APPLICATION

STEP 1: Procedural Screen

The potential action regarding Appendix R to 10 CFR Part 50 is within the scope of this project. Additionally, there is no present or planned NRC rulemaking in this area. Therefore, further consideration of the action is appropriate.

STEP 2: Background Description

Rulemaking Motivation

In 1975, a fire occurred at the Browns Ferry nuclear power plant. The fire caused extensive damage to electrical control cables and components. As a result, many of the systems normally relied upon for safe shutdown and cooldown of the reactor were not available. At the time of this event, Criterion 3 of Appendix A to 10 CFR Part 50 (General Design Criteria) was the governing document for fire protection. Fire protection safety evaluations based on Criterion 3 were the basis for NRC acceptance of fire protection programs implemented by the licensees. However, these evaluations were not detailed and did not focus on safe shutdown capabilities following a fire.

After the Browns Ferry fire, a special review group was commissioned to evaluate the fire and its consequences. The group made two recommendations regarding the implementation of Criterion 3. Those recommendations were addressed by the Commission in the Statement of Considerations for the proposed rule for fire protection in May 1980, as follows.

> One of the recommendations was that NRC should develop additional specific guidance for implementation of Criterion 3. The other was that NRC should make a detailed review of the fire protection program at each operating plant comparing it to the guidance developed per the above recommendation.
>
> In response to the first recommendation, NRR developed Branch Technical Position Auxiliary Power Conversion Systems Branch 9.5-1 (BTP 9.5-1), "Guidelines for Fire Protection for Nuclear Power Plants" and Appendix A to BTP 9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants Docketed Prior to July 1, 1976."
>
> In response to the second recommendation of the Special Review Group, the NRC requested every operating plant to (1) compare its fire protection program with the above guidelines and (2) analyze the consequences of fire in each plant area. The NRC then reviewed the licensee's analysis against the guidance contained in Appendix A to BTP 9.5-1 and visited each plant to examine the relationship of the structures, systems and components important to safety with both in situ and transient fire hazards, the potential consequences of fire, and the associated fire protection features. (45 FR 36082)

As a result of this plant-specific effort, most licensees accepted the NRC interpretations and positions of Appendix A to Branch Technical Position (BTP) 9.5-1. However, by the late 1970s there were still 17 generic issues in the fire protection safety analysis reports for 32 plants where agreement had not been reached between the licensees and the NRC (45 FR 36083). To establish a definitive resolution of these contested subjects in a manner consistent with the general guidelines of Appendix A, and to ensure timely compliance by licensees, the NRC found it necessary to issue a proposed fire protection rule, 10 CFR 50.48, and Appendix R to 10 CFR Part 50.

Section 50.48 required the creation of fire protection plans, and Appendix R provided the more specific minimum fire protection requirements for each issue. Section 50.48 and Appendix R were issued in final form in November 1980, and have not been substantively amended since then.

Requirements for Licensees

The NRC's stated purpose of Appendix R is to provide generic requirements that must be incorporated into fire protection plans for those nuclear power plants licensed to operate prior to January 1, 1979. Appendix R consists of both general and specific requirements.

The general requirements in this section of Appendix R state the need for a comprehensive fire protection program at each nuclear power plant. In general terms, the requirements call for:

- establishment of a fire protection program;
- performance of a fire hazards analysis;
- establishment of fire prevention features for those areas containing or presenting a fire hazard to structures, systems, or components important to safety; and
- alternative or dedicated safe shutdown capability in areas where fire protection features cannot ensure safe shutdown capability.

The specific requirements in Appendix R stem from the detailed review of licensee fire protection programs conducted by the NRC in the late 1970s. As previously noted, there were 17 fire protection issues contested by 32 licensees. Two of the original 17 issues were combined to create 15 specific requirements covering the following areas: water supplies for fire suppression systems, sectional isolation valves, hydrant isolation valves, manual fire suppression, hydrostatic hose tests, automatic fire detection, fire protection of safe shutdown capability, fire brigade, fire brigade training, emergency lighting, administrative controls, alternative and dedicated shutdown capability, qualification of the seals for fire barrier cable penetrations, fire doors, and the oil collection system for reactor coolant pumps.

In addition to the general and specific requirements of Appendix R, various documents related to the implementation of Appendix R have also been issued. The following is a synopsis of those issuances.

GL 81-12: Clarified information required by the NRC to complete reviews of alternative safe shutdown capabilities.

GL 83-33: Provided additional information related to NRC interpretations of Appendix R.

IEN 83-41: Discussed safety-related equipment rendered inoperable by actuation of the fire suppression system.

IEN 83-69: Discussed improperly installed fire dampers.

IEN 84-09: Provided lessons learned from NRC inspections to evaluate compliance with Appendix R.

GL 85-01: Provided a report by the Fire Protection Policy Steering Committee. The Steering Committee (SC) had been formed to make recommendations to expedite compliance with Appendix R at older plants and to assure consistent levels of fire protection safety at all plants. This letter also provided staff positions on commonly asked questions related to Appendix R.

GL 86-10: Provided a copy of Interpretations of Appendix R (a handout provided to participants in the regional fire protection workshops sponsored by the NRC). This letter also notified licensees that Paragraph 50.48(c)(6), which contained scheduled exemptions for Appendix R, was no longer valid (on the recommendation of the SC) and that fire protection programs approved by the NRC were to be incorporated into the Final Safety Analysis Report.

GL 88-10: Provided guidance to licensees for preparing a license amendment to remove fire protection requirements from Technical Specifications.

For those plants operating prior to January 1, 1979, the guidance documents listed serve as the basis for licensing reviews for fire protection and subsequent safety evaluation reports. For those plants not operating prior to January 1, 1979, alternative guidance is provided to ensure compliance with Criterion 3 of Appendix A to 10 CFR 50. One form of guidance is Standard Review Plan (SRP) 9.5-1 (formerly BTP 9.5-1), which is intended for use by plants whose applications for construction permits were docketed after July 1, 1976. Appendix A to BTP 9.5-1 is intended for plants whose applications for construction permits were docketed prior to July 1, 1976.

With few exceptions, SRP 9.5-1 and Appendix A to BTP 9.5-1 contain the same information found in Appendix R.

Intent of the Requirement

The primary purpose of Appendix R was to ensure a definitive and consistent resolution of specific issues related to fire protection. The current requirements of Appendix R remain consistent with this purpose. Appendix R has been implemented at all currently operating nuclear power plants. This implementation may have taken the form of backfits to operating plants, a determination that applicant plants meet the requirements of BTP 9.5-1, or exemptions to the specific requirements based on alternative approaches which achieve the requisite level of safety.

STEP 3: Determination of Importance to Safety

The potential elimination of Appendix R (and reliance on the guidance of a subordinate document, the SRP) is not a technical issue. Appendix R has proven to be effective in assuring adequate fire protection, the importance of which is stated in the introduction to Appendix R: "When considering the effects of fire, those systems associated with achieving and maintaining safe shutdown conditions assume major importance to safety because damage to them can lead to core damage resulting from loss of coolant through boiloff."

Rather, the potential elimination of Appendix R is a matter of licensing policy. Appendix R was created to resolve fire protection issues that existed in the late 1970s. Once current licensees have complied with Appendix R or been granted exemptions, these safety issues are resolved. The implementation schedule for Appendix R was established in Section 50.48. The NRC envisioned that implementation would be complete by the end of 1985. However, the "tolling provision" of Paragraph 50.48(c)(6) and Section 50.12 resulted in many extensions, and the schedule was not met. Generic Letter 86-10 addressed this issue by eliminating the "tolling provision" to expedite compliance with Appendix R. Because of these actions, technical and licensing objectives of Appendix R have been met. Plants once required to fulfill the requirements of Appendix R would look to SRP 9.5-1 or the appendix to that section of the SRP (formerly BTP 9.5-1) for guidance on fire protection programs.

Future license applications for light-water reactors will be reviewed against the SRP, which contains the same requirements as Appendix R. (Though some wording and references are slightly different, it is generally understood in the industry that the requirements of Appendix R are reflected in the SRP and its references.) Appendix R would not apply to future plant concepts that differ significantly from the current generation of plants. Thus, elimination of Appendix R would not reduce safety programs or activities at nuclear power plants, and therefore should not have a negative impact on safety. While Appendix R is not technically obsolete, it may be obsolete from a regulatory standpoint in that the original intent of the rule has been met.

In considering other attributes of the methodology, the analysis team determined that Appendix R is neither ambiguous nor inconsistent with other regulations.

STEP 4: Impact Analysis

Regulatory efficiency may be improved by reducing the bulk of formal NRC regulations. Voluminous, prescriptive regulations force licensees and the NRC to expend resources on many items, even though they are not all of equal importance to safety. Therefore, the Commission has stated a desire to streamline the regulations so they may focus their efforts (and those of the regulated industry) on areas where the greatest safety benefits can be derived. Elimination of Appendix R to Part 50 could have this effect.

Industry implementation of fire protection requirements would improve because less administrative effort is necessary to document compliance with or exceptions from specifications of accepted NRC guidance documents than is necessary for regulations. For example, thousands of exemptions have been processed for alternative approaches to the specific methods provided in Appendix R for meeting the intent of 10 CFR 50.48. These formal licensing positions can require significant administrative review efforts, unrelated to safety, when licensees make major system improvements or modifications, such as those anticipated for license renewal. Maintaining system safety could be more efficiently handled using 10 CFR 50.59 and license amendment provisions of the regulations.

Any beneficial changes to fire protection programs can be made within the process specified in 10 CFR 50.59. This process permits the licensee to make changes to the facility and procedures as described in the safety analysis report, and to conduct tests and experiments not described in the safety analysis report, without prior Commission approval (except for changes to technical specifications or changes involving unreviewed safety questions). The flexibility permitted by the §50.59 review process, compared with the more rigorous and time-consuming exemption process required for older plants, provides a number of advantages to both the NRC staff and the licensees. Eliminating the regulatory requirement of Appendix R would allow license holders for older plants to use this §50.59 process to make changes to their fire protection programs, resulting in a saving of resources.

NRC implementation costs would be low since the actual requirements for fire protection would remain unchanged. There would be a short period during which the staff would have to become accustomed to relying on supporting documentation in this area rather than the regulations. After this period, the NRC implementation effort would likely improve because the administrative burden associated with enforcement of accepted guidance documents is smaller than that associated with enforcing the regulations.

The implementation effort would be low only if the industry does in fact accept the requirements of the current Appendix R as the general industry standard for fire protection safety. If licensees do not accept the necessity to meet the requirements of Appendix R, much greater staff efforts would be needed to ensure compliance once the regulation is removed. The basic reason the requirements were originally codified was tc force certain licensees to adopt specific fire prctection safety measures.

If it can be determined that licensees will maintain the current level of fire protection safety, and that the staff does not need the enforcement tool of a formal regulation, the level of effort for rulemaking should be low. If it cannot be demonstrated that basic industry standards and practices have rendered Appendix R unnecessary, the rulemaking could become protracted and costly.

CONCLUSION

Reduction of specific fire protection requirements from the highest level of NRC's hierarchy of RRs, i.e., the regulations of 10 CFR, to those already found in the SRP and using the process described in 10 CFR 50.59 to make changes to a facility and procedures should not result in a negative impact on safety. Such a change should result in improved implementation of the requirements and regulatory efficiency. The only significant burden to this approach appears to be development costs to the NRC, a short-term burden.

APPENDIX A.2

10 CFR 50.71(e)
Maintenance of records, making of reports.
FSAR Update

BATTELLE CONCLUSIONS

Potential Action: Eliminate/Replace

The Battelle report makes the following conclusions regarding Paragraph 50.71(e).

> There are several potential actions possible. The first is to eliminate that text which distinguishes among plants that were and were not in the SEP. That language has outlived its usefulness. The second is to maintain the requirement for regularly updating the FSAR but replace that portion which makes submittal of such updates to the NRC mandatory. The licensee could be required to maintain and produce on demand a current FSAR at the plant site or other similarly appropriate location. The final option is to eliminate Paragraph (e) all together on the grounds that changing the FSAR has no direct impact on the plant's safety and represents only a burdensome exercise in generating and moving paper.

TRIAL APPLICATION

STEP 1: Procedural Screen

The potential actions regarding 10 CFR 50.71(e) are within the scope of this project. Additionally, there is no present or planned NRC rulemaking in this area. Therefore, further consideration of the actions is appropriate.

STEP 2: Background Description

Rulemaking Motivation

In 1980, the NRC issued a rule requiring the periodic updating of Final Safety Analysis Reports (FSARs). The rule stemmed from NRC and licensee concerns that the safety analysis, which guides the safe operation of the plant, be kept current with changes in the plant. There was a precedent for updating SARs in 10 CFR 50.30(c)(2), which required applicants for construction permits to update their applications. These applications included safety-related information such as the Preliminary Safety Analysis Report and preliminary emergency plans. Updating the application ensured that superseded information was removed, and the updated application provided an index of the changes made prior to the public hearing on the application. However, the NRC noted that no corresponding regulation existed for an applicant or holder of an operating license to update the FSAR. As a result of this discrepancy, 10 CFR 50.71(e) was formulated. The Commission made the following statement regarding the need to update the FSAR on a regular basis.

> Revision of the FSAR to reflect the current status of a facility's safety related structures, systems, and components would be of value to provide a reference document for recurring safety analyses performed by the applicant or licensee and the Commission. Maintenance of the FSAR in this manner will remove the need for repeated review of outdated portions of the FSAR and succeeding documents related to the outdated portions document.

Requirements for Licensees

The goal of Paragraph 50.71(e) is to provide an updated reference document to be used in safety analyses. The following requirements are included in Paragraph 50.71(e) to accomplish this goal.

1. Each licensee must update the FSAR periodically to assure that it includes the latest material developed for the facility. The updated FSAR must include the effects of:

    (a) changes made in the facility or procedures described in the FSAR;

    (b) safety evaluations performed by the licensee in support of requested license amendments, or in support of conclusions that changes did not involve an unreviewed safety question; and

    (c) analyses of new safety issues performed by or on behalf of the licensee at Commission request.

2. A revision of the original FSAR must be filed within 24 months of either July 22, 1980 (the date 50.71(e) became effective), or the date of issuance of the operating license, whichever is later. The time interval between subsequent revisions cannot exceed 12 months.

3. Those licensees who participated in the Systematic Evaluation Program (SEP) were not required to comply with 50.71(e) because they already provided much of the information required by this rule. However, when a licensee was notified that the SEP was complete, a complete and updated FSAR had to be submitted within 24 months, with yearly revisions thereafter.

4. The updates must reflect changes up to a maximum of 6 months prior to the date of filing.

The rule requiring FSAR updates has undergone two minor amendments since it went into effect. In 1987, the NRC deleted a requirement of the rule specifying the number of copies that had to be sent to the NRC. This change resulted from a new rule that consolidated copy requirements and mailing instructions for Part 50 and 51 submittals. In 1988, the NRC added a requirement for licensees to retain the updated FSAR until the Commission terminated their licenses. This requirement was added to comply with a requirement of the Office of Management and Budget, which called for a retention period to be specified for each record requirement imposed by Federal regulations.

Intent of the Requirement

As previously stated, the primary purpose of 50.71(e) was to ensure that an updated reference document existed that could be used for recurring safety analyses. The updated FSAR is currently the only document required by and routinely available to the NRC that provides a comprehensive paper trail of modifications that affect safety-related issues. It is a valuable reference document used by the licensee as the basis for all safety analyses and by the NRC as a tool in its review of new safety analyses developed by the licensee. The current requirements of 50.71(e) remain consistent with this motivation.

STEP 3: Determination of Importance to Safety

The three potential actions proposed by Battelle are: (1) eliminate the rule; (2) modify the rule to maintain the requirement for yearly FSAR updates, but eliminate the requirement for mandatory submission of the updates to the NRC; and (3) modify the rule to eliminate the text that grants plants that participated in the SEP a delay in complying with this rule. (These plants are not required to update the FSAR until

24 months after SEP issues have been evaluated by the NRC.) Each of these potential actions is discussed below.

1. Elimination of the Rule

The primary purpose of 50.71(e) has not been affected by the passage of time or by technical innovation. Elimination of this rule would allow licensees to make a variety of modifications without incorporating those changes into the FSAR. As these changes accumulate, the FSAR would no longer reflect actual plant facilities, procedures, etc. This would degrade the design basis documentation for the plant and invalidate the use of the FSAR as a reference document during emergency situations. Loss of this resource could also lead to mistakes on the part of both the licensee and the NRC if incorrect or outdated information is used during safety analyses or in reviews of license amendment applications.

Therefore, elimination of 50.71(e) would have a negative impact on safety. The analysis team judges that the effects could be potentially significant. For example, the accident at Chernobyl was in part due to a disregard for maintaining the plant within the analyzed safety envelope, such as that provided by the FSAR.

This finding completes the review of this item. No evaluation is required of the benefits of the potential action.

2. Elimination of Formal Submission of Updates to the NRC

Elimination of the requirement to submit the updated FSAR to the NRC could lead to incorrect conclusions by the NRC during emergency situations. Therefore, elimination of the requirement to submit FSAR changes to the NRC on a yearly basis would have a negative impact on safety.

This finding completes the review of this item. No evaluation is required of the benefits of the potential action.

3. Elimination of Exceptions for SEP Plants

Elimination of the text that grants plants participating in the SEP a delay in submitting an updated FSAR would have no effect on safety since it does not change the requirement for updating the FSAR. The SEP plant evaluations have been completed by the NRC, and all plants are now required to meet the FSAR update rule on a routine basis. All licensees now follow the same submittal cycle, and there is no longer any distinction owing to past participation in the SEP. Therefore, this portion of the rule is now obsolete. (Note: The status of SEP plants will be verified in subsequent reviews.)

STEP 4: Impact Analysis

In accordance with the proposed methodology, only the third action (elimination of exceptions for SEP Plants) is evaluated in this step.

The potential action would have no effect on non-SEP plants and would offer no benefits to SEP licensees since the action does not change the requirement to submit an updated FSAR. The only benefit to the NRC would be the shortening of the regulations by eliminating obsolete portions of the rule. This benefit is more than offset by the short-term NRC burden to accomplish the rule change.

CONCLUSION

Based on the preceding evaluation, complete elimination of this rule would have a significant, adverse effect on safety. Likewise, modification of the rule to eliminate the requirement for a formal yearly submittal of updates to the FSAR would have a negative impact on safety. The third potential action, elimination of that portion of the rule that grants delays to SEP plants, would have no impact on safety since that portion of the rule is now obsolete. However, the only benefit that can be realized from this last action is the shortening of the regulations, and that benefit is more than offset by the short-term burden of rule change on the NRC.

No action is warranted with respect to this RR.