POLICY ISSUE
(Information)

January 13, 1986 SECY-86-10

For: The Commissioners

From: Victor Stello, Jr.
Acting Executive Director for Operations

Subject: RECOMMENDATIONS FOR IMPROVING TECHNICAL SPECIFICATIONS

Purpose: To inform the Commissioners of the recommendations of the Technical Specification Improvement Project (TSIP) and planned staff actions in response to these recommendations.

Background: In March 1982, the NRC proposed a change to 10 CFR 50.36 to focus Technical Specifications on items of greatest safety importance. The proposed approach was to split existing requirements between two documents, the plant Technical Specifications which would remain an appendix to the operating license and a separate set of supplemental requirements of lesser safety significance which would not be a part of the operating license. Because of difficulties with defining the criteria for making the split and other higher priority licensing work, implementation of the rule change was delayed.

In August 1983, the Office of the Executive Director for Operations established a Task Group on Technical Specifications to identify the scope and nature of problems with surveillance testing in current Technical Specifications and to develop alternative approaches that will provide better assurance that surveillance testing does not adversely impact safety. The product of this Task Group was NUREG 1024 "Technical Specifications - Enhancing the Safety Impact."

On December 31, 1984, NRR established a Technical Specification Improvement Project (TSIP) to reconsider the entire subject of Technical Specifications and provide recommendations for improvement. TSIP work was coordinated

CONTACT: Edward J. Butcher
x24559

8601280338 860113
PDR SECY
86-010 PDR

closely with a similar industry effort sponsored by the Atomic Industrial Forum (AIF). The TSIP and AIF final reports are provided as enclosures.

Discussion:

The principal finding of the TSIP Report is that there are no acute safety concerns or resource burdens associated with Technical Specifications which would support imposing a mandatory program of changes to the Technical Specifications of operating reactors. There were, however, important problem areas identified where significant improvements could best be realized through a cooperative program between the industry and NRC to revise the existing Standard Technical Specifications (STS). The problem areas can be summarized as follows:

1. Lack of well-defined criteria for what should be included in Technical Specifications, and

2. Human factors and other technical weaknesses in the Technical Specifications.

The first problem, in addition to a reluctance of the NRC staff to use tools other than the Technical Specifications for implementing regulatory requirements, has resulted in the Technical Specifications becoming a catch-all for staff requirements and, thus, covering too wide a range of safety importance. In the second problem area specific problems of clarity, poor wording and inadequate statement of the bases were also identified in NUREG-1024. The result has been a document which is voluminous and difficult to use.

To address these problems TSIP recommended that:

1. A Commission Policy Statement be issued which defines the scope and purpose of Technical Specifications and encourages licensees to implement a program to upgrade their Technical Specifications.

2. The NRC staff give increased attention to changes made by licensees using the 10 CFR 50.59 process.*

*This would be a first step in reducing the reluctance of individual NRC staff units to use the FSAR as a tool other than the Technical Specifications for implementing regulatory requirements.

3. The NRC staff review and revise the STS tc correct human factors and other technical weaknesses through a program of outside technical assistance and dedicated in-house resources.

4. The NRC encourage the continued development of probabilistic risk assessment (PRA) methods to address Technical Specification requirements.

Specifically, with regard to the proposed Policy Statement, TSIP recommended that the Commission adopt as policy for all power reactors the fundamental principles of importance and immediacy embodied in the Atomic Safety and Licensing Appeal Board decision ALAB-531 which states:

> "Technical Specifications are to be reserved for those matters as to which imposition of rigid conditions or limitations upon reactor operation is deemed necessary to obviate the possibility of an abnormal situation or event giving rise to an immediate threat to the public health and safety." (9 NRC 263, 1979)

A specific set of objective criteria based on this concept was developed in conjunction with AIF for determining which systems, structures and process variables must be controlled by Limiting Conditions for Operation (LCO) in the Technical Specifications. These criteria are:

A. An installed system that is used to detect, by monitors in the control room, a significant abnormal degradation of the reactor coolant pressure boundary,

B. A process variable that is an initial condition of a DBA analysis, or

C. A structure, system, or component that is part of the primary success path of a safety sequence analysis and functions or actuates to mitigate a Design Basis Accident.

Regulatory requirements which do not meet this test would be reserved for other controlled documents such as the updated FSAR or Quality Assurance Plan.

The Office of Nuclear Reactor Regulation has initiated actions to develop a complete program to verify the practicality of implementing the recommendations in the

TSIP report. Validation of the criteria as a mechanism for implementing the principles of importance and immediacy in ALAB-531 is in progress by a trial split of an existing set of PWR and BWR Technical Specifications. The balance of the program will be focused on the short term implementation of improvements to the existing STS and the longer term development of a new more streamlined set of STS based on the criteria. Some of the improvements proposed would require minor rule changes, such as deleting the requirement for Radiological Effluent Technical Specifications (RETS) (10 CFR 50.36a). However, the staff believes that accomplishment of the overall program objectives can be initiated without the major rule change proposed in 1982. Instead, a Commission Policy Statement would be issued, as recommended by TSIP, to adopt the principles of ALAB-531 and establish the specific criteria to be used for defining the scope and purpose of Technical Specifications. After experience is gained in the application of the criteria and implementation of the program, a decision on codification of the criteria can be made.

The staff has initiated a series of meetings with the various groups representing the industry to further identify and prioritize the short term improvements that can be made and to define the level of industry participation in both the short term and long term aspects of the program. The staff believes that the active participation of the industry and other interested groups is a critical element in the timely achievement of our goal of improving Technical Specifications. To begin this process the staff met with the Chairman of the AIF Subcommittee on Technical Specification Improvements, on December 4, 1985 and with the full AIF Subcommittee on December 11, 1985. We have also begun a series of meetings with individual Owners Groups by meeting with the B&W Owners Group on December 10, 1985. By the end of January 1986, we plan to have completed at least an initial meeting with all of the Owners Groups.

At the conclusion of this first round of meetings with the various industry groups, the staff will develop a complete Program Plan for seeking appropriate approvals and implementing specific Technical Specification improvements. By meeting with the industry before developing our final plan, we hope to be able to develop an integrated approach which will assure the most effective use of both industry and NRC resources in achieving the desired improvements. Our Program Plan

will include both resource estimates and schedule goals for specific activities including the issuance of a Commission Policy Statement on Technical Specifications. The plan will consist of activities to implement both short term improvements to the existing STS and a longer term complete rewrite of the STS based on the TSIP criteria for establishing Technical Specification requirements.

Our current schedule goal for completing the Program Plan is March 1, 1986. Implementation of the Program Plan will follow immediately. One of the initial tasks will be the preparation of a Commission Policy Statement. Other high priority areas will include implementation of the short term improvements identified in meetings with the Owners' Groups and an upgrade of the Bases sections in the existing STS. As stated above, the ultimate long term objective of the Program Plan will be to completly rewrite and streamline the STS.

Victor Stello, Jr.
Acting Executive Director
for Operations

Enclosures:
1. TSIP Final Report
2. AIF Final Report

DISTRIBUTION:
Commissioners
OGC
OPE
OI
OCA
ACRS
EDO
SECY

BACKGROUND AND SIGNATURE TAB

Use this side of the sheet to precede the signature page when assembling correspondence.

(USE REVERSE SIDE FOR BACKGROUND TAB)

ENCLOSURE 1

RECOMMENDATIONS FOR IMPROVING TECHNICAL SPECIFICATIONS

SEPTEMBER 30, 1985

Technical Specification Improvement Project

Don H. Beckham, Director

Samuel E. Bryan, Assistant Director

Timothy E. Collins

Richard L. Emch, Jr.

Scott F. Newberry

Peter M. Williams

Legal advice provided by Richard K. Hoefling

The Technical Specification Improvement Project was established by the Director, Office of Nuclear Reactor Regulation on December 31, 1984. This report presents the conclusions and recommendations of the Project to the Director, NRR and summarizes the Project efforts. The conclusions and recommendations do not represent NRR or Commission Policy.

TABLE OF CONTENTS

LIST OF TABLES AND FIGURES

1 INTRODUCTION AND SUMMARY

In November 1983, the Task Group on Technical Specifications published NUREG 1024, "Technical Specifications - Enhancing the Safety Impact" (Sniezek, November 1983). The NUREG contained specific recommendations for improving Technical Specifications. The Director, Office of Nuclear Reactor Regulation (NRR), was directed to implement the recommendations (Dircks, November 1983). Subsequent events both delayed implementation and highlighted the need for improvements.

In December 1984, the Director, NRR, chartered the Technical Specification Improvement Project (TSIP) to reconsider the entire area of Technical Specifications and provide him with recommendations and changes needed to implement the recommendations (Denton, December 1984). TSIP was also to facilitate short-term improvements to specific areas of Technical Specifications where possible. Therefore, the project members have not only studied the problems with Technical Specifications from a detached vantage point, but have also had to deal day-to-day with the technical and institutional barriers that must be dealt with to effect improvements. The recommendations in this report were derived from both activities.

In the TSIP Program Plan TSIP stated, "The history of Technical Specifications indicates that the concerns expressed [in the plan introduction] are not new. The efforts to date have largely been to strike a balance between identifying a set of specifications that 'enable [the Commission] to find that the utilization or production of special nuclear material will be in accord with the common defense and security, and will provide adequate protection to the

health and safety of the public;' (Atomic Energy Act) and also will not be so detailed as to unnecessarily hamper facility operation." (Beckham, March 1985). TSIP maintains that opinion and views its work as an effort to improve on the past. TSIP recognized that it is not writing on a clean slate.

Starting from the discussion in NUREG 1024, TSIP collected information to identify the root causes of problems with the Technical Specifications. Its meetings with vendor and utility personnel, the Atomic Industrial Forum's (AIF) Subcommittee on Technical Specification Improvements, and representatives of public interest groups are described in Section 4 of this report. From these meetings, its technical assistance work, and its efforts on short-term projects, TSIP developed an overwhelming sense that, although NUREG-1024 captured specific problems with Technical Specifications, it did not identify root causes. Despite the enthusiasm and support shown by utilities for correcting some of the problems identified in NUREG-1024, little progress has been made since 1983. Therefore, TSIP's efforts concentrated on going beyond the compelling specific problems to the underlying foundation that was inhibiting correction of the problems.

From this work, as described in detail in Section 4, TSIP identified three major problems:

(1) Reluctance of the NRC staff to use tools other than Technical Specifications for establishing regulatory requirements,

(2) Lack of well-defined criteria for what requirements should be included in Technical Specifications, and

(3) Human factors and other technical weaknesses of the Technical Specifications.

TSIP concluded that these problems do not pose an acute safety problem for operating power reactors. However, if the NRC is to achieve effective and efficient regulation of the nuclear industry, each problem must be addressed.

After identifying the problems, TSIP went through an extensive program of evaluating alternatives, as described in Section 5 of the report. TSIP evaluated each alternative against two conditions. First, did it resolve all or part of the problems? Second, what were the safety impacts, the resource impacts, and the administrative burdens associated with the alternative? The assumptions that TSIP used are also detailed in Section 5.

The major difficulty facing TSIP as evidenced from the problem statements above, is a lack of consistent philosophy on the roles of the different regulatory tools in relation to safety issues of differing importance. Therefore, although TSIP's first recommendation is that a Policy Statement be prepared to articulate the scope and purpose of Technical Specifications (Recommendation 1), this effort could be enhanced by improving NRC staff's understanding of the relationship of safety to the roles of regulations, orders, license conditions, Technical Specifications, and commitments made in the Final Safety Analysis Report (FSAR).

The Commission Policy Statement should include criteria to identify Technical Specifications. In evaluating potential criteria, TSIP found itself returning

to the subjective criterion used by the Atomic Safety and Licensing Appeal Board in ALAB-531,

> "that Technical Specifications are to be reserved for those matters as to which imposition of rigid conditions or limitations upon reactor operation is deemed necessary to obviate the possibility of an abnormal situation or event giving rise to an immediate threat to the public health and safety." (9 NRC 263, 1979)

To remove the subjective judgements required by that statement, TSIP attempted to identify objective criteria that would capture that subjective concept. In pursuing these criteria, TSIP had several discussions with the AIF Subcommittee, who were pursuing a similar goal.

Out of these discussions grew a set of proposed criteria for screening items for inclusion in Technical Specifications. The proposed criteria are strongly linked to the Design Basis Accident (DBA)* analysis included in the FSAR and are discussed in detail in Section 2.2.1.

Admittedly the DBA concept does not include several items imposed on licensees by regulation or order subsequent to licensing. However, TSIP feels strongly that the proposed criteria capture most, if not all, of the items that would be included in the subjective criteria of "immediacy" and "most important items" that we each carry around in our heads.

*DESIGN BASIS ACCIDENT - A postulated event, analyzed in the Final Safety Analysis Report, for which a structure, system, or component must meet its functional goals. These analyses are contained in Chapters 6, 15 of the FSAR (or equivalent chapters) and are identified as Condition II, III, or IV Events (or equivalent) that either assume the failure of, or challenge to the integrity, of a fission product barrier.

Because individual items that fall inside or outside of these criteria might have the same immediacy and importance articulated by the ALAB, TSIP has recommended a Policy Statement instead of a rule. However, it should be clear that the burden of proof would fall to the group proposing to add items not consistent with the criteria, or to delete or items consistent with the criteria. And the burden should be heavy.

With a strict program for controlling Technical Specifications, the staff must become more familiar and comfortable with other regulatory tools. The evaluation and review process addressed by 10 CFR 50.59 is the primary mechanism recommended by TSIP for controlling items not in Technical Specifications (Recommendation 2). Currently, there is a mistrust of that mechanism because of perceived abuse by licensees. This mistrust can be overcome by training and by joint NRR, IE, Regional programs to audit the licensees' 50.59 processes. The mechanisms already exist in the IE Inspection Manual and regional instructions. Specific recommendations for increasing NRR involvement are included in Section 2.2.2.

Finally, TSIP recognizes that the improvements recommended by NUREG-1024 and confirmed in its work will only be made through a program involving the utilities and owners groups in the technical evaluations. (Conclusion 4, Recommendations 1, 3, and 4). TSIP believes that allowing licensees to revise their existing Technical Specifications to reflect the proposed criteria will serve as incentive for them to improve the Bases, clarity and technical adequacy of the items that remain Technical Specifications. Because TSIP could find no acute safety concern with existing

Technical Specifications, the program should be voluntary. Therefore, industry support is essential in realizing the improvements that can and are being made. NRC reluctance to relinquish any items from Technical Specifications to other control mechanisms will surely limit the cooperation extended by licensees.

This summary is presented to give the reader an overview of the goals of the Technical Specification Improvement Project and a framework of how the recommendations support those goals. Ultimately, the result of the TSIP would be submittals by each participating licensee of a detailed request for a change to Technical Specifications. This change request will require review, notification, and approval prior to implementation just as for any license change. The purpose of TSIP is to remove institutional barriers to legitimate changes, to minimize the subjectivity of what constitutes a legitimate change, and to provide a framework for handling items not incorporated in Technical Specifications. TSIP has no vested interest in any piece of the recommendations. For example, if criteria could be proposed that are equally objective, capture the concepts of immediacy and importance, and can be implemented without significant re-analysis of operating reactors, then TSIP would gladly support them.

But each recommendation is a piece of the overall program that tries to balance NRC needs, industry concerns, and most importantly, improving the regulatory process to protect the public health and safety.

2 CONCLUSIONS AND RECOMMENDATIONS

2.1 Conclusions:

(1) There are no acute safety concerns or resource burdens which would support imposing a mandatory program of changes to the Technical Specifications of operating reactors.

(2) Improvements in both safety and resource requirements can be realized through a focused effort to correct human factors and other technical weaknesses in the Technical Specifications.

(3) Definition of the scope and purpose of Technical Specifications would provide useful guidance to the NRC and should lead to substantial NRC resource savings.

(4) Maximum safety enhancement will require participation of licensees and other interested groups.

(5) Definition of the scope and purpose of Technical Specifications is an important incentive for industry participation in a program to improve Technical Specifications.

2.2 Recommendations:

(1) A Commission Policy Statement should be issued which defines the scope and purpose of Technical Specifications as discussed in Section 2.2.1 and encourages licensees to implement a program to upgrade their Technical Specifications.

(2) The NRC should give increased attention to changes made by licensees using the 10 CFR 50.59 process.

(3) The NRC should review and revise the Standard Technical Specifications to correct human factors and other technical weaknesses through a program of technical assistance and dedicated in-house technical resources.

(4) The NRC should encourage the continued development and application of probabilistic risk assessment methods to address Technical Specifications requirements.

2.2.1 Policy Statement on Technical Specification Criteria

A Commission Policy Statement should be issued which defines the scope and purpose of Technical Specifications and encourages licensees to implement a program to upgrade their Technical Specifications.

An essential first step in correcting the root causes of the problems identified with Technical Specifications is establishing clearly the

purpose and scope of Technical Specifications. Without this step, it is impossible to evaluate the adequacy of the control mechanisms used for other areas. Therefore, TSIP evaluated several previously articulated statements of purpose. The criterion expressed by the Atomic Safety and Licensing Board in ALAB-531 was considered to be the most concise subjective statement of the purpose. That statement,

> "Technical Specifications are to be reserved for those matters as to which imposition of rigid conditions or limitations upon reactor operation is deemed necessary to obviate the possibility of an abnormal situation or event giving rise to an immediate threat to the public health and safety." (9 NRC 273, 1979)

should be adopted as the Commission's purpose for Technical Specifications.

To make that statement of purpose useful in the regulatory arena, the subjective statement of purpose has to be expressed, as clearly as possible, in objective criteria that define the scope of Technical Specifications. Although there will probably always be some gray area and discussions of some specific issues will persist no matter what criteria are developed, the proposed objective criteria should minimize that gray area.

In efforts to develop an acceptable set of objective criteria, TSIP has had several interactions with the AIF Subcommittee and its Working Group on Technical Specification Criteria. Through these actions, and significant work by the Working Group, a set of criteria were developed that TSIP concludes captures an adequate statement of the scope and purpose of Technical Specifications. These criteria were written to be applied to the Limiting Safety System Settings (LSSS), the Limiting Conditions for Operation (LCO),

and the Surveillance Requirements that support the LCOs. The areas of Bases, Design Features, Safety Limits and Administrative Controls are adequately defined in 10 CFR 50.36. Some inappropriate material has been included in these latter areas and this is specifically discussed later in this Section. The significant problems arise from the selection of structures, systems, and components included in Technical Specifications, and therefore, the criteria focus on those areas. The recommended criteria for evaluating LSSSs and LCOs are as follows:

(1) An installed system that is used to detect, by monitors in the control room, a significant abnormal degradation of the reactor coolant pressure boundary,

(2) A process variable that is an initial condition of a DBA analysis,

(3) A structure, system, or component that is part of the primary success path of a safety sequence analysis and functions or actuates to mitigate a Design Basis Accident.

The AIF Subcommittee has prepared a full recommended program for implementing the Technical Specification revisions. Although TSIP has reviewed a draft of this proposal, it is not incorporating the entire program into these recommendations.

TSIP concludes that the current 10 CFR 50.36 could serve as a vehicle to solve the problems identified. The full AIF proposal would require changing the rule prior to implementation. TSIP concludes that the improvements

recommended below can proceed without a change to 10 CFR 50.36. The TSIP has reviewed each of the categories in the present rule and recommends the following.

Safety Limits and Limiting Safety System Settings would be retained in their present form and content.

Limiting Conditions for Operation (LCOs) would be examined using the recommended criteria to determine which LCOs would remain in Technical Specifications. For items removed from Technical Specifications, licensees would be required to address the location and controls for the technical content of the Technical Specifications removed. Modifications to the licensee's FSAR would generally be required.

Surveillance Requirements would remain for LCOs which remain in the Technical Specifications. However, TSIP concludes that extracting Surveillance Requirements into a separate document could improve their useability and would be an acceptable alternative. The document would be incorporated into the Technical Specifications by reference and changes would continue to require prior NRC approval.

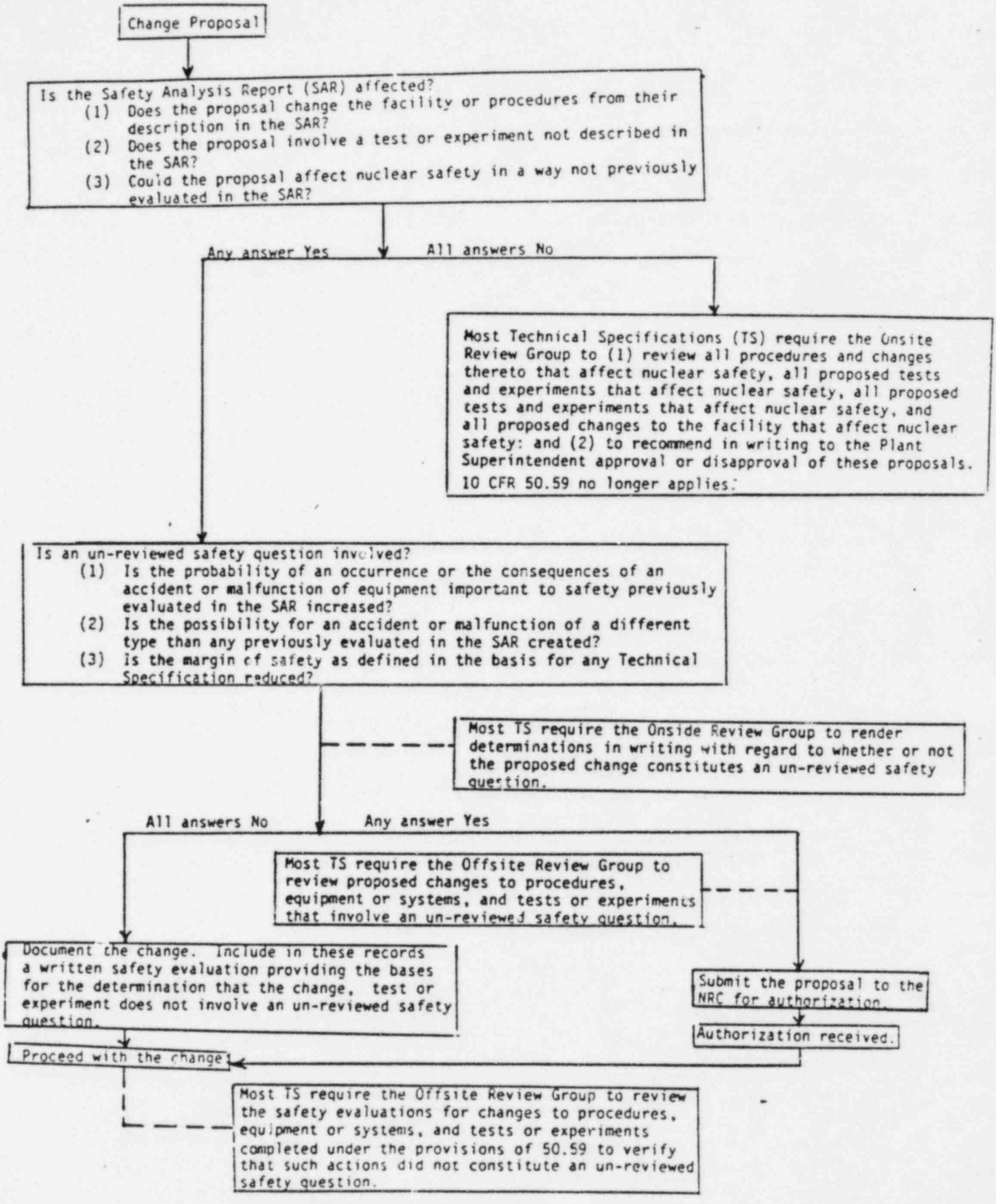
Design Features would be retained in its current form and content. While TSIP has doubts about the need for all the information currently in this category, modification of the category would require a rule change and TSIP would not recommend a rule change for this purpose alone. This category does serve in its present form to demonstrate compliance with Section 182 of the Atomic Energy Act.

Administrative Controls would also be retained. However, TSIP concludes that current Technical Specifications contain substantial information extraneous to the purpose of this category. The Administrative Controls category should be limited to: (1) a requirement that certain procedures described in the FSAR be adherred to, (2) a description of the process utilized by the licensee to control and review changes to organization and procedures (this would include the licensee's process to assure compliance with 10 CFR 50.59), (3) the licensee's controls to assure adequate record keeping, and review and auditing of licensee activities, and (4) specific requirements, if any, for reporting to the NRC not already defined in regulations. Figure 2.1 describes the change process in place at most nuclear facilities.

All other material currently in this category of Technical Specifications would be removed. Specifically, TSIP views the sections of current Technical Specifications describing procedures and dealing with Responsibility, Organization, Qualifications and Training as inappropriate for Technical Specifications. This material would be placed in the FSAR either directly or by reference and would be subject to the control of 10 CFR 50.59.

In implementing this program, TSIP recommends that the current 10 CFR 50.36 be retained. Some regulatory changes would nontheless be required but a major

FIGURE 2.1
CHANGES TO FACILITIES, PROCEDURES AND TESTS (OR EXPERIMENTS)



rule change would be avoided. Greater flexibility would exist for implementation of the recommended criteria if the TSIP recommended program was implemented as a Policy Statement rather than a rule. TSIP recognizes the industry's need for stability and would recommend that industry be given assurance of the NRC's dedication to implementation of the recommended program through issuance of a Commission Policy Statement. NRC resources for the implementation effort should also be identified.

The proposed criteria are clearly tied to the Design Basis Accident safety analyses. To evaluate the impact of accepting the recommended criteria, TSIP had to consider three areas. First, a most important consideration regarding the recommended criteria is their consistency with the present regulatory scheme governing Technical Specifications. The TSIP has carefully considered this matter and has concluded that the proposed criteria do isolate those systems, components and variables most important to safety consistent with the current rule.

More specifically, the Statements of Consideration accompanying the current rule discussed the scope of Technical Specifications as including the following:

> In the revised system, emphasis is placed on two general classes of technical matters: (1) those related to prevention of accidents, and (2) those related to mitigation of the consequences of accidents. By systematic analysis and evaluation of a particular facility, each applicant is required to identify at the construction permit stage, those items that are directly related to maintaining the integrity of the physical barriers designed to contain radioactivity. Such items are expected to be the subjects of Technical Specifications in the operating license. (33 Fed. Reg. 18610)

The proposed criteria, with their focus on immediacy and importance, are consistent with this emphasis. The first consideration, accident prevention, is captured by criterion (1) and to some extent, criterion (2) in that they address systems and process variables that alert the operator to a situation when accident initiation is more likely. The second consideration, mitigation of accident consequences, is clearly captured by criteria (2) and (3). Table 2.1 summarizes the major areas that would remain in Technical Specifications using the recommended program.

Items that would be removed from the Specifications, such as fire protection or primary coolant chemistry control, are not of immediate importance to safety. They provide essential controls and some level of control must be maintained over these programs, but the direct and immediate relationships discussed in the 1968 Statement of Considerations and ALAB-531 is not evident.

Again, when 10 CFR 50.36 was proposed, the role of Limiting Conditions for Operations was discussed.

> The 'minimum conditions for operation' would specify the lowest functional capability or performance levels necessary to assure safe operation of the facility. The conditions generally would cover (1) the equipment or systems necessary to verify compliance with safety limits and (2) the required engineered safeguard systems. (31 Federal Register 10981)

TABLE 2.1

TECHNICAL SPECIFICATIONS REMAINING UNDER

RECOMMENDED CRITERIA

SAFETY LIMITS - (no change)

LIMITED SAFETY SYSTEM SETTINGS - (no change)

LIMITING CONDITIONS FOR OPERATION - (and supporting Surveillance Requirements)

Reactor -
Shutdown Margin
Moderator Temperature Coefficient
Moveable Control Assemblies
Power Distribution Limits
Special Test Exceptions

Reactor Coolant System -
Pressure Temperature Limits
Minimum Temperature for Criticality
Appendix G Pressure Temperature Limits
DNB Parameters
Pressure Limits (Safety Limits)
Reactor Coolant Loops
Overpressure Protection (Normal, Low Temperature)
Pressurizer
Steam Generators
RCS Leakage
Specific Activity
Special Test Exceptions

Instrumentation -
Reactor Protection System
Engineered Safety Feature
Radiation Monitors

Auxiliary Systems -
Service Water
Ultimate Heat Sink
Component Cooling Water

Steam and Power Conversion -
Safety Valves (Secondary)
Auxiliary Feedwater
Condensate Storage
MSIV's (plant specific)
Steam Generator Water Inventory

Radioactive Inventory -
Liquid Holdup Tank Inventory
Gaseous Waste Tank Inventory

Engineered Safety Features -
ECCS
Containment

Electrical Power Systems -
AC Sources
AC Distribution
DC Sources
DC Distribution

DESIGN FEATURES - (no change)

ADMINISTRATIVE CONTROLS -
Process to control and review changes.
Controls to assure adequate record keeping, review, and reporting
Additional reporting requirements

The items which would be removed from Technical Specifications do not specify minimum levels, but provide added assurance above the minimums. They are not necessary to verify compliance with safety limits and they are not engineered safety features. Therefore, the inclusion of these items in Technical Specifications is not appropriate. Removing them does not reduce the level of protection to below the level foreseen by the 1968 rule. This is not to say that some items will not be removed. On the contrary, Table 2.2 identifies a list of Limiting Conditions for Operations from the Standard Technical Specifications which may not be captured by the criteria but that currently require plant shutdown or power reduction. These LCOs should be evaluated against the subjective criteria of immediacy and importance to validate the proposed objective criteria.

The second area that was evaluated was the safety implication of removing any items from the Technical Specifications. As indicated in Section 5.1 on the evaluation process, TSIP assumed that less NRC control would imply a reduction in safety. This assumption is itself clearly conservative. In ALAB-531, the Appeal Board concluded:

> "It bears repetition, however, that this should not be taken as reflecting a belief that the applicants are relieved of any obligation to take appropriate measures to live up to each of the commitments with respect to (spent fuel) pool operation which are set forth in the design report. For the reasons we have set forth, all we need or do decide here is that none of those commitments has been shown to have such an immediate bearing upon the protection of the public health and safety that it must be made the subject of rigid operational limitation in the form of a Technical Specification. To the contrary, with regard to each commitment, the record affirmatively establishes that fulfillment of the requirements of 10 CFR 50.59 will provide ample safety protection." (9 NRC 279, 1979)

However, even given the conservatism of that assumption, TSIP evaluated the subjective magnitude of this reduction in safety. First, TSIP noted that removing any item from Technical Specifications does not alter the plant design. The assumption of decreasing safety comes from the reasoning that the removal of NRC pre-approval will lead to changes that allow degradation of the system involved. To evaluate, subjectively, the potential impact, TSIP reviewed several sets of Technical Specifications against the criteria to determine if, in its own judgement, the systems that were most directly related to protecting the public health would remain in Technical Specifications. In each case, TSIP determined that the most important items were retained. TSIP also determined that the decrement in safety from removing some items, especially in light of the controls proposed in Section 2.2.2 of this report, was small.

Regardless of the magnitude of safety decrement, any reduction should be justified by some improvement. This led TSIP to its third area of consideration. Were the safety reductions justified? Two possible justifications were evident. Allowing the removal of some items from Technical Specifications would result in either (1) resource improvements significant enough to override the safety concern, or (2) improvements in other areas which would provide compensating safety benefits. The resource considerations are discussed more completely in Section 5.2 of this report but basically from the perspective of NRC resources there is no overriding resource consideration. Savings of approximately $2M and 20 professional staff years per year should result in NRR. This level would be reduced in the short-term by implementation costs of the changes. Long-term resource

considerations would certainly support a change but would not provide a compelling argument for NRC action. Although the industry has shown a willingness to commit resources to this activity and appears to be highly motivated to pursue the improvement of Technical Specifications, they have not provided convincing resource arguments that lead to a conclusion that over-regulation is a significant concern in this area. However, the motivation displayed suggests that the benefits anticipated by the industry are considerable.

Because the resource arguments were not convincing, removal of some items for Technical Specifications was evaluated against the potential for improvements in other areas. By tying the reduction in Technical Specifications to improving the Bases and clarity of the remaining specifications, an overall improvement in safety should be realized. This compensating safety improvement provides the primary impetus for change.

A line-by-line review of the Technical Specifications against the existing safety analysis would be resource intensive. Development of additional analyses to expand the Bases would add more resource requirements. Even then there is no assurance that the NRC would approve the changes that deviated from the Standard Technical Specifications. Therefore, NRC needs to assure that the recommended criteria would be used as the basis for the evaluation and that reviews would be completed expeditiously and resources would be made available on a priority basis. In return, the utility desiring the changes would be required to conduct the review described above. The submittal would have to provide the expanded Bases, the improvements in clarity, and the disposition of, and controls for the requirements removed from the Technical Specifications.

TABLE 2.2

SPECIFICATIONS WHICH REQUIRE REACTOR SHUTDOWN OR POWER LIMITATIONS.[1]

Power Distribution	Heat Flux Hot Channel Factor	Power Limitations
	RCS Flow Rate and Nuclear Enthalpy Rise Hot Channel Factor	Power Limitations
Reactor Coolant System	Water Chemistry	Shutdown in 24 hours
	Structural Integrity	Restore or isolate prior to startup
	RCS Vents	Shutdown in 72 hours
	Pressurizer Heaters	Shutdown in 72 hours
Engineered Safety Features	Containment Structural Integrity	Shutdown in 72 hours
Instrumentation	Remote Shutdown	Shutdown in 7 days
	Accident Monitoring	Shutdown in 7 days
Containment	Combustible Gas Control	Shutdown in 30 days
Electric Power	Equipment Protective Devices	De-energize crcuit or shutdown
Steam and Power Conversion	Secondary Specific Activity	Shutdown in 6 hours

[1]Based on DRAFT Former Tech-Spec LCO's provided by AIF as applied to Wolf Creek Technical Specifications.

2.2.2. Increased Attention to 10 CFR 50.59

The NRC should give increased attention to the review of changes made by licensees using the 10 CFR 50.59 process.

In Section 4.1, TSIP discusses the reluctance of NRR reviewers to impose controls on a licensee by means other than the Technical Specifications. While the regulations now require updating of the FSAR, neither NRR project managers nor technical reviewers have been given formal responsibility to review these updates. Using 50.59, licensees make hundreds of changes a year which receive no NRR review or attention. Only changes which licensees conclude involve an unreviewed safety question or a Technical Specification amendment currently receive NRR review and attention. Also, while most 50.59 changes are appropriate, NRR personnel are aware that occasionally licensees have overstepped the intended use of 50.59 by not reviewing changes that may have involved an unreviewed safety question or by making an inadequate safety evaluation. To an NRR reviewer, this combination of factors implies that a licensee may later change an FSAR commitment upon which the reviewer relied in the SER at the time the plant was licensed. Therefore, the reviewer mistrusts the 50.59 process and relies instead on Technical Specifications to validate the commitment.

NRC Inspectors do (1) review the lists of changes made by licensees under 50.59 each year; (2) audit the licensee's procedures for complying with 50.59; and (3) review the documentation of several of a licensee's 50.59

changes each year. However, NRR personnel are rarely involved in the NRC review effort for 50.59 changes even though it is the NRR personnel who are the most familiar with the licensing basis for the plant.

To alleviate this mistrust and provide appropriate NRC attention to those conditions which would be removed from the Technical Specification using the recommended criteria, TSIP recommends that the NRC give increased attention to review of 50.59 changes. First, NRR project managers should be formally and specifically charged with responsibility for review of FSAR updates. The project manager would be responsible for identifying changes which potentially overstep the intent of 50.59. The project manager would consult with I&E and regional personnel and with NRR management and technical reviewers as needed and initiate further action such as formal NRR reviews when necessary. Second, NRR should set up a procedure with Regional Offices to give increased attention by including joint NRR, IE, Regional reviews of selected issues.

The proposed solution would entail an increase in emphasis on 10 CFR 50.59. Therefore, NRR, IE, and Regional personnel would have to be informed of and provided some level of training in the role of rules, license conditions, Technical Specifications and FSAR commitments. This training should include descriptions of the roles of project managers, technical reviewers, regional-based, and resident inspectors. It should also include a comparison of the relative level of effort to be devoted to Technical Specifications compared to other areas, such as 50.59 and would possibly require revisions to the IE Inspection Manual.

2.2.3. REVISIONS TO TECHNICAL SPECIFICATION BASES AND CONTENT

NRC should review and revise the Standard Technical Specifications to correct human factors and other technical weaknesses through a program of technical assistance and dedicated in-house resources.

2.2.3.1 Short Term Improvements

In addition to the programmatic changes discussed above, there are three specific actions that should be taken to improve the Technical Specifications that fall within the recommended criteria. These are:

(1) Provide more complete and meaningful Bases. Virtually all organizations interviewed by TSIP indicated a need for well documented and technically supported Bases. Perceived benefits included a potential for safety enhancement through a reduction of unnecessary shutdowns, improved equipment testing requirements and action statements, and better use of resources by reducing the many Technical Specification interpretation problems. These problems occur daily in areas of compliance, enforcement, and amendment. A potential for reduction in occupational exposure exists if unnecessary test requirements are eliminated.

The work sponsored by TSIP to update the containment Systems Technical Specification Bases (Kripps, September 1985) is an example of an effort to collect already available information for incorporation into the Bases. Follow-on work for formal review by the Owners Groups and for

additional technical assistance to update other sections of the Technical Specifications should proceed in concert with Owners Group efforts. Owners Group initiatives and submittals to improve Bases should be encouraged. The AIF Subcommittee on Technical Specification Improvements states that all four Owners Groups are planning to utilize probabilistic methodology on specific Technical Specification requirements. This area provides significant potential improvement and is discussed further in Section 4.3.1 below.

(2) Correct problems with clarity of the Technical Specifications. There are several instances in which discussions have centered on what a requirement means as discussed in Section 4.3.2. The resources wasted on interpreting these requirements could be saved, but a line-by-line cleanup of the Technical Specifications would be required. The AIF Subcommittee has proposed that a Writer's Guide be prepared (probably by the ANS 58.4 working group) to provide clear guidance for revising the specifications. This approach has been used in the development of upgrading Emergency Operating Procedures (EOP), and there may be efficiencies realized by using that effort as a basis. TSIP recommends that this be pursued with AIF and ANS and that the Technical Specifications be reviewed for clarity and useability.

(3) Examine the operability definition and requirements. In 1980, the NRC required a general definition of operability be included in all Technical Specifications (Eisenhut, April 1980). Coupled with the general requirements that a system that cannot be proven operable within the

scope of the Technical Specifications be declared inoperable and the requirement that, barring a separate action statement, plant shutdown should be undertaken when equipment operability problems persist, the application has been extremely conservative. This has led to shutdowns to "correct" situations where slight system degradation has been interpreted as system inoperability (Gallagher, July 1985). Clearly, there must be a point at which a system is declared inoperable. However, given the lack of Bases for most Surveillance Requirements and LCOs noted above, a strict interpretation of the operability definition does not seem warranted.

The AIF Subcommittee has been developing a proposal for improving the operability definition. Because TSIP has not had an opportunity to review the proposal in depth, TSIP is unable to provide a recommendation on its merits. However, TSIP recommends that the OPERABILITY definition and the associated general requirements, such as Technical Specification 3.0.3, be examined for improvement. In the meantime, TSIP would recommend that, for surveillance requirements and LCOs that are not clearly related to the safety analyses, discretion be used. Licensees should still observe the Technical Specification requirements strictly and request relief as early as possible. Two cases should specifically be considered, First, when an allowed outage time is likely to be exceeded by some small amount but there is a high probability that the system will be returned to service shortly beyond the AOT, there should be discretion in allowing continued operation. Second, when a surveillance test has been missed but the system can be shown to be operable by analysis or other means, can be tested by tests other than those

required by the surveillance requirement, or it can be demonstrated that the safety function assumed in the accident analysis is not threatened, then one-time relief should be granted. The more tightly coupled the AOTs and Surveillance Requirements are to the safety analysis (such as for Reactor Protection System testing consistent with WCAP 10271), the less discretion needs to be used in evaluating the licensees request for relief.

The AIF Subcommittee has also developed suggestions for extending the 18 month fuel cycle requirements, for deleting cycle-dependent variables from the Technical Specifications and for revising the general Technical Specification on changing modes (T.S. 3.0.4). TSIP has not had an opportunity to review each of these proposals in detail. However, if a detailed review of the Technical Specifications is to be undertaken, these areas should also be addressed. Therefore, an NRC position on the general acceptability for each AIF proposal should be developed.

The NRC should give priority to cooperative efforts by owners groups or AIF/ANS, such as proposed revisions to the Standard Technical Specifications or development of a writers guide. NRC review methods should recognize generic work and avoid duplicative reviews of individual submittals that closely follow approved generic programs. The NRC should reject programs that propose applying the criteria for Technical Specifications without providing the improvements to the remaining Technical Specifications.

2.2.3.2 Long Term Improvements

Since the safety analysis in most cases did not address system testing or action statements in the event of system degradation, it will be impossible

to derive complete Bases from the safety analyses. Therefore some will have to be inferred and the linkage documented, and some will have to be developed. TSIP recommends that a comprehensive program to improve the Bases be established.

As the efforts to improve the Bases progress several problems may be identified. This is an ideal time to correct these problems. Where evaluation of the Bases indicates inappropriate action statements, the statement could be revised to more closely follow the overall safety analyses. A second area to evaluate when reviewing Bases is the appropriateness of test methods. The test selected should ensure that the specific safety function assumed in the safety analysis is being verified. Scrutiny of the Bases and closer association with the LCOs and LSSSs may identify inappropriate test methods.

Finally, the evaluation of Bases could identify inappropriate test frequencies. Since for the containment system Technical Specifications reviewed, few Surveillance Requirements could be linked directly to the safety analysis through the Bases, there appears to be considerable room for improvement in this area. Probabilistic methodologies discussed in Section 2.2.4 could provide additional information for improving this area.

The impact on Technical Specifications should be considered by the NRC staff in evaluating new safety information. Forthcoming Commission decisions on new reactor safety information, particularly in areas of piping analysis, seismic margins, source term and ECCS models should address the impact on

Technical Specifications. The new information should provide an overall improvement to the Technical Specifications through justifying, as appropriate, relaxations, strengthening, and changes that correct some existing problems and errors. Incorporation of improvements derived from new information on seismic margins and piping analysis could proceed in the near future as Commission policy in these areas is advancing rapidly. Improvements based on new source term information should be studied now, but actual implementation must be paced by the development of final Commission policy in the area. Improvements in ECCS Technical Specifications would be paced by rulemaking activities in this area now underway.

2.2.4 Use of Probabilistic Risk Assessment Methodology to Improve Technical Specifications

The NRC should encourage the continued development and application of probabilistic risk assessment methods to address Tecnnical Specification requirements.

There has been an increasing trend toward the use of risk-based evaluations to assist review of Technical Specification requirements (and their associated Bases). Westinghouse and General Electric Owners Group analysis of Reactor Protection Systems (WCAP 10271 and NEDO 30855;) and Commonwealth Edison's Byron LCO Relaxation Program are recent examples. At this time, there is not a standard methodology or review method for using probabilistic risk assessment methods to assist determination of Technical Specification requirements. As a result, reviews have taken quite a long time and were

quite extensive. Two of the most difficult problems with the use of PRA are the lack of a cumulative outage consideration and lack of acceptance criteria (relative change in risk or absolute risk level). Of course, other uncertainties also exist involved with the modeling, data and assumptions. Nonetheless, the insights gained from these recent evaluations have been and are being used to successfully alter Technical Specification requirements where justified.

Owners Group efforts should be encouraged. The AIF Subcommittee on Technical Specification Improvements stated that all four Owners Groups are planning to utilize probabilistic methodology on specific Technical Specification requirements. Efforts to effectively utilize NRC review resources should continue. These efforts should be coordinated with the continuing research by industry and NRC to develop methods and Procedures to Evaluate Technical Specifications (PETS). Coordination should be the responsibility of the Technical Specification Coordination Branch (TSCB) with assistance from the Reliability and Risk Assessment Branch and the necessary NRR technical branches.

The Office of Regulatory Research (RES) PETS program to develop methods to evaluate the Bases and extensions of allowed outage times (AOT) and surveillance test intervals (STI) is very close to completion. Industry participation has been active and should continue based on its stated interest. Efforts to finalize and use the procedures should proceed in the next year. As soon as practical after completing the AOT/STI work, risk

assessment methods should be evaluated that could assist the industry and NRC in the determination and improvement of Technical Specification Action Statements.

Following the allowed outage time and surveillance interval work, it is recommended that the work related to cumulative outage issues be completed by RES and the results provided to NRR with a recommended course of action. Like all other PETS work, review and comment by the public should be encouraged. At this time, the AIF has indicated that there is no clear benefit to a cumulative outage time. This issue must be considered if probabilistic risk assessment is used to increase allowed outage times for equipment.

The values and impacts of cumulative outage requirements should be considered by NRR as necessary in accordance with NRR Office Letter Number 40 (Denton, March 1983). Every effort should be made to involve the industry in each phase of this research. It is recommended that the AIF Risk-Based Methodology Working Group be used as a contact for this review. A related issue of equipment configuration management (combined equipment Technical Specifications) was recently proposed as a new generic issue. This proposal would provide the control of equipment/components in the same accident sequence cut set. We recommend that prioritization of this proposal proceed in accordance with NRR Office Letter Number 40.

In the long term TSIP supports programs that would investigate alternatives to prescriptive Technical Specification test and maintenance requirements.

The Office of Research program, Operational Safety Reliability Research Project, is investigating such an alternative. NRR should continue to evaluate this effort's trial application and participate in the peer review in FY 1986.

3 Impacts of Implementing Recommendations

3.1 Safety

As discussed in Section 2.2.1 TSIP concludes the overall safety impact of the recommended program is positive. This is based upon the safety enhancements expected from the technical improvements and Bases development which are conditions for implementation of the program. The negative component is based upon the reduction in NRC control over those requirements removed from the Technical Specifications; that is, it is assumed that a reduction in NRC control has an adverse safety impact. This effect is offset however, by the fact that only those requirements not meeting the criteria of "immediacy and importance" may be removed from the Technical Specifications, and these same requirements will now be covered by the 10 CFR 50.59 control process will receive increased NRC attention.

3.2 Resource Impacts

3.2.1 Near Term (1-2 years)

The primary contributor to the resource impact in the near term is the effort to reorganize, clarify and provide Bases for those items which remain as

Technical Specifications. The effort to organize and clarify the specifications will be facilitated by the industry initiative to develop a "Writer's Guide" for Technical Specifications. It is still expected that, as a minimum, a staff effort similar to the "proof and review" effort expended on recently issued Technical Specifications will be necessary for each plant that chooses to revise its Technical Specifications. The magnitude of this impact could be minimized by developing model bases for the Standard Technical Specifications. Although this effort is estimated to require $2M-$4M (exclusive of new analysis beyond that already available) plus some in-house support, it would result in less in-house resource expenditure for the reviews. The effort increases with the number of technical changes proposed. Total impact therefore depends upon the number of plants which elect to modify their specifications and the extent of the technical modifications. There will also be the associated burden of a large number of license amendment packages.

The other near-term programs will also have resource impacts, but these impacts will not be of the magnitude associated with the actual revisions. These efforts include developing the Policy Statement, modifying some regulations to allow full application of the recommended criteria, developing a guidance document for Technical Specification content, refining the OPERABILITY definition, and encouraging the use of PRA for technical enhancement. Also included is the effort required to inform the NRC Staff of the roles of regulations, license conditions, Technical Specifications and FSAR commitments and of the roles of project managers, technical reviewers, and region-based and resident inspectors.

3.2.2 Long Term

The long-term benefits again depend primarily on the number of licensees which chooses to revise their Technical Specifications. Applying the recommendations, approximately 1/3 to 1/2 of the existing LCOs would be moved out of the Technical Specifications. It is expected that there will be a comparable reduction in license amendment requests in the future. For the Regional Staffs, the problems of interpreting the Technical Specifications during inspections and evaluations of operations would be significantly reduced. The improved Bases and clearer wording would eliminate many of the protracted discussions described to TSIP by the regional personnel.

However, for those items removed from Technical Specificatons, the burden would shift to the NRC to prove that the licensee's review had been inadequate. This has the potential for adding significant resource burdens to the regional staffs. Therefore, shifting the emphasis and some of the resources currently used by NRR and the Regions from evaluation of Technical Specification compliance to review of the licensee's programs for control under 50.59 will provide confidence in the process. The net effect would be neutral over the near-term, and as confidence is gained, resources could be channeled into other areas for a net savings.

Another potential benefit is an increase in plant availability due to a reduction in downtime associated with unnecessary or overly conservative specifications. This benefit is also the result of the clarification and Bases development efforts. Based upon the TSIP review of Technical

Specification outages in 1984 which appeared to be unnecessary, and assuming $300K/day replacement power cost, the potential exists for a per plant savings of $20K to $200K per year (Beckham, August 1985). The BWR Owners Group estimated a potential savings of 1280 to 6240 megawatt-hours per 1000Mwe plant per year would result if inadvertent reactor trips from unnecessary reactor protection system trips were eliminated (Sullivan, May 1985). At 3¢/kWh, this is equivalent to $45k to $200k per year per 1000 Mwe plant.

3.3. Administration

TSIP has recommended that 10 CFR 50.36 be retained in its current form. A Policy Statement would require significantly less time to develop than a new rule. Since the overall program is voluntary for licensees, a Policy Statement would be sufficient to provide the guidance necessary to direct NRC staff activities. Application of the criteria to current LCOs would be constrained by other regulations. Table 3.1 lists substantive regulations currently affecting Technical Specifications. Relatively minor changes to these rules should allow the flexibility necessary to implement Technical Specification improvements. The changes should not allow deleting items from Technical Specifications unless the compensating improvements are made. Changes to the regulations that are intended to reflect new safety information should not be confused with the changes necessary to allow a licensee to improve its Technical Specifications.

Enforcement activities could become more difficult under the recommended program. Under the present scheme calling for prior approval of Technical Specifications changes, the only enforcement issue is literal compliance with

TABLE 3.1

SUBSTANTIVE REGULATIONS IN TITLE 10
INVOLVING TECHNICAL SPECIFICATIONS FOR POWER REACTORS

Primary Regulation	General Description	Disposition Under Proposed Solutions
10 CFR 50.36	Describes Technical Specifications (TS)	retain
10 CFR 50.36a	Extends TS to effluents	modify
10 CFR 50.59	Changes to TS must be by license amendment	retain
Secondary Regulations		
10 CFR Part 2 Appendix C (Enforcement Policy)*	Specific references to TS to determine severity violations	modify
10 CFR 50.46	ECCS systems	modify
10 CFR 50.48	Fire protection	modify
10 CFR 50.54	Minimal shift requirements, cold shutdown - refueling, emergency action	modify
10 CFR 50.55a	Inservice inspection	modify
10 CFR 50.71	Record retention	retain
10 CFR 50.72 and 73	Notifications	retain
10 CFR Part 50 Appendix I	Effluents	modify
10 CFR Part 50 Appendix J	Leak testing	modify
10 CFR Part 50 Appendix K	Maximum peaking factor	modify
10 CFR Part 50 Appendix H	Pressure-temperature limits	modify
10 CFR Part 50 Appendix R	Fire Protection (reference to Standard TS)	modify
10 CFR 55.22	Tests for operators	retain
10 CFR Part 55 Appendix A	Re-qualification program	retain
10 CFR 70.32	Special Nuclear Material (physical security plan)	modify

*Strictly speaking this is not a regulation but rather Commission policy.

the Technical Specification. Under the recommended program the licensee could unilaterally make changes to many areas previously requiring prior approval. If the NRC concluded that the licensee's 10 CFR 50.59 review was inadequate and that enforcement action was appropriate, the NRC would have the burden of proving the licensee wrong.

The magnitude of the potential impact, however, is difficult to gage. If the NRC implements an appropriate program of oversight of 10 CFR 50.59, enforcement impact could be minimal. The proposed Commission Policy Statement should identify that the NRC will pay increased attention to 10 CFR 50.59 reviews. Also, enforcement would benefit from the upgraded Technical Specifications because less interpretation by inspectors and reviewers would be required.

4 PROBLEM IDENTIFICATION

This section (1) describes TSIP's approach to identifying Technical Specifications problems and (2) discusses the problems identified by TSIP and the significance of those problems. TSIP's Interim Report provides additional details on the problem identification stage of the project.

TSIP gathered information from various sources within and outside the NRC:

Within NRC:

- Technical Specification Advisory Group
- NUREG-1024, "Technical Specifications..Enhancing The Safety Impact"

- Previously published Proposed Rule Change to Split the Technical Specifications (47 FR 61, March 1982)
- Technical Review Branches
- Regional and Resident Inspectors
- Technical Specification Review Group
- Division of Licensing Project Managers
- Licensing amendment survey
- Regulatory documents: 10 CFR 50, ALAB-531, past studies
- Office of Inspection & Enforcement
- Technical Assistance:
  - Bases Adequacy
  - Impact on Operating Reactors - 1984 Data
  - Risk Significance of Technical Specifications
  - Effects of new information (source term, seismic margins, and leak before break).

Outside NRC:

- AIF Technical Specification Improvement Subcommittee
- Plant operations staff interviews [1]
- Regulatory Effectiveness Meetings (RES program)[1]
- Department of Energy (FFTF)
- Westinghouse Hanford (FFTF)

---

[1] See Table 4.1

TABLE 4.1

PLANT OPERATIONS STAFF INTERVIEWS BY TSIP

St. Lucie	Limerick
Sequoyah	Peach Bottom
Oconee	ANO-1
La Salle	ANO-2
Dresden	Trojan
Pilgrim	Zion
	D. C. Cook

UTILITY/VENDOR OFFICE VISITS[1]

Tennessee Valley Authority

Duke Power

Florida Power and Light

Georgia Power

Westinghouse

---

1 Office of Research Regulatory Effectiveness program

The information gathered by TSIP was evaluated and resulted in the identification of three root problems associated with Technical Specifications.

1. Reluctance of the NRC staff to use tools other than Technical Specifications for establishing regulatory requirements.

2. Lack of well defined criteria for what requirements should be included in Technical Specifications.

3. Human factors and other technical weaknesses of the Technical Specifications.

TSIP concludes that these concerns do not pose an acute safety problem for operating power reactors. TSIP's alternative solutions evaluation in Section 5 will discuss potential safety impacts in more detail.

4.1 Use of Alternate Tools

The reluctance of the NRC staff to use regulatory tools other than the Technical Specifications is generally attributable to one of two causes: a limited understanding of the roles of the different tools available or a lack of confidence in the effectiveness of alternative tools. These problems lead to the general belief that concerns must be addressed in the Technical Specifications to ensure compliance and, thereby, assure the public health and safety.

This belief, along with the lack of criteria delineating what items should be included in Technical Specifications has led to the inclusion of too broad a range of items in the Technical Specifications.

4.1.1 Role of Regulatory Tools

When the NRC licenses a nuclear plant, the safety analyses form part of the basis for the NRC's conclusion that the plant can be operated safely. After licensing there is a continuing regulatory need to ensure that the plant operates in accordance with the assumptions in the safety analyses. This link between licensing safety analyses and plant operation forms a part of the continuing basis for the NRC's conclusion that the plant should be allowed to operate. This judgement is the responsibility of the NRC. The Technical Specifications are one tool which the NRC uses to provide this link between licensing analyses and safe plant operation. Other tools are the regulations, the FSAR/SER, plant procedures required by regulation or license condition, and programmatic documents required by regulations such as the licensee's Quality Assurance Program, Security Plan, and Emergency Plan.

The regulations are a set of rules which licensees must obey even if those rules are not duplicated in the Technical Specifications. The regulations (1) require that there be Technical Specifications; (2) describe in broad categories what should be covered by Technical Specifications; (3) state the NRC procedures for control of Technical Specification changes; (4) require that there be an FSAR which describes the facility, and limits on its operation; (5) require the FSAR be kept up-to-date; and (6) state the procedures for control of changes to the FSAR.

When a plant is licensed, the NRC reviews the FSAR and prepares an SER approving the facility and providing the basis for that approval. Often the SER includes conditions which must be met to make approval valid. These conditions can be covered in the license or the Technical Specifications which are part of the license. Some of these conditions can be met by revising the FSAR.

The Technical Specifications are derived from the FSAR safety analyses (approved by the SER) and define the operating safety envelope within which a plant should stay. The Technical Specifications also state what is to be done when the plant operates outside those bounds. The Bases explain why the Technical Specification limitations are what they are. These Bases support the Technical Specifications and are attached to the specifications, but they are not legally a part of the Technical Specifications. The NRC may issue civil penalties for violations of the Technical Specifications or the regulations as described in the NRC's Enforcement Policy (10 CFR 2, Appendix C).

Licensees develop procedures, which are referenced by regulations and by the Technical Specifications, which describe in detail actions to follow in operation of the plant. These procedures are designed to keep the plant within the Technical Specification limitations. Procedures are the instrument with which operators deal most frequently.

There are a number of other programmatic documents which are referenced by the regulations and/or Technical Specifications such as the Security Plan,

Emergency Plan, and Offsite Dose Calculation Manual (ODCM). In most cases, various procedures were set up by the regulations or Technical Specifications to control changes to these programmatic documents.

These above descriptions explain the relationship of the various regulatory documents or "tools." In examining these relationships, TSIP concluded that FSAR commitments are enforceable through 10 CFR 50.59 and that programmatic documents required by regulation or Technical Specifications are also enforceable. However, TSIP found a considerable amount of variation throughout the NRC in the knowledge of 10 CFR 50.59 procedures, and consequently, on the trust placed in the process for ensuring control. Because of this, TSIP found that many of the NRC staff (headquarters and regional) hold the philosophy that if it is not in the regulations or the Technical Specifications, the NRC can not ensure that the licensee will do it. Certainly NRR Office Letter No. 34 Revision 1 - "Utility Commitments" (Denton, July 1981) encourages this philosophy.

Consequently, Technical Specifications have been used for matters that deal with a wide range of safety importance. TSIP concludes that many of these matters are inappropriate for inclusion in the Technical Specifications and could be effectively and more efficiently controlled by other mechanisms.

4.2 Lack of Criteria

TSIP identified a lack of criteria delineating what limitations and conditions should be included in the Technical Specifications. The absence of clear

criteria for what should be in Technical Specifications may have grown out of the lack of understanding of the role of regulatory tools described above.

Probably the most definitive guidance as to how Technical Specifications are to be used is NRR Office Letter No. 34. This document instructs the NRC staff to use the Technical Specifications to provide legally binding requirements in the license for any limitation or design detail which is significant in the formation of the safety evaluation.
NRR Office Letter No. 34 states:

> "If the commitment is of such importance that no change should be made without prior staff review and approval, it should be reflected in the technical specifications or as conditions to the license."

This guidance leaves the decision about what should go into the Technical Specifications primarily in the hands of the NRR technical reviewer. This guidance does not provide criteria to the reviewers or NRC management about the depth of the analyses regarding which items must be included as Technical Specifications or what systems are important enough from a safety standpoint to be Technical Specification items. As a result, there is confusion over what requirements warrant inclusion in the Technical Specifications, and therefore, Technical Specifications are imposed for items which vary greatly in their importance to public health and safety.

It is difficult to identify specifically the significance of this lack of principal purpose and criteria in terms of plant safety implications or

resource burdens on the NRC and licensees. However, the confusion and the resulting inclusion of items of lesser safety importance in the Technical Specifications does tend to divert attention (including that of the operators) from the more important safety items in the Technical Specifications. The presence of the items of lesser importance in the Technical Specifications also results in incremental resource costs to licensees and the NRC in administration and the change process.

4.3 Human Factors and Other Technical Weaknesses

TSIP has concluded that another important problem with Technical Specifications is that the NRC has not given sufficient consideration to making the Technical Specifications easily usable from an operations standpoint. Past emphasis has been on licensing and enforcement, with little regard for operations. Without a clearly defined statement of purpose, it is difficult to identify the primary user for whom the Technical Specifications are written. This problem of emphasis is fundamental to the subsequent problems of clarity and Bases which are discussed in the following sections.

4.3.1 Bases

The Technical Specification Bases are inadequate. Many are non-existent, few are complete. The Bases in general are not unique for each specification, do not reference analyses to explain the determination of the LCO, do not discuss mode applicability, do not discuss how action requirements relieve safety concerns, and do not support test requirements, frequencies or allowed outage times. These problems with Bases have been identified by the Technical Specifications Advisory Group, Technical Specification Task Group (NUREG-1024),

staff reviewers, regional staff, resident inspectors, plant operators and maintenance personnel, utility compliance engineers, and public interest groups.

A significant impact of this problem concerns the Technical Specification change process. Neither the licensee nor the reviewer has the necessary background information readily available to facilitate changing a Technical Specification. If it is uncertain why a Technical Specification is as it is, it is very difficult to justify a change to it. This contributes to the log-jam of change requests, the reluctance of staff reviewers to approve changes, and consequently, to the negative attitudes expressed by licensees and operators toward change requests.

A second impact of the inadequacy of the Bases is aggravation of interpretation problems. The Bases should provide information which clarifies the safety intent of the specifications. When they do not, misinterpretation can lead to inappropriate actions which may result in a less safe plant condition or an unnecessary shutdown. The same concern applies to the preparation of test procedures. Without clear Bases to define the safety intent of a specification, it is left to the judgement of the procedure writer or test personnel as to how a test should be performed. The result may be an inappropriate or less efficient test. Finally, enforcement becomes more arbitrary when interpretations must be made without supporting Bases.

From a safety standpoint, lack of a documented basis for requirements is most significant in the area of equipment test frequency, action statements, test types and allowed outage times. Although not an acute safety concern, the potential exists for safety enhancement since (1) maintenance is in many

instances the dominant contributor to system unavailability; (2) test and maintenance errors are a significant cause of inadvertent reactor trips; (3) Action Statements may be directing plants to less safe conditions; and (4) equipment designs do not always include appropriate features to facilitate proper testing.

It should also be recognized that a body of new information upon which to base nuclear plant safety analyses and practices has been developing from reactor operating experience and NRC and industry research programs. The most important areas are source term applications, piping failure mechanisms and seismic margin. Recognition and incorporation of this new information is expected to result in both safety and administrative benefits, particularly for the containment systems, piping support requirements, and component and system operability requirements. Moreover, there are indications that several of the current Technical Specifications in these areas may involve a negative safety impact and others are, at best, benignly erroneous because they are based on outdated information. As part of the TSIP technical assistance effort, a contractor has surveyed Technical Specifications from the four reactor vendors and found for the sections on instrumentation, reactor coolant system, emergency core cooling system, and containment systems that as many as 38% of these Technical Specifications may need revision (Phung, August 1985).

4.3.1.1 The Bases Problems and Their Significance

An inspection of the containment systems sections of all vendor Technical Specifications indicates that the Bases for most Technical Specifications are

almost entirely absent, the action statements are different from vendor to vendor, some surveillance tests do not totally test the system safety function, some LCOs are not based on the safety analyses, and some Action Statements make compliance impossible.

The following shows the extent to which these problems were found in a review of containment systems Bases.

BASES AREA	% OF BASES COMPLETE
Safety function/definition	95%
How safety concern is aggravated by violation of LCO	20%
Reference to analyses used to derive specification values	0%
Explanation of mode applicability	0%
Basis for action statement	5%
Surveillance requirements	10%

Some of the missing Bases can most likely be found in the FSAR and other documents while others cannot. This is a consequence of the safety analysis primarily supporting the design and construction of the plant rather than its operation and maintenance. The Technical Specifications relating to these areas are largely based on judgement backed up by manufacturer's recommendations, standards, and some analysis which, in most cases, is not documented. It is these areas, operation and testing, where most of the concerns identified to TSIP were focused. While missing Bases are a concern by themselves, concerns

also exist with specific allowed outage times, test types, test intervals and Action Statements, and therefore, with the associated Bases. For resolution of these Bases problems, additional analysis and review would be necessary.

One specific concern was that Technical Specifications were unnecessarily shutting down plants. A review of all shutdowns required by Technical Specifications in 1984 indicates that some shutdowns occurred when continued operation probably could have been justified. These shutdowns did not result in significant outage time. However, most of the shutdowns were judged to be necessary. The average unavailability per plant (industry-wide) from shutdowns required by Technical Specifications was about 1.5 percent for 1984. Total average unavailability per plant (industry-wide) for 1984 was 37 percent.

To better understand the significance of the problems with allowed outage times and surveillance test intervals, TSIP requested the assistance of the Office of Regulatory Research. Using a plant specific PRA and the plant's Technical Specifications, risk estimates were made for the specific allowed outage times and surveillance intervals. The study estimates an extremely wide range (6 to 7 orders of magnitude) of allowed risk for various degraded modes of operation and test intervals. In addition, about half of the requirements had minimal risk impact (Samanta, August 1985). This is not a surprise, (although the magnitude of variance may be higher than anticipated), since the Technical Specifications were never intended, by themselves, to regulate to a certain level of risk or system reliability. The current requirements for Technical Specifications are based primarily on the single

failure criterion and deterministic safety analysis assumptions. For the most part, there is no attempt to maintain operability of systems or components that are part of the same probabilistic risk assessment accident sequence cutset. Nor is there a specification on the total cumulative time that a component, train or system can be out-of-service over a period of time.

4.3.2 Clarity

The Technical Specifications often lack clarity. The organization is poor, the use of footnotes is confusing, and the wording needs improvement. A common complaint of operations personnel is that a single component or system may appear in several Technical Specifications with differing requirements but without cross referencing. Testing and maintenance personnel indicated a difficulty in ascertaining what tests are necessary and sufficient because of poor wording in the Technical Specifications. The use of adverbs such as "immediately" and "continuously" causes enforcement hassles. Some requirements are only applicable in one mode, but no direction is given for what requirements exist in other modes. These complaints were universal among operators and operations staffs at the plants. A few who had lived with these problems for a while were reluctant to propose a change for fear of making the problem worse. (Clearly, many of these problems relate to the inadequacies of the Bases.)

The consequences of this problem are uncertainty, and sometimes frustration, on the part of operations and testing personnel. This can result in inappropriate actions which may take the plant to a less safe condition, cause excessive testing, or cause unnecessary plant shutdown. Licensees often develop numerous interpretation documents to state their view as to what a specific Technical Specification means. Resident inspectors are called upon to assist in understanding Technical Specifications, and the meaning of Technical Specifications can change as resident inspectors change.

Unclear Technical Specifications also create problems in the implementation of the agency's enforcement program. Technical Specifications often form the basis for the issuance of proposed civil penalties in accordance with the NRC's Enforcement Policy. Substantial resources are often committed to determine whether or not a violation occurred. To the extent a licensee is unsure of a Technical Specification, compliance becomes frustrating. Licensees generally indicated a strong desire to meet Commission requirements. To the extent Commission requirements, in this case Technical Specifications, are unclear, the agency is losing the benefit of a positive attitude by licensees toward compliance. This weakens the enforcement program.

TSIP identified a number of problems associated with the Technical Specification definition of OPERABILITY. These problems are included but are strongly associated with the lack of Technical Specification Bases. First, the current definition of OPERABILITY requires licensees to declare a component inoperable if a surveillance requirement associated with that component is missed. If in fact there is no other reason to believe that the component is inoperable (unable to perform its intended function), then missing a surveillance does not make the component inoperable.

Based on a review of all LERs submitted in 1984 to report deviations from Technical Specifications, over 100 missed surveillance tests were discovered for U.S. reactors as a whole. Usually, the licensee is able to perform the test before the applicable Technical Specification Action Statement would require a plant evolution such as shutdown, but not always (Gallagher, July 1985).

Second, the current definition of OPERABILITY leads a licensee to declare a component inoperable when the component is only slightly degraded. In some instances while a component is slightly degraded, it could probably perform its function if it were needed.

In each of the above situations, considerable difference exists in the safety significance of the "inoperability" problem as contrasted to a condition where the component is broken and can not function at all. In some cases these problems could require shutdown to begin within one hour.

These problems occur more than 100 times per year for U.S. reactors as a whole. Most of the time, OPERABILITY is reestablished or emergency relief is obtained from the NRC, and the reactor is not shutdown. However, many times the shutdown process is begun before relief is obtained. Any evolution such as reducing power or beginning shutdown involves some risk that an inadvertent trip could occur and a safety system will be challenged. Therefore, an evolution which is not necessary from a safety viewpoint and which is caused by these problems is itself an unnecessary risk.

In addition to the safety implications, these inoperability problems require unnecessary expenditure of utility and NRC resources to resolve them. TSIP has concluded that some other method of dealing with these problems is desirable. The method should balance the significance of the problem against the impact of the transient required by plant shutdown.

5 DEVELOPMENT AND EVALUATION OF ALTERNATIVE SOLUTIONS

After identifying the problems currently associated with Technical Specifications, TSIP "brain storming" sessions were used to identify and list potential alternative solutions to the problems. TSIP deliberately set out to explore a wide range of potential solutions.

An examination of the list of alternatives showed that most overall solutions could be broken into components which addressed a particular problem, set of problems, or a piece of a problem. For example, developing and implementing criteria to determine what items should be in Technical Specifications addresses the problem of lack of criteria but does not address the problems of clarity and inadequate bases. However, criteria, in combination with a line-by-line review and revision of Technical Specifications, would address both problems. The solution components identified by TSIP are listed under proposed solutions in the Evaluation Matrix (Table 5.1).

After the alternatives were identified, a method of evaluating them was needed. TSIP identified three areas of consideration for evaluation of potential solutions:

(1) Safety

(2) Resources

(3) Administrative

Using these areas of consideration, development of an evaluation tool was begun. The Evaluation Matrix presented in this report is the final product of that development. Basically the matrix still uses the same three areas of consideration, but a number of refinements and iterations were necessary to arrive at the final matrix. The Evaluation Matrix presented here addresses the potential solutions in these three areas.

5.1 Safety Impact

In the safety impact category, TSIP considered whether the proposed solution would improve or degrade plant safety. Changes which would achieve the following results were considered by TSIP to be safety improvements:

- Clearer language in the Technical Specifications.

- Overall greater NRC attention or control (this is somewhat arbitrary but was included to reflect existing staff perceptions and to recognize that NRC attention generally results in greater overall attention).

- Focusing NRC or licensee attention or control on the most important safety items.

- More complete technical Bases for Technical Specifications.

- Identification and correction of requirements for inappropriate tests or test methods or for testing more frequently than is necessary. Safety can be degraded in several ways by testing: by making the equipment unavailable during the test, by wearing out equipment, by inadvertently returning equipment to service in an inoperable condition, or by causing challenges to safety systems (for example, an inadvertent trip due to operator error in realigning system).

- Identification and correction of action statements which may require licensees to take actions which are not appropriate from a safety standpoint. In some cases, shutdown may not be the most appropriate action because there is some risk of inadvertent challenges to safety systems even during an orderly shutdown.

- Aids which contribute to a clearer understanding or usability of the Technical Specifications, such as cross-reference tables organized by system or mode.

- Identification and correction of operability requirements and action statements for inoperable equipment which may be more stringent than necessary (For example, instructions that a system is inoperable if a surveillance requirement has been missed. Such an instruction may cause a plant to begin shutdown unnecessarily, again incurring some small risk of inadvertent safety system challenges.)

Any change which would achieve results opposite to this list was considered a reduction in safety by TSIP.

5.2 Resource Impact

In the resource impact category, TSIP considered the costs in terms of money and personnel both to licensees and the NRC to implement the proposed solution. The resource impact category was subdivided into short-and long-term impacts. For the purposes of these evaluations, TSIP graded the solutions based on the efforts that would be involved in the solution and TSIP's estimate of the magnitude of those efforts. These estimates were verified with quantitative cost or manpower estimates where the information was available.

Short-term costs were considered to be the costs to complete the implementation of the solution. Generally, the time frame for implementation of any viable solution would be no longer than 1 to 2 years.

All short-term resource impacts were judged to be zero or negative because TSIP concluded that implementation of any change (solution) would require expenditure of additional resources before resource savings, resulting from the change, would be realized.

Efforts which could be required to implement solutions include:

- Rule changes.

- Legislation.

- PRA analyses of AOTs and STIs.

- Large scale revisions or reviews of Technical Specifications to identify and correct linguistics, clarity, technical problems and/or to implement criteria defining scope.

- Large scale generic PRA analyses and/or plant specific PRA analyses.

- Development of Technical Specification selection criteria.

- Development of new controls for changes by licensees in procedures and FSAR (such as 10 CFR 50.59).

- Preparation of Technical Specification amendments, CRGR packages, Generic Letters, NRR Office Letters, Commission Papers, Inspection Manual revisions, Standard Review Plan revisions, NUREGs, Standard Technical Specifications, and Commission Policy Statements.

- Allotment in NRC/NRR resources for a group dedicated to Technical Specifications.

- Development of new programmatic documents, such as an operational surveillance program.

- Large scale revisions to operating procedures, FSARs, or existing programmatic documents such as the ODCM.

- Large scale revisions of Technical Specification Bases.

- Complete rewrite of Technical Specifications, including reformatting.

- Licensee retraining

Long-term costs were considered to be those costs associated with whatever ongoing program was left in place after the implementation stage or short-term. Under long-term resources, TSIP considered what those costs would be (using TSIP's estimates, not quantitative values) and compared them to the costs TSIP would expect in the foreseeable future under the present Technical Specification scheme.

The following efforts currently consume licensee and NRC resources and would continue to do so under most solutions:

- Technical Specification amendment applications, reviews, and processing. Both the number of amendments and ease of handling technically and administratively affect consumption of resources.

- Equipment testing and plant operations.

- Processing, reporting and reviewing changes to FSAR, procedures, and programmatic documents.

The evaluation compared the current level with the expected level after a proposed solution was implemented. Those solutions that resulted in the lowest resources expended by licensees and the NRC received the highest positive scores.

5.3 Administrative Impact

The administrative impact category is not as well defined as the safety and resource categories. In evaluating the administrative impact of the proposed solutions, TSIP considered the following questions:

- Does the solution require a rule change or legislation? Both of these activities have large administrative burdens associated with them. They are time consuming and take a long time to complete, maybe more than the 1 to 2 years assumed in the short-term resource impact evaluation.

- Does the solution reduce NRR's Operating Reactor Licensing Action Summary (ORLAS) backlog, result in fewer new amendments in the future, or make amendments easier to review/process?

- Does the solution provide a clear understanding of the roles of Technical Specifications and other regulatory tools?

- Does the solution provide a clear understanding of what items should be included in the Technical Specifications?

- Does the solution complicate enforcement?

- Does the solution provide a clear understanding of what NRC group(s) has the authority and responsibility for Technical Specifications?

- Will the solution be acceptable to licensees, public interest groups, and the NRC Staff?

- Does the solution require development of new procedures for control of licensee changes to FSAR, procedures, or programmatic documents?

- Does the solution provide better understanding of the technical bases of the Technical Specification or provide technically sounder Bases?

5.4 Evaluation Scoring

The matrix shows a score for each solution and impact. The scoring was done by relative judgments and a range of -3 to +3 was used.

A +3 score means the solution provides the most improvement in comparison to the other possible solutions in the impact category under evaluation. Under safety impact, a +3 score means the largest increase in plant safety over the current level. In the resource impact, a +3 score means the greatest reduction in cost (dollars and manpower) from current levels. In the administrative impact, +3 score means the greatest reduction of administrative burden over the current level.

A 0 score means the solution causes no change in the impact category under evaluation. A -3 score means the solution causes the largest undesirable change in comparison to the other possible solutions in the impact category under evaluation.

More than one solution can be scored with a -3 or +3 in a given impact category. This simply means that the impacts are of the same order of magnitude and that a finer scale would be needed to differentiate the impacts. These scores were not arithmetically combined to produce a single, overall score for each proposed solution. They were used to direct attention to the proposed solutions that presented the most positive impacts.

TABLE 5.1

EVALUATION MATRIX FOR PROPOSED SOLUTIONS TO TECHNICAL SPECIFICATION PROBLEMS

Identified T. S. Problem	Proposed Solution	Safety Impact	Resource Impact		Administrative Impact
			Short Term	Long Term	
1. Reluctance to use other regulatory tools	°No change, heavy use of T.S. to formalize conditions would continue	0, °No change by definition	0, °No change by definition	0, °No change by definition °Number of T.S. & amendments would continue to increase °Mechanisms such as CRGR and Backfit Rule would act to control increase	0, °No change by definition
	°Establish guidance on the roles of T.S. and other regulatory tools	0,+1, °Might help focus attention or control on most important safety items	-1, °Staff effort to prepare NUREG, generic letter, or Commission Policy Statement °Rule change probably not needed	+1,0, °Might result in fewer new amendments	+1,0, °Might result in fewer new amendments. °Provide a clearer understanding of roles of regulatory tools
	°Revise NRC controls associated with other regulatory tools; controls could range from total NRC control like T.S. amendments to mainly licensee controlled methods like 10 CFR 50.59.	+1, °Overall greater NRC attention or control	-1, °Might require a change to rules such as 50.59 °Would require development of new controls °Preparation of generic letter and CRGR package °Revision of inspection manuals	0,-1, °Additional effort required by controls ongoing °Might result in fewer T.S. amendments	-3, °Probably requires rule change °Might result in fewer T.S. amendments °Requires development of new procedures for changes °Would provide some clearer understanding of roles of regulatory tools °This solution alone would not be accepted easily by licensees

Identified T. S. Problem	Proposed Solution	Safety Impact	Resource Impact		Administrative Impact
			Short Term	Long Term	
1. Continued	°Eliminate T.S. Place conditions in other documents	-1, °Less NRC control or attention °Would really not address clarity and technical problems unless specifically reviewed in conversion	-3, Would require rule change and legislation °Large revisions to procedures, and other documents °CRGR package, SRP revisions, inspection manual revisions °May require development of new programmatic documents and new change procedures °Substantial licensee retraining	+3, °No T.S. amendments °May require additional effort for new ongoing change controls	-3, °No T.S. amendments °Reduce ORLAS backlog °Requires rule changes and legislation °Unacceptable to NRC and intervenors °Complicates enforceme °Provides clear understanding of T.S. °Might require new change procedures for programmatic documents
	°Reduce T.S. to a minimum set of general requirements with conditions handled in plant procedures, FSAR, regulations, and/or programmatic documents	0, °Might reduce overall NRC attention or control °Reduces usability problems of T.S. °Would not address clarity and technical problems like inappropriate tests unless specifically reviewed in conversion to other documents	-2, -3, °Might require rule change °Large scale revisions to T.S. and other documents such as procedures °Preparation of CRGR package, SRP revisions, and inspection manual revisions °May require development of new programmatic documents and new change procedures °Substantial licensee retraining	+3, °Big reduction in T.S. amendments °May require additional effort to new ongoing change controls	+2, °Might require rule change °Reduces ORLAS backlog °Reduces T.S. amendment °Provides clear understanding of what should be in T.S. °Solution alone would not be easily accepted by NRC staff (without additional controls) °Might require new change controls

Identified T. S. Problem	Proposed Solution	Safety Impact	Resource Impact		Administrative Impact
			Short Term	Long Term	
1. Continued	°Revise NRC framework for handling T.S. and amendments - NRR group given total authority and responsibility	+1, 0, °Could focus attention on most important items	-1, °NRR resources for group °Probably preparation of various guidance documents	+1, 0, °Implement additional order and control in T.S. amendment process °Might reduce number of new T.S. and amendments	+1, 0, °Clearer lines of authority and responsibility °No rule change °Might reduce number of new amendments
2. Lack of criteria for inclusion of items in T.S.	°No change, decisions made by reviewers based on NRR Office Letter #34 - heavy reliance on T.S. to formalize conditions	0, °No change by definition	0, °No change by definition	0, °No change by definition °Growth of T.S. would be controlled to some extent by CRGR and Backfit Rule	0, °No change by definition
	°Institute greater control of T.S. by organization - NRR group given total T.S. control or directives/guidance to NRC managers.	+1, 0, °Could focus attention on most important items	-1, °NRR resources for group °Preparation of guidance for managers	+1, 0, °Implement additional order and control in T.S. amendment process °Might reduce number of new T.S. and amendments	+1, 0, °Clearer lines of authority and responsibility °No rule change °Might reduce number of new amendments.

Identified T. S. Problem	Proposed Solution	Safety Impact	Resource Impact		Administrative Impact
			Short Term	Long Term	
2 Continued	°Eliminate T.S. Place conditions in other documents	-1, °Less NRC control or attention °Would really not address clarity and technical problems unless specifically reviewed in conversion	-3, °Would require rule change and legislation °Large scale revisions to procedures and other documents °CRGR package SRP revisions, inspection manual revisions °May require development of new programmatic documents and new change procedures °Substantial licensee retraining	+3, °No T.S. amendments °May require additional effort for new ongoing change controls	-3, °No T.S. amendments °Reduce ORLAS backlog °Requires rule changes and legislation °Unacceptable to NRC and intervenors °Complicates enforcement °Provides clear understanding of T.S. °Might require new change procedures for programmatic documents
	°Reduce T.S. to a minimum set of general requirements with conditions handled in plant procedures, FSAR regulations, and/or programmatic documents	0, °Might reduce overall NRC attention or control °Reduces usability problems of T.S. (transfers problem to some extent) °Would not address clarity and technical problems like inappropriate tests unless specifically reviewed in conversion to other documents	-2, -3, °Might require rule change °Large scale revisions to T.S. and other documents such as procedures °Preparation of CRGR package, SRP revisions inspection manual revisions °May require development of new programmatic documents and new change procedures °Substantial licensee retraining	+3, °Big reduction in T.S. amendments °May require additional effort for new ongoing change controls	+2, °Might require rule change °Reduces ORLAS backlog °Reduces T.S. amendments °Provides clear understanding of what should be in T.S. °Solution alone would not be easily accepted by NRC staff (without additional controls) °Might require new change controls

Identified T. S. Problem	Proposed Solution	Safety Impact	Resource Impact		Administrative Impact
			Short Term	Long Term	
2. Continued	°Develop criteria for content of T.S. Place dropouts into other documents; criteria based on probabilistic risk assessment analyses	+1, °Focus attention and control on most important items °Possible slight loss of overall NRC control	-3, °May require rule change °Significant effort to develop criteria and split T.S. °May require plant specific PRA's °Would require extensive PRA analyses even if done on generic basis °Licensee retaining °Preparation of guidance document CRGR package, inspection manual revision and new change controls (Maybe)	+1, +2, °Reduce T.S. amendments °May require additional effort for new ongoing change controls °May make T.S. amendments easier to process. °Short term may extend well beyond 2 years.	+1, +2, °Reduce ORLAS burden °Possible rule change °Fewer new T.S. amendments °Provide clearer understanding of what items should be in T.S. °May require development of new controls °Radical departure from DBA analyses may be difficult to accept to many in NRC and industry °No set PRA acceptance criteria

Identified T. S. Problem	Proposed Solution	Safety Impact	Resource Impact		Administrative Impact
			Short Term	Long Term	
2. Continued	°Develop criteria for content of T.S. Place dropouts into other documents; criteria based on licensing analysis.	0, °Possible slight loss of overall NRC control °Focus attention and control on most important items	-2, -1, °May require rule change (eventually) °Significant effort to develop criteria and split T.S. revise other documents °Preparation of guidance document, CRGR package, inspection manual revision °May require development of new documents or change control procedures °Some licensee retraining	+2,+1, °Reduce T.S. amendments °May require additional effort for new ongoing change controls	+2,+3, °Reduce ORLAS burden °Possible rule change °Fewer new T.S. amendments °Provides clear understanding of what items should be in T.S. °Some difficulty getting NRC staff and intervenor acceptance °May require development of control procedures
3. Human factors & technical problems °Inadequate Bases °Clarity °Test methods and intervals °Operability definition °AOT and inappropriate action statements	°No change; let licensees propose changes (amendments) they feel are necessary	0, +1 °No change by definition (licensees might make improvements)	0, °No change by definition	0, °No change by definition °May result in more T.S. amendments	0, °No change by definition °ORLAS backlog would probably increase
	°Improve T.S. Bases Section	+1, +2, °Provide more complete technical bases °Help focus attention on most important safety items °May identify inappropriate test methods and intervals	-1, -2, °Effort to review and revise bases °No rule change	+1, +2, °Will make T.S. amendments easier to review °Probably result in some reduction of testing	+1, +2, °No rule change °Would help make enforcement less complicated °Makes T.S. amendments easier to review °Provides better understanding, technically sounder bases

Identified T. S. Problem	Proposed Solution	Safety Impact	Resource Impact		Administrative Impact
			Short Term	Long Term	
3. Continued	°Review T.S. for clarity problems	+1, °Provides clearer language in T.S.	-2, -1, °Review and revision effort °No rule change °Licensee retraining °Possible CRGR package preparation	+1, °Improved T.S. clarity will make plant operation a little easier °Reduce the need for T.S. amendments	+1, °No rule change
	°Review T.S. for technical problems (testing, operability, AOT's, actions statements)	+2, +3, °Technical problems such as inappropriate tests would be identified and corrected	-2, -3, °Review and revision effort °CRGR package preparation °No rule change °Licensee retraining	+2, °Improved T.S., result in easier operation and less testing °Large reduction in need for amendments	+2, +3, No rule change °Fewer T.S. amendments °Reduction of ORLAS backlog °Improve enforcement °Provides better understanding or technically sounder bases

Identified T. S. Problem	Proposed Solution	Safety Impact	Resource Impact		Administrative Impact
			Short Term	Long Term	
3. Continued	°Rewrite T.S. including new formating, clarity and technical review	+3, °Improved T.S. clarity °More complete technical bases °Identification and correction of technical problems such as inappropriate tests	-3, °May require rule change °Largest T.S. revision effort °Preparation of CRGR package, STS, generic letters °Licensee retraining	+3, °Result in fewer T.S. amendments °Easier plant operations and less testing °Facilitate handling of T.S. amendments	+3, °May require rule chan °Reduce ORLAS backlog °Result in fewer T.S. amendments °Facilitate handling o amendments °Provides better under-standing of T.S. and better technical bases. °Makes enforcement less complicated
	Provide aids such as cross reference tables for systems and modes	+1, 0, °Some improvement in clarity, help ensure items not missed	-1, 0, °Relatively small effort to implement °No rule change	+1, 0, °Easier plant operations	+1, 0, °No rule change °Improve clarity
	Use PRA to evaluate AOT's and STI's (allowed out-of-service times and surveillance test intervals)	+1, +2, °More complete technical basis for T.S. °Correction of overly restrictive AOT's and STI's	-2, -3, °Performance of PRA analyses to evaluate AOT's and STI's and NRC review	+2, °Reduce T.S. amendments °Easier plant operations °Less frequent testing	+1, +2, °No rule change °Reduce T.S. amendments °No set PRA acceptance criteria °More complete safety bases for T.S.

APPENDIX A

BACKGROUND ON PURPOSE OF TECHNICAL SPECIFICATIONS

° To provide adequate protection to health & safety of the public - common defense and security.	Atomic Energy Act 1954
° To reasonably protect the integrity of the physical barriers (fuel, RCS, containment) (safety limits, limiting safety system settings).	10 CFR 50.36
° To prevent alteration of design features that would have a significant effect on safety (design features).	10 CFR 50.36
° To assure the necessary quality of systems and components is maintained, and that the facility operation will be within the safety limits (surveillance requirements).	10 CFR 50.36
° Define and preserve those underlying assumptions that are expected to, or could, vary with time or circumstances, through the life of the plant, and thus to preserve the validity of the safety analysis.	Proposed Rules, Fed. Reg. 03/30/82

° To validate the assumptions of the safety analysis that are not validated by other means. When these assumptions are validated, the risk is controlled to that level found acceptable in the licensing process.	Corcoran, Combustion Engineering, "Verifying the Adequacy of Technical Specifications"
° Are to be reserved for those matters as to which the imposition of rigid conditions or limitations upon reactor operation is deemed necessary to obviate the possibility of an event giving rise to an immediate threat to the public health & safety.	ALAB-531
° Technical Specifications should be limited to those aspects of the reactor system which bear a direct relation to public safety, rather than a detailed description of all components of the reactors.	Marvin Mann Reg. Review Panel
° The Technical Specifications will reflect in such form limits in design and procedures approved by the Commission. They will represent, in essence, those parameters which define the boundaries of licensed activity which the Commission has evaluated and approved from a safety standpoint.	1962 Rule

6 REFERENCES

Law

Atomic Energy Act of 1954, as amended. 42 USC 2011, et. seq. at 2232.

Regulations

Title 10 Code of Federal Regulations, Part 2, Appendix C, General Policy and Procedures for NRC Enforcement Actions.

Title 10 Code of Federal Regulations, Part 50, Section 50.36, Technical Specifications.

Title 10 Code of Federal Regulations, Part 50, Section 50.59, Changes, Tests, and Experiments.

Proposed Regulations

47 FR 61, March 30, 1982, "Technical Specifications for Nuclear Power Reactors."

Board Decisions

In the Matter of Portland General Electric Company (Trojan Nuclear Plant). ALAB-531, 9 NRC 263, (1979) et. seq. 273.

NUREG Reports

NUREG-1024, "Technical Specifications - Improving the Safety Impact," November 1983.

Reports

Azarm, M. A., J. L. Boccio, R. E. Hall, S. Karimian, "Operational Safety Reliability Research Project Plan", Brookhaven National Laboratory, June 1985.

Corcoran, W. R., S. A. Webster, J. C. Braun and D. R. Earles, "Verifying the Adequacy of Technical Specifications," Transactions of the American Nuclear Society 1983 Winter Meeting, 43.555-6, November 14-18, 1982.

Gallagher, D, and B. Atefi, "Impact of Technical Specifications on Operating Reactors During 1984" SAIC-85/1777, July 31, 1985.

Jansen, R. L. , L. M. Lijewski, and R. J. Masarik, "Evaluation of Surveillance Frequencies and Out of Service Times for the Reactor Protection Instrumentation System," WCAP-10271, January 1983.

Phung, D. L. , "Impact of New Reactor Safety Information on Technical Specifications," Professional Analysis, Inc., August 15, 1985.

Samanta, P. K., S. M. Wong, and J. Carbonaro, "Evaluation of Risk Impacts of ANO-1 Technical Specification Requirements," Brookhaven National Laboratory, August 23, 1985.

Sullivan, W. P. , "Technical Specification Improvement Analyses for BWR Reactor Protection System," NEDC-30951, May 1985 (Proprietary Information. Not publicly available.)

Letters

Eisenhut, D., NRC, to All Licensees, Subject: "Clarification of the Term Operable," April 10, 1980.

Kripps, L. J., Energy Inc., to T. Collins, NRC, Subject: "Review of Standard Technical Specification Containment System Bases," September 17, 1985.

Thomas, C., NRC, to J. Sheppard, Westinghouse Owners Group, Subject: "Safety Evaluation Report on WCAP-10271," February 21, 1985.

Memorandums

Beckham, D. H., NRC, to D. G. Eisenhut, NRC, Subject: "Program Plan for the Technical Specification Improvement Project," March 19, 1985.

Beckham, D. H., NRC, to D. G. Eisenhut, NRC, Subject: "Technical Specification Improvement Project - Interim Report," August 29, 1985.

Denton, H. R., NRC to All NRR Employees, Subject: "NRR Office Letter 34 - Utility Commitments," July 1981.

Denton, H. R., NRC, to All NRR Employees, Subject: "NRR Office Letter 40 - Management of Proposed Generic Issues," March 1983.

Denton, H. R., NRC, to T. P. Speis, NRC, Subject: "Formation of a Technical Specification Improvement Project Group," December 31, 1985.

Dircks, W. J., NRC, to H. R. Denton, NRC, Subject: "Report by the Task Group to Study the Design of Surveillance Testing in Technical Specifications, NUREG-1024," November 14, 1983.

Rowsome, F., NRC to W. Minners and S. Bryan, NRC, Subject: "Candidate Generic Safety Issue: Allowable Outage Times for Diverse, Simultaneous Equipment Outages," May 9, 1985.

ENCLOSURE 2

INCOMING AND SIGNATURE TAB

Use this side of the sheet to precede the incoming material when assembling correspondence.

(USE REVERSE SIDE FOR SIGNATURE TAB)

Atomic Industrial Forum, Inc.
7101 Wisconsin Avenue
Bethesda, MD 20814-4805
Telephone (301) 654-9260
TWX 7108249602 ATOMIC FOR DC

October 8, 1985

Mr. Harold R. Denton
Director, Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Denton:

Enclosed is a copy of the report entitled, "Technical Specifications Improvements", prepared by the AIF Subcommittee on Technical Specification Improvements of the Committee on Reactor Licensing and Safety. The report represents the results of over six months of intense effort by the Subcommittee, its four working groups and many discussions with your staff of the Technical Specification Improvement Project (TSIP). The Subcommittee consists of the Chairman of the four vendor Owners Groups Technical Specification Subcommittees, the Chairman of the Nuclear Power Plant Standards Working Group, ANS-58.4, as well as representatives from EPRI, individual utilities, AE's and consultant firms.

As Mr. Alan Passwater, Chairman of the Subcommittee, highlighted during the October 1, 1985 meeting with you and your staff, Section II of our report provides the recommendations and conclusions of the Subcommittee. These recommendations include improvements that can be made now within the present regulatory framework. We strongly encourage the NRC to proceed immediately to work with the Owners Groups, individual utilities and the Subcommittee in implementing these improvements. Specifically, NRC endorsement of the recommended criteria and improvements should be obtained as soon as possible.

In order to gain the necessary improvements discussed both in our report and the TSIP's report, the necessary staffing resources and management attention must be dedicated to this very important issue. The organizational responsibilities for implementing the recommendations and the individuals responsible for reviewing and approving the requested changes in technical specifications, either generic or plant specific, should be delineated as soon as possible. These individuals should work closely with the Owners Groups, individual utilities, and the Subcommittee to develop schedules for timely implementation of the recommendations and reviews of existing and future requests.

One of the major differences in our recommendations and those of the TSIP is the need for rulemaking to gain full benefit of the improvements that can and should be made. Although, the TSIP did not recommend changes in the regulations, we feel that there are changes that should be made in them to obtain full benefit of improvements in technical specifications. I must emphasis however that improvements that can be made now should not be delayed until any changes to the regulations are made. These two activities can and should go forward in parallel and on separate schedules.

The Subcommittee and its Working Groups have found the working relationship with the TSIP staff in addressing this very important topic extremely useful in coming to a mutual understanding of the problems and suggested recommendations. We encourage continuation of this approach during implementation of the recommendations and stand ready to continue discussions during this very important phase. The Subcommittee has spent considerable time in developing the criteria and the recommendations and looks forward to pursuing the improvements recommended. As soon as you and your staff have had an opportunity to review our report, I would suggest a meeting be scheduled in early November to discuss its content and how best to implement the recommendations.

Sincerely,

Murray R. Edelman

Murray R. Edelman
Chairman, Committee on Reactor
Licensing and Safety

MRE:tkr
Enclosure

Technical Specifications Improvements

by

AIF Subcommittee on
Technical Specification Improvements
of the
Committee on Reactor Licensing and Safety

October 1, 1985

Table of Contents

I. INTRODUCTION

It is generally agreed that the technical specifications in effect at most nuclear plants today are in need of review and simplification. The importance of the key information contained in them is diluted by the large volume of information. Some of the requirements are actually adverse to safety, others are simply ambiguous. A program has been undertaken by both the industry and NRC to improve technical specifications; to separate the most important from the less important, to clarify the content and to improve overall plant safety.

A. Report Purpose

This report articulates the industry's proposals for technical specification improvements and presents a regulatory basis for the proposed technical specification reforms. It serves as a communication vehicle both among nuclear industry personnel and between the industry and the NRC. Full implementation of the technical specification improvement program will require substantial resources from both the industry and the regulatory agency. This document has been prepared to assure efficient utilization of the resources required during the implementation phase. This can be accomplished by having the NRC and industry reach agreement on as many substantive matters as possible prior to the actual implementation and by solving generic issues on as broad a scale as possible.

B. Report Content

Section I provides background information. Section II presents conclusions and recommendations derived from discussions presented in the balance of the report. Section III describes the expected benefits from the full implementation of improved technical specifications. A detailed description of this new system is contained in Section IV and its implementation is described in Section V. Appendices provide details and related information.

C. The Evolutionary Background of Technical Specifications

The following information summarizes the evolutionary history of regulatory actions related to technical specifications. Appendix A provides additional details.

Section 182a of the Atomic Energy Act of 1954, 42 U. S. C. 2232(a) provides in part that:

> "In connection with applications for licenses to operate production or utilization facilities, the applicant shall state such technical specifications, including information of the amount, kind, and source of special nuclear material required, the place of the use, the specific characteristics of the facility and such other information as the Commission may, by rule or regulation, deem necessary in order to enable it to find that the utilization or production of special nuclear material will be in accord with the common defense and security and will provide adequate protection to the health and safety of the public. Such technical specifications shall be a part of any license issues."

This statutory directive has been implemented in the Commission's regulations, 10 CFR Part 50, Section 50.36, entitled "Technical Specifications." Before 1968, Section 50.36 required technical specifications to include "those significant design features, operating procedures, and operating limitations which were considered important in providing reasonable assurance that the facility (would) be constructed and operated without undue hazard to public health and safety."

In December, 1968, the Atomic Energy Commission (AEC), predecessor of the NRC, amended its regulations in Sections 50.36 and 50.59 (33 FR 18612). Section 50.36 was amended to include a more precise definition of those categories of technical specifications that must be included in an application for an operating license. (33 FR 18610)

The amended regulation narrowed the scope of the material contained in technical specifications by defining five specific categories of technical specifications. The five categories defined for nuclear reactors are: (1) Safety limits and limiting safety system settings, (2) limiting conditions for operation, (3) surveillance requirements, (4) design features, and (5) administrative controls. (47 FR 13370)

On July 8, 1980, the Commission published an Advance Notice of Proposed Rulemaking (ANPR) requesting comments on the desirability of changing its regulations on technical specifications to: (1) establish a standard for deciding which items derived from the safety analysis report must be incorporated into the technical specifications for a facility; (2) modify the definitions of categories of technical specifications to focus more directly on the aspects of reactor operation that are important to the protection of the health and safety of the public; (3) define a new category of requirements that would be of lesser importance; and (4) establish a mechanism for the licensee to make changes without prior NRC approval.

On March 30, 1982, after considering the public comments made in response to its previous ANPR, the NRC published a proposed rule for comment. This is the so-called "George" rule to split the technical specifications, relocating some material to a document called supplementary specifications. In the supplementary information, the Commission explained that a recent legal case "...highlighted the need to establish specific criteria in the regulations for deciding which items derived from the safety analysis report must be included in the technical specifications incorporated in the license for a facility."

This rulemaking for technical specification reforms was never completed. The Commission suspended efforts on the rule around mid-1983 in order to concentrate staff resources on the issuance of near term operating licenses. Public comments regarding the 1982 proposed rule on technical specifications is provided in Appendix C.

D. New Initiatives for Technical Specification Improvements

Beginning in August, 1981, with the publication of NUREG-0839 (Results of a Senior Management Survey), the staff acknowledged the potential for safety reductions due to poorly conceived technical specification requirements including test frequencies and scope. More recently specific concerns were raised in regard to reactor trip system test frequency and diesel generator test frequency and scope. These concerns were documented in associated Generic Letters. In August, 1983, the Deputy Executive Director for Regional Operations and Generic Requirements directed

the establishment of a Task Group to review technical specification requirements. This effort was documented in NUREG-1024, "Technical Specifications -- Enhancing the Safety Impact", November 1983.

The recommendations of this Task Group, along with other motivating factors, led to the establishment of the NRC's Technical Specification Improvement Project (TSIP) in December, 1984. The objective of the TSIP was to reconsider the entire area of technical specifications, including philosophy, scope, content, depth, and the process by which they are implemented and enforced.

To interface with the TSIP, the industry formed a Subcommittee under the auspices of the Atomic Industrial Forum (AIF). While prior technical specification improvements had been on an individual utility or Owners Group basis, the AIF Subcommittee serves as a focal point for individual utility optimization efforts as well as Owners Groups activities on generic issues associated with technical specification improvements.

In developing an overall plan to address technical specification improvements, the Subcommittee has addressed the key elements needed for a successful program. This includes developing criteria, the administrative controls needed, proposed regulatory changes and near-term solutions. The overall program plan is shown on Figure 1.

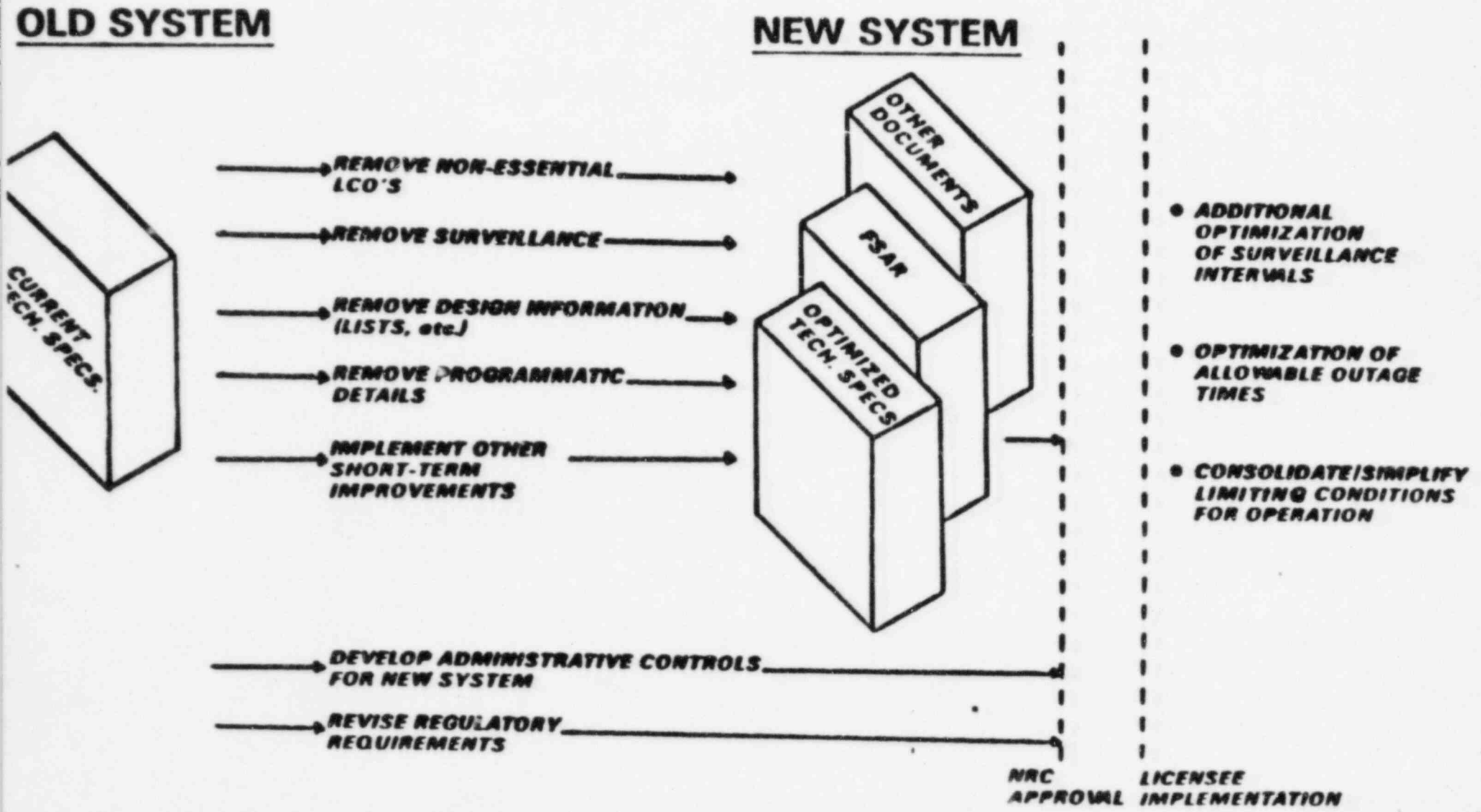
E. AIF Subcommittee on Technical Specifications Improvements

On March 1, 1985, representatives of industry met with the NRC to present the industry's proposal for improving technical specifications. This proposal included the development of criteria for determining the content of optimized technical specifications. The criteria will be used to split current technical specifications, either custom or standard, into optimized technical specifications. The existing technical specification requirements that did not satisfy the criteria would go into supplemental specifications or an updated FSAR. Additionally, the industry committed to form an AIF Technical Specifications Subcommittee to coordinate industry plans and policies and interact with the NRC. The AIF Subcommittee on Technical Specification Improvements was formed mid March, 1985 and reports to the AIF Committee on Reactor Licensing and Safety. The four light water reactor owners groups (LWROGs), EPRI and ANSI as well as individual utilities, vendor and AE firms have representation on the Subcommittee. The Subcommittee established four working groups to develop recommendations. The balance of this report is the result of the efforts of the following working groups:

- Criteria Development;
- Suggested Regulatory Changes and Administrative Process for Converting to the Revised Approach;
- Administrative Process for Controlling and Maintaining the Revised Document; and
- Research on Technical Specifications; including Probabilistic Methodology and Criteria Applications.

Figure 1

PLAN TO REFORM NRC REQUIREMENTS RELATED TO THE TECHNICAL SPECIFICATIONS



F. Probabilistic Methodology

The Subcommittee is gratified to see that the NRC has, on a selective basis, considered the use of probabilistic analyses in justifying changes in the existing technical specifications. The industry encourages this work and plans to continue to interact with the NRC in the further development and application of this methodology.

Criteria for defining the scope and content of technical specifications could have been developed through the use of probabilistic methods. However, it is not clear that PRA based criteria would provide a demonstrable incremental benefit in technical specification improvement. Properly defined deterministically developed criteria provide greater benefit. Because of this fact, and in recognition of the need to maintain consistency with the current regulatory basis for nuclear plants, the Subcommittee has proposed a set of deterministic criteria to define the content of improved technical specifications. The Subcommittee supports continued investigation into the application of probabilistic methods and associated acceptance criteria for improving technical specifications, within the context of a deterministically-developed set of criteria for their content, such as those proposed in this document. Immediate areas for these applications are the assessment of Surveillance Test Intervals (STI) and equipment Allowable Outage Times (AOTs), now found in technical specifications.

The Subcommittee believes that significant improvements in technical specification requirements for specific systems and components can be achieved now and it recommends that the NRC be prepared to accept, review, and approve requests for such changes (e.g., for STIs and AOTs) which are based on the application of probabilistic methods, as well as for those requested improvements which are based on the application of more deterministic criteria for technical specification content. The parallel application of deterministic and probabilistic methods for improving technical specifications is feasible and entirely appropriate. These methods, when used in parallel, should be consistently applied by industry in substantiating future requests for technical specification changes, and by the NRC in evaluating these requests.

The industry and NRC representatives at an August, 1985 meeting agreed that a continuing dialogue on the development of methods, procedures and criteria for application of probabilistic methods to technical specification improvement should be maintained. The industry representatives requested an opportunity to review the products of the PETS program as they become available. In return, industry representatives, through the AIF Subcommittee on Technical Specification Improvements, agreed to provide comments on these products and other issues to the responsible organizations within NRC.

After extensive discussion within the Subcommittee on the uses and benefits of probabilistic methods in obtaining technical specification improvements, it was concluded that the establishment of the proper role of such methods in the process will be greatly facilitated by their application now, where possible and clearly beneficial. The Subcommittee recommends that both the NRC and industry continue expanding the applications of these methods for technical specification improvement. Additional discussion on this topic is found in Appendix I.

II. CONCLUSIONS AND RECOMMENDATIONS

The purpose of this section is to articulate the industry's conclusions and recommendations based on the material discussed in the balance of the report.

CONCLUSIONS

1. The present scope and content of technical specifications do not necessarily enhance safe facililty operations. Some requirements are confusing and present an element of unnecessary frustration to both the facility operator and the regulator. There is no clear understanding of the purpose of the document, what should be included and why, resulting in at times unnecessary exchanges between the licensee and the NRC with questionable benefit to public health and safety. There is a definite need to seek improvements in technical specifications, regarding both philosophy and content.

2. Substantial improvements can be made in technical specifications in the immediate future. These improvements are consistent with regulatory requirements that presently exist. Such changes include removing information which duplicates that presently found in other documents and in other regulations, providing clarification of terms used, and reconsidering the technical basis for certain requirements. These types of improvements can and should proceed immediately.

3. Explicit criteria are needed to determine which structures, systems, components and process variables should be included in the technical specifications. These criteria will assist the staff and licensee in determining what elements of the facility have a unique level of importance that warrants their inclusion in this document. For long term stability, these criteria should be explicitly written into the regulations,specifically 10CFR50.36.

4. Pilot studies conducted by the Owners Groups have successfully demonstrated use of the recommended criteria. (See Appendix D for detailed discussion)

5. There is no need to establish a separate document entitled "supplemental specifications" as suggested in the proposed rule (47 FR13369 March 30, 1982). Existing documents and associated administrative controls can be used for those topics no longer required to be retained in the technical specifications. which must be retained in the interest of safety.

6. There are technical improvements that can be made in regard to such matters as allowed outage times and surveillance test intervals using probabilistic methodologies and operating experience, which provide overall improvements in safety and operability.

7. There is no clear benefit to public health and safety in requiring "cumulative outage times" in the revised technical specifications. The additional administrative burden and potential stress of returning equipment to operation too quickly in order to minimize expenditure of outage time allowances may compromise quality repairs with questionable benefit to the overall safety of the facility.

RECOMMENDATIONS

1. Criteria

A. The NRC should endorse the AIF technical specification criteria for application on a voluntary basis by utilities to existing and future technical specifications.

B. Following NRC endorsement of the criteria, each Owners Group should apply the criteria to their respective Standard Technical Specifications. These revised documents, with technical justification, should then be submitted to the NRC for review and approval for use as generic guidelines.

C. Pending staff originated technical specification additions should be reviewed against the criteria and those not meeting the criteria should be placed on hold pending resolution of NRC approval and codification of the criteria.

D. The NRC should initiate rulemaking to codify the criteria for use on a voluntary basis in place of the current requirements of 10CFR50.36.

E. The industry and NRC should participate in preparation of a revision to ANSI/ANS 58.4 (Criteria for Technical Specifications for Nuclear Power Stations) to provide a "writers' guide" to utilities on preparation of technical specifications using the criteria. The NRC should consider endorsing this revised standard for use on a voluntary basis by issuance of a Reg Guide.

2. Process

The basis for adequate control over items which are excluded from the new technical specifications falls into three areas:

1. 10CFR50.59
2. Licensee Commitments
3. Federal Regulations

Based on these controls, and the link established between the FSAR and plant procedures, the NRC should concur with the process as depicted in Appendix F, Figure F-1.

3. Short Term Improvements

Appendix G to this report provides recommended improvements to several specifications which should be reviewed by the NRC. It is requested that the NRC accept and utilize these documents as the basis for generic guidance which would facilitate plant-specific proposed license amendments. Further improvements are under development by the Owners Groups and will be submitted to the NRC for similar consideration. Upon NRC issuance of generic guidance on these issues, each participating utility should consider promptly responding with a proposed amendment incorporating the changes.

Sufficient resources to review and approve requests for these technical specification improvements should be provided by the NRC. A single central organization within the NRC should be responsible for ensuring consistent application of these improvements.

4. Other Rule Changes

In addition to the codification of the criteria outlined in recommendation 1.D above, several conforming changes should be processed as described in Appendix H. These include, but are not limited to, such items as 10 CFR 50.36a (RETS), 10CFR50, Appendix J, etc.

5. Other Longer-Term Changes

In Recommendation 3 above, changes which are relatively straightforward and which do not involve a change to the rules are proposed. There are other changes which do not require rulemaking and which may be somewhat more complex, that should also be pursued. An example of such an item is improvements in the bases.

6. Probabilistic Methodology

A. Sufficient resources to review and approve probabilistic requests for technical specification changes should be provided by the NRC. A single central organization within the NRC should be responsible for ensuring consistent application of these probabilistic methods.

B. The present dialogue between the NRC and the industry on the application of probabilistic methods to technical specification evaluations and improvements should continue. The opportunity for the broadest possible technical review of the PETS program products, within the NRC and the industry, should be provided.

C. Future applications of probabilistic methods beyond the evaluation of changes to surveillance requirements and allowable equipment out-of-service times should continue to be pursued.

D. The industry and the NRC should strive to achieve agreement on appropriate probabilistic methods (either generic or plant specific) and related acceptance criteria which can be used for review of technical specification changes.

E. Acceptable means should be developed to apply the results of a generic probabilistic analysis directly to individual plant requests for changes. These means should not necessarily require the existence of a plant specific PRA for each individual applicant plant.

III. IMPROVEMENTS IN TECHNICAL SPECIFICATIONS TO ALLEVIATE CURRENT PROBLEMS

The overall improvements in technical specifications described herein provide a logical way to alleviate current technical specification problems and bring these individual efforts to fruition. It is expected that the program will have multiple benefits as described below.

There are four anticipated benefits that can be realized from full implementation of the proposed technical specification improvement program: These are:

- o Promoting safe plant operations;
- o Facilitating licensee compliance with NRC requirements; and
- o Minimizing manpower and paperwork burdens for the NRC and licensees.
- o Increasing plant performance/availability

The following sections discuss each of these benefits separately.

A. Promoting Safe Plant Operations

Contrary to the originally intended function of technical specifications, evolutionary changes over the past 15 years have resulted in the introduction of many requirements which actually may be adverse to safety. Concern about this possibility has been raised by both industry and NRC representatives. An NRC Task Group on Technical Specifications established in August, 1983, confirmed that there were several areas in which needed technical specification changes could probably result in direct safety improvements. For example, the Task Group indicated that requiring surveillance testing of an operable train while equipment in the other train of a system is declared inoperable may "actually degrade the needed system and increase public risk."

The Task Group effort which was quite comprehensive was documented in NUREG-1024. This document is considered to be a good assessment of ways in which present technical specifications could adversely affect safety. One of the key objectives of this program is to correct these problems, thus resulting in improved safety.

A second significant way in which safety can be improved is through technical specification simplification. Much of the information presently contained in technical specifications duplicates that found in other licensee documents and NRC regulations. A typical volume of technical specifications for a modern day nuclear plant is several inches thick. The table of contents alone may require as many as 25 pages. It is generally agreed that one of the key values of technical specifications is to communicate to operations personnel exactly what the important limits and limiting conditions are for the plant. Technical specifications currently do not effectively prioritize or highlight the most important information. This dilutes the significance of the information which is of most immediate importance to assuring safety. Making the technical specifications easier for operations personnel to use is another way to promote safe plant operation.

The impact of the substantial growth in the size of technical specifications was noted by the NRC in its proposed rule on technical specifications (47FR13369, 3/30/82). It was noted in the preamble that, "The Commission is concerned that the increased volume of technical specifications lessens the likelihood that licensees will focuse attention on matters of more immediate importance to safe operation of the facility."

B. Facilitating Licensee Compliance with NRC Requirements

Any effort that focuses the scope and clarifies the content of technical specifications will increase the attention on safety-significant areas. Relocating requirements in discrete documents (e.g. In-service Inspections-(ISI) plan) will avoid possible conflicts (real and imaginary) and will facilitate understanding and tracking. The current situation with regulations referring to technical specifications and technical specifications providing exemption to regulations as well as supplementing regulations (all true for 10CFR50, Appendix J itself) is confusing and inappropriate.

The NRC's Office of Inspection and Enforcement had discussions with several licensees during April and May, 1981 to, "directly ascertain the perspective of licensees on the depth and scope of this negative safety impact problem." The results of this effort were discussed in NUREG-0839, "A Survey by Senior NRC Management to Obtain Viewpoints on the Safety Impact of Regulatory Activities from Representative Utilities Operating and Constructing Nuclear Power Plants," issued in August, 1981. These discussions involved shift personnel, plant engineers, lower level plant supervisors, senior plant managers, as well as senior corporate management. In discussing the technical specifications, it was noted on page 12 of NUREG-0839 that, "According to one group of managers, NRC has 'lost sight of the forest because of the trees' in imposing new technical specifications. The required amount of detail has approached the unreasonable level. In a specific administrative example, it was stated that the format of the technical specifications changed six times in the last two years." On page 15 of the same document it was noted that, "The technical specifications, including reference requirements, continue to grow. Technical specifications are looked upon more as a trap than as safety requirements." There were many additional concerns expressed during these meetings.

The current technical specifications often have unclear or missing technical bases. This lack of bases promotes legalistic compliance in lieu of clearly understanding and meeting the technical concern. Therefore, bases improvements will also improve compliance and will help assess the significance of non-compliance. An example of this is the ongoing dialogue between licensees and the NRC on Appendix J requirements.

C. Minimizing Manpower and Paperwork Burdens for the NRC and Licensees

The process of amending many items contained in current technical specifications now imposes an unnecessary and costly burden on the NRC and licensees to meet administrative requirements which do not seem to serve the needs of the public or the nuclear industry.

Under the current technical specification amendment system implemented in 1983, the Commission requires an applicant requesting an amendment to its operating license (technical specifications) to provide its appraisal on the issue addressing whether or not the amendment involves a significant hazards consideration using the standards in 10CFR50.92, and, if the amendment involves the emergency or exigency provisions, to address the features upon which the Commission must make its findings. The licensee also is required to notify the State authorities of the amendment request and the results of its significant hazards consideration review.

The 1983 "Sholly" regulations, implemented by 48FR14873, has greatly increased the amount of administrative effort involved for both the utility and the NRC in issuing license amendments and introduced complications that can significantly expand the NRC effort. These complications include such things as: internal controversy between technical staff and legal staff which can necessitate extensive rewrites and meetings, disagreements between NRC staff and licensees, extensive comments on the Federal Register notices, and opposition resulting in the need to hold a public hearing.

A Congressional review of the implication of "Sholly" concluded in part that the public does not appear to benefit from these hearing opportunities for many items now included in the technical specifications. Many licensing amendments are sought to correct typographical errors, change corporate structure, or update equipment lists which are currently contained in the technical specifications. NRC officials point out that the amount of resource time devoted to meeting their own publication requirements in the Federal Register would seem to fail a cost/benefit analysis. The administrative log jam which has been established has had the overall effect that processing of the most routine uncomplicated licensing amendments now normally requires a minimum of 90 to 120 days to accommodate the reviews and pre-noticing required by the new regulations. More complicated amendments may require six months or longer for review and approval. Additional discussion on this topic is found in Appendix B.

The changes currently suggested by the AIF Subcommittee make no direct effort to alter "the Sholly Process". It is the Subcommittee's conclusion that suggested changes will significantly reduce the volume of the technical specifications. Futhermore, many of these items moved from technical specifications are precisely those which have generated trivial license amendments (for example: minor changes to lists or fuel-cycle dependent variables).

D. Increasing plant performance/availability

The performance statistics of commercial U.S. reactors indicate that improvements should be made. A number of factors have been reviewed to determine their impact on plant availability. Technical specifications have been shown to have considerable impact on plant operations. An NRC contractor review (SAIC evaluation for NRC-TSIP, "Impact of Technical Specifications on Operating Reactors In 1984") reported that in 1984 alone, a total of 77 shutdowns were required by technical specifications. The subject of shutdowns contributed over 1 1/2% unavailability to the total industry performance. Industry estimates are higher than this value since the evaluation did not include start up delays, trips attributed to less flexible operating or test configurations nor normal maintenance personnal work diversions due to testing assignments. The report did, however, note that technical specifications do also contribute 17% to the forced outage hours. From the utility perspective ...forced outage hours... may have greater impact on plant operation since they are unplanned or unavoidable unavailabilities. Excessive testing at power required by current technical specifications contribute to higher scram frequencies. Owners group work (WCAP-10271 and NEDE-30851P) have addressed this and have quantified this impact for the reactor protection systems. Many shutdowns were for conditions of negligible risk. Some shutdowns may have placed a greater challenge on plant safety systems than if the plant had continued to operate while repairs were made. In summary, technical specifications do contribute to unnecessary shutdowns.

IV. A New System of Technical Specifications

In Section I, and more fully in Appendix A, the regulatory basis of technical specifications is reviewed. The current codification of the Atomic Energy Act requirement to include technical specifications in facility licenses, 10 CFR 50.36, is deficient in at least one principal characteristic. While it provides a categorization of technical specifications' content, it provides no meaningful criteria regarding appropriate scope. This point was noted by the ASLAB in the Trojan proceeding and was the purpose of the 1980 Advanced Notice and 1982 Proposed Rule. The 1982 Proposed rule remained deficient in this respect since it simply acknowledged that the technical specifications contained items of varying importance but provided no objective tests by which potential subjects could be judged. Subsection C, below, provides the missing criteria.

An additional unfortunate circumstance has involved the concept widely held that technical specifications are the only set of enforceable technical requirements that can be relied upon. This concept is embodied in NRR office letter No. 34 as well as indirectly in many other arenas. This should not be the case. Both the Enforcement Policy and history draw attention to many other enforceable requirements. To be sure, the technical specifications do provide a set of important requirements. However, many items of minor significance are included and others are appropriately not included. This proposal, when implemented, will allow the relocation of many items currently found in technical specifications. This should not be viewed as erradication. It is, rather, an appropriate restructuring of a whole body of regulatory requirements. Section V will address the generic aspects of this restructuring and acknowledge that appropriate controls will be maintained.

This restructuring is different than that envisioned in the 1982 rule, in that no new major programs (Supplemental Specifications) are recommended. This is premised upon the existence of other sufficiently controlled programs. Section V provides a detailed development of the general concepts of the proposed restructured system.

A. The General Philosophy of Technical Specifications

The intent of technical specifications is to specify the limiting conditions for operation to maintain the plant in a configuration during normal operation such that, if an accident or malfunction occurs, there is a high degree of assurance that the plant can be successfully brought to a safe shutdown state.

B. Selection Criteria for the Present Technical Specifications

Present technical specifications consist of six sections. These are: Definitions, Safety Limits and Limiting Safety Systems Settings, Limiting Conditions for Operations (LCO), surveillance requirements, design features, administrative controls. The selection criteria in Section IV.C. has been developed principally for use with those items listed in the LCO section of present technical specifications. The selection criteria is not intended for use with the other sections of present technical specifications. These other sections have varying degrees of level of importance and in many cases repeat information that is presently contained in the Final Safety Analysis Report or 10 CFR. The following provides the recommendations for handling these other sections of present technical specifications.

Definitions - Retain in new technical specifications only those which provide clarification or have a special meaning within the document and which are not in general use.

Safety Limits, Limiting Safety System Settings - Retain in new technical specifications.

Surveillance Requirements - Relocate from technical specifications. Surveillance requirements for items listed in the new technical specifications should be located in documents not controlled by the license amendment process. Surveillance, per se, is not of the same level of importance as the equipment involved. It is not a question of whether or not surveillance will be performed; but the details associated with surveillance, frequency and methodology, may be more effectively controlled by a program with an appropriate administrative control process.

Design Features - In many cases, information contained in this section is redundant to that which is contained in the FSAR. Any additional details should be relocated into the FSAR. Items described herein that possess a high level of importance will have LCO's established for them. The design details provided by this section are not considered to be as high a level of importance. They can be effectively controlled, and in many cases already are, by documents which are administratively controlled pursuant to 10 CFR.

Administrative Controls - In many cases, information contained in this section is redundant to that which is contained in the FSAR and 10 CFR. The administrative details contained therein are not considered to be as high a level of importance, except for those for which regulations exist (e.g., shift staffing, non-routine event reporting). Any additional details can be relocated to the FSAR. These details can be effectively controlled in documents which are administratively controlled pursuant to 10 CFR.

C. Selection Criteria For the Present Limiting Conditions of Operations (LCOs)

As a means of selecting those items covered by the present LCO's which are of greatest importance to plant safety and which should be included in the technical specifications, criteria have been established. A brief background as to how these criteria are selected is presented as a prelude to the criteria. A complete discussion of the development of the criteria is provided in Appendix D.

It is important that the plant be operated under conditions (pressure, power, water level, temperature, etc.) which are consistent with the safety analyses that have been performed. Each selected event has been evaluated to determine systems and limits which are essential to avoiding unacceptable results. The design basis analyses consider the potential initiating causes of threats to fuel and the nuclear system process barriers. Design basis accidents are those hypothetical events that potentially affect one or more of the radioactive material barriers and that are not expected during plant operations. The effects of these hypothetical events are analyzed giving consideration to plant conditions (loss of off-site power, single active failures, etc.) to examine events that result in the potential release of radioactive material. These are the established "bounds" of normal plant operation within which the conclusions of the safety analysis report are expected to remain valid. A fundamental purpose of technical specifications is to define and preserve the validity of the results and conclusions of the design basis accident (DBA) analyses in the modes for which they are analyzed.

The NRC, on a selective basis, has reviewed and accepted changes in the technical specifications using probabilistic assessment methodologies without changing the DBA analyses. These criteria are meant to be flexible enough so as not to preclude the future use of PRA methodology in establishing technical specifications.

The three criteria listed below ensure that the most important items are maintained in the technical specifications. If an item meets any one of the three criteria, it should be retained in the technical specifications.

Criterion 1: An installed system that is used to detect, by monitors in the control room, a significant abnormal degradation of the reactor coolant pressure boundary, or;

DISCUSSION: A basic concept in the protection of the public health and safety is the prevention of accidents. Systems are installed to detect significant abnormal degradation of the reactor coolant pressure boundary so as to allow operator actions to either correct the condition or to shutdown the plant safely, thus reducing the likelihood of a loss of coolant accident.

This criterion is intended to ensure that technical specifications control those systems that detect excessive reactor coolant system leakage. Two specific examples of systems which are selected using Criterion 1 are:

Secondary system radiation monitors

Reactor Building sump level instrumentation

Criterion 2 A process variable that is an initial condition of the Design Basis Accident Analysis, or;

DISCUSSION: Another basic concept in the protection of the public health and safety is that the plant shall be operated within the bounds of the initial conditions assumed in the existing Design Basis Accident (DBA) analysis. These analyses consist of postulated events, analyzed in the Final Safety Analysis Report (FSAR), for which a structure, system, or component must meet specified functional goals. These analyses are contained in Chapters 6 and 15 of the FSAR (or equivalent chapters) and are identified as Condition II, III, or IV events (ANSI N 18.2) (or equivalent) that either assume the failure of or present a challenge to the integrity of a fission product barrier.

Process variables are parameters for which specific values or ranges of values have been chosen as reference bounds in DBA analyses and which are monitored and controlled in actual operation such that process values remain within the analysis bounds.

The purpose of this criterion is to capture those process variables that have initial values assumed in the DBA analyses, which are monitored and controlled. So long as these variables are maintained within the established values, risk to the public safety is presumed to be acceptably low.

Implicit in this criterion is the associated installed control room instrumentation that monitors and/or controls the selected process variable. Two specific examples of process variables selected using Criterion 2 are:

Movable Group Assembly Rod Insertion Limits

Reactor Coolant System Pressure Limits

Criterion 3: A structure, system, or component that is part of the primary success path of a safety sequence analysis and functions or actuates to mitigate a Design Basis Accident.

DISCUSSION: A third concept in the protection of the public health and safety is that in the event that a postulated DBA should occur, structures, systems, and components are available to function or to actuate in order to mitigate the consequence of the DBA. Safety sequence analyses or equivalent have been performed in recent years and provide a method of presenting the plant response to an accident.

A safety sequence analysis is a systematic examination of the actions required to mitigate the consequences of events considered in a plant's DBA analysis, as presented in Chapters 6 and 15 of the plant's Final Safety Analysis Report. Such a safety sequence analysis considers all applicable events, whether explicitly or implicitly presented. The primary success path of a safety sequence analysis consists of those actions assumed in the design basis accident analysis which limit the consequences of the events to within the appropriate acceptance criteria.

It is the intent of this criterion to capture into technical specifications only those structures, systems, components that are part of the primary success path of a safety sequence analysis. Implicit in this criterion are those support systems that are necesssary for items in the primary success path to successfully function. The primary success path is equivalent for each DBA to the combinations and sequences of equipment assumed to operate when responding to the event which results in acceptable plant accident response (including consideration of the single failure criterion).

Two specific examples of structures, systems, and components which are selected using Criterion 3 are;

Reactor trip system instrumentation

Primary system safety valves

D. Disposition of Requirements not Appropriately Contained in Technical Specifications

Those structures, systems, components, process variables and administrative sections that would no longer be in the technical specifications would be placed in other documents (FSAR, QA Plan, Fire Protection Plan, procedures, etc.). It must be recognized that there are other means of validating the overall safety of the plant such as the design review (FSAR, SERs etc), the QA plan, the operating procedures, etc. These other documents have regulatory controls placed on them and are both inspectable and enforceable. For example, action statements are presently found in operating and emergency procedures. There is information presently found in other documents, for example the emergency plan, that have equivalent importance in protecting the health and safety of the public but are not located in the technical specifications. A detailed discussion of other documents available, their present control and a suggested process for controlling those items no longer in technical specifications is provided in Appendix F.

V. IMPLEMENTING THE NEW SYSTEM

The information contained in this section describes the process for implementing the improved technical specifications and companion documents. It discusses the changes to existing regulations, and changes to regulatory guidance documents. It also describes the conversion of both Standard Technical Specifications and custom technical specifications by application of the new concept.

A. Applicability of the New System

One of the key industry premises under which the improvements in technical specifications was initiated was that conversion to the new concept would be voluntary for plants having either custom technical specifications or Standard Technical Specifications. Additionally, conversion to Standard Technical Specifications should not be a prerequisite to obtaining the benefits of this approach. With this understanding, the suggested criteria, suggested changes to regulations and control process are applicable to custom as well as Standard Technical Specifications.

B. Changes to the Regulations

The selection criteria for determining what should be in technical specification should be codified in the regulations. As discussed in Section IV.C. of this document, those LCOs to be located in technical specifications define and preserve the validity of the results and conclusions of the design basis accident analyses. They assure that the facility is maintained in such a configuration as to maximize the probability of a successful and safe recovery from the accident.

Therefore, recognizing the level of importance to safety of these limitations, the criteria used to determine these limits should be made part of the regulations. The suggested changes to 10 CFR 50.36 are discussed in Appendix H.

C. Short Term Improvements

There are improvements in the present technical specifications that can be made now without awaiting the results of rulemaking. These include, but are not limited to (1) removal of lists such as containment penetration lists, fuse lists, etc. (2) the removal of requirements that are already in the regulations and which must be met by the licensee, and (3) attaining a clearer understanding of the interpretation of the term, "operable". These are discussed individually in Appendix G. The industry encourages the NRC to address these suggested improvements now and obtain the benefits as soon as possible. The AIF Subcommittee will continue to interact with the NRC on these and additional generic improvements.

D. Conversion of Technical Specifications

The conversion process for licensees, whether their current technical specifications are custom or standard, has two primary characteristics: (a) it is voluntary; and (b) it does not seek to bypass appropriate backfit controls. Regarding the potential for backfits, it is expected that the general approach will be for each Owners Group to collectively review the applicable technical specifications. Each licensee will have the benefit of such partitioning efforts as they develop their individual optimization proposals. Since the plant is presently operating with an acceptable set of technical specifications which are part of the license, certification of the revised technical specifications should not be required.

Any potential future additions to technical specifications, whether identified in optimization effort(s), identified by the NRC staff in their review of generic or plant-specific issues, or otherwise, will need to be judged against the criteria presented in Section IV C above and against appropriate cost-benefit reviews expressed in 10 CFR 50.109.

E. Format and Style of New Technical Specifications

The contents of new technical specifications are established by the selection criteria previously described. In order to make the new technical specifications a more user friendly document, certain enhancements to the style and format should be incorporated. Some areas of present technical specifications that tend to make the document difficult to use include extensive equipment listings, cycle dependent variable values, and single systems referred to in several specifications with overlapping or contradictory requirements.

In order to correct these and other style and format problems, it is proposed that an industry standard writers guide for technical specifications be developed. There presently exists an industry standard (ANSI/ANS - 58.4 -1979, Criteria for Technical Specifications for Nuclear Power Stations) that could be revised to include not only the selection criteria previously provided but also guidance in the preparation of technical specifications. This guidance would be in the form of a writers guide to ensure that writers produce technical specifications that are readable, complete, convenient, accurate and useable to control room personnel. Such a guide would include suggested format principles as examples for use by writers in preparing the document. It would also include a discussion of style and sentence structure that would emphasize the use of concise directions. Further, it would provide guidance to allow information to be presented in a simple, familiar, and unambiguous manner. Consistency in style and sentence structure of technical specifications will improve the ability to understand and use them just as it has been found to improve the effectiveness of revised emergency operating procedures.

This effort will be initiated shortly and will build upon the writing criteria presently detailed in the ANS standard. The resultant document will be a revised ANSI/ANS 58.4 standard which can be used by the nuclear industry as guidance in the preparation of new technical specifications. Further, NRC could adopt this standard by issuing a generic letter or Regulatory Guide to this effect.

Appendix A: Regulatory History and Current Regulatory Requirements and Guidance

As used in the nuclear industry, the term "technical specifications" originates in Section 182a of the Atomic Energy Act of 1954, 42 USC 2232(a). That Section 1822 provides in pertinent part that:

> "In connection with applications for licenses to operate production or utilization facilities, the applicant shall state such technical specifications, including information of the amount, kind, and source of special nuclear material required, the place of the use, the specific characteristics of the facility and such other information as the Commission may, by rule or regulation, deem necessary in order to enable it to find that the utilization or production of special nuclear material will be in accord with the common defense and security and will provide adequate protection to the health and safety of the public. Such technical specifications shall be a part of any license issued."

This statutory directive has been implemented in Section 50.36 of the Commission's regulations in 10 CFR Part 50, entitled "Technical Specifications." Before 1968, Section 50.36 required technical specifications to include "those significant design features, operating procedures, and operating limitations which were considered important in providing reasonable assurance that the facility (would) be constructed and operated without undue hazard to public health and safety." Technical specifications that were formulated in accordance with this regulation, as it was then written, generally contained more detailed design information than was considered to be necessary to assure safe reactor operation. These technical specifications proved to be difficult to organize, unduly restricted flexibility of reactor operation, and necessitated the processing of many changes that were not significantly related to safety (47 FR 13370).

In December, 1968, the Atomic Energy Commission (AEC), predecessor of the NRC, amended its regulations in Sections 50.36 and 50.59 (33 FR 18612). Section 50.36 was amended to include a more precise definition of those categories of technical specifications that must be included in an application for an operating license.

The amended regulation narrowed the scope of the material contained in technical specifications by defining five specific categories of technical specifications. The five categories defined for nuclear reactors are: (1) safety limits and limiting safety system settings, (2) limiting conditions for operation, (3) surveillance requirements, (4) design features, and (5) administrative controls (47 FR 13370).

The Statement of Consideration which accompanied promulgation of 10CFR50.36 in its present form made specific reference to the then recently issued "Guide to Content of Technical Specifications for Nuclear Reactors" (November 1968, 33 FR 18610). That guide spoke of technical specifications in terms of "conditions governing operation of a facility that cannot be changed without prior Commission approval" and that represent "legal bounds within which the licensee is required to operate the facility." It went on to state the technical specifications "related to technical matters should consist of those features * * * of the facility that are of controlling importance to safety; the identification of such features was to be accomplished by thorough safety analysis of the facility, the analysis being based on current knowledge and understanding of safety needs and techniques."

In 1979, the Atomic Safety and Licensing Appeals Board clarified both the statutory and regulatory underpinnings for technical specifications when it upheld a prior licensing board decision concerning an application to expand the spent fuel pool at the Trojan Nuclear Plant (Portland General Electric, Co., et al. (Trojan Nuclear Plant), ALAB-531, 9 NRC 263 (1979)). At issue was a contention by the State of Oregon that certain items from the design report on the spent fuel pool's expansion should be given the status of technical specifications to the operating license. This contention was denied and the Appeals Board held that water chemistry limits for minimizing corrosion to fuel elements and spent fuel racks "need not be carried over into a technical specification to insure a margin to safety." In its ruling, the Appeal Board wrote:

> "From the foregoing it seems quite apparent that there is neither a statutory nor a regulatory requirement that every operational detail set forth in an applicant's safety analysis report (or equivalent) be subject to a technical specification, to be included in the license as an absolute condition of operation which is legally binding upon the licensee unless and until changed with specific Commission approval. Rather, as best we can discern it, the contemplation of both the Act and the regulations is that technical specifications are to be reserved for those matters as to which the imposition of rigid conditions or limitations upon reactor operation is deemed necessary to obviate the possibility of an abnormal situation or event giving rise to an immediate threat to the public health and safety".

On July 8, 1980, even before the Appeal Board's ruling in the Trojan case, the Commission published an Advance Notice of Proposed Rulemaking (ANPR) (45 FR 45916), requesting comments on the desirability of changing its regulations on technical specifications to: (1) establish a standard for deciding which items derived from the safety analysis report must be incorporated into the technical specifications for a facility; (2) modify the definitions of categories of technical specifications to focus more directly on the aspects of reactor operation that are important to the protection of the health and safety of the public; (3) define a new category of requirements that would be of lesser immediate importance to safety than technical specifications, thereby providing greater flexibility to both the NRC and licensees in processing proposed changes; and (4) establish appropriate conditions that must be met by licensees to make changes to the requirements in the new category without prior approval (47 FR 13370-13371). (Comments received in response to the ANPR were strongly in favor of a rule change to incorporate these concepts, see 47 FR 13371 and SECY 81-672.)

On March 30, 1982, after considering the public comments made in response to its previous ANPR, the NRC published a proposed rule for comment (47 FR 13369). This is the so-called "George" rule to split the technical specifications, relocating some material to a document called Supplementary Specifications. In the supplementary information portion of its proposed rule, the Commission explained (Id. at 13370) that the recent Trojan case "...highlighted the need to establish specific criteria in the regulations for deciding which items derived from the safety analysis report must be included in the technical specifications incorporated in the license for a facility." The Commission went on to explain the then current problems with technical specifications:

> "In addition, the substantial growth in both the number of items and in the detail of the requirements contained in technical specifications that has taken place since the STS were instituted indicated that more precise

definitions of the existing categories of technical specifications contained in Section 50.36 are needed. The Commission is concerned that the increased volume of technical specifications lessens the likelihood that licensees will focus attention on matters of more immediate importance to safe operation of the facility.

While each of the requirements in today's technical specifications plays a role in protecting public health and safety, some requirements have greater immediate importance than others in that they relate more directly to facility operation. These are the requirements that pertain to items which the facility operator must be aware of and must control to operate the facility in a safe manner. To a large extent, the relative importance of these requirements, as distinguished from those related to long-term effects of concerns, may have been diminished by the increase in the total volume of technical specification requirements.

Moreover, increased volume and detail of technical specifications and the resultant increase in the number of proposed change requests that must be processed have increased the paperwork burden for both licensees and the NRC staff. This is because Section 50.36 requires that technical specifications be included in each operating license; thus, any proposed change, regardless of its importance to safety, must be processed as a license amendment. For changes involving matters of lesser importance to safety, the processing of a license amendment with the associated increased paperwork has had no significant benefit with regard to protecting the public health and safety".

A draft Commission paper containing a proposed final rule was issued in a March 21, 1983 NRC memo from Darrel Eisenhut (then Director, DOL) to other division directors within NRR. This draft Commission paper explained that 27 out of 29 commentors had expressed support for the general concepts of the 1982 proposed rule.

This rulemaking for technical specification reforms was never completed. The Commission suspended efforts on the rule in sometime around mid-1983 in order to concentrate staff resources on the issuance of near term operating licenses.

The concept for technical specification reform outlined in the 1982 proposed rule and also in the 1983 draft Commission paper consisted of dividing the existing technical specifications into two general categories, each with corresponding provisions regarding the NRC's treatment of licensee-initiated changes. Basically, the proposed system would have required prior NRC approval of a license amendment for changes to certain items still called technical specifications in the 1982 proposed rule. These items would include such things as process-variable safety limits, limiting safety system settings, operational limits and conditions, certain check and test requirements, and operating shift crew and staff composition requirements. Items in the other category, called supplemental specifications, could be changed without prior NRC approval or license amendment since they would not be considered directly a part of the operating license. For such changes, however, NRC would have to require licensees to prepare and report safety evaluations on an at-least-annual basis. Also, the NRC Regional Administrator could quickly revoke such changes in writing, if he so desired. The items in this second category would include such things as operating state and status of systems; provisions for monitoring, inspecting, testing, and calibration; and administrative provisions related to licensee management practices at the facility. Although the supplemental specifications category would not have been directly a part of the license, it would nevertheless have been "linked" to the license via a license condition in 10CFR50.54.

Finally, the 1982 proposed rule would not have required operating plants to implement the proposed two-category system. Instead, for these plants, implementation would have been voluntary. Indeed, the Commission explained in its notice that "Technical Specifications issued before that date 180 days before the final rule's effective date would not be required to be changed; however, upon request by a licensee to convert the existing technical specifications to the new scope, content and format, the NRC would take action to grant the request" (emphasis added). 47 FR 13374. Also, the proposed rule did not explicitly condition these plants' use of the two-category system on their adaption of Standard Technical Specifications as a prerequisite. The Regulatory Impact Analysis accompanying the 1982 proposed rule, however, suggested the opposite.

The regulatory basis for technical specifications is embodied in 10 CFR 50.34(b)(6)(vi) that requires, as part of the Final Safety Analysis Report (FSAR), each application for a license to operate a facility, provide proposed technical specifications and bases or reasons for such technical specifications in accordance with the requirements of 10 CFR 50.36. Under 10 CFR 50.36, technical specifications are incorporated into licenses authorizing operation of a production or utilization facility. According to 10 CFR 50.59, after issuance of an operating license, the Technical Specifications can only be changed with prior NRC approval, which is granted by issuance of an amendment to the license. Additional regulations related to technical specifications are listed in Table A-1.

In addition to regulations, supplemental guidance has been issued over the years for the preparation and content of technical specifications. Chapter 16 of the Standard Review Plan (NUREG-0800) endorses the use of Standard Technical Specifications for plants currently in licensing. Each NSSS vendor has a set of such Standard Technical Specifications for its system. Regulatory Guide 1.16, "Reporting of Operating Information--Appendix A, Technical Specifications," presents an acceptable basis for reporting operating information as required in the technical specifications. These include startup reports, annual operating reports, and monthly operating reports, all of which are considered routine reports. In addition, NUREG 1022 provides information on reportable events. ANSI/ANS-58.4, "Criteria for Technical Specifications for Nuclear Power Stations," provides a detailed conceptual framework which can be applied to the preparation of technical specifications, criteria for selecting subjects and values to be included in the technical specifications, and criteria for developing technical specification bases. The attached Table A-2 lists additional material which provides guidance for or insight into techncal specifications.

Table A-1

Primary Regulations for Technical Specifications

10 CFR 50.36, "Technical Specifications."

Describes information to be included in technical specifications, including items in the following categories:

1. Safety limits, limiting safety system settings, and limiting control settings

2. Limiting conditions for operation

3. Surveillance requirements

4. Design features

5. Administrative controls

10 CFR 50.36a, "Technical specifications on effluents from nuclear power reactors."

Requires technical specifications that will provide for keeping releases of radioactive materials to as low as is reasonably achievable.

10 CFR 50.59, "Changes, tests and experiments."

Indicates that any changes in technical specifications must be by license amendment.

Secondary Regulations Governing Aspects of Technical Specifications

10 CFR Part 2, Appendix C, "General Policy and Procedure for NRC Enforcement Actions."

Although this is a general policy statement, rather than a specific regulation, it is regarded as applicable. In its discussion of the varying degrees of safety, safeguards or environmental significance that regulatory requirements have, a footnote indicates that the term "requirement" includes, among other items, technical specifications. In determining severity categories, technical specifications are specifically mentioned.

10 CFR 50.46, "Acceptance criteria for emergency core cooling systems for light water nuclear power reactors."

Technical specifications are required to conform to the requirements of this section.

10 CFR 50.48, "Fire protection."

Provides for fire protection features to be completed in accordance with the technical specifications.

10 CFR 50.54, "Conditions of licenses."

Ties minimum shift requirements to definition of operational modes as given in the technical specifications; indicates no change can be mad> from techncal specifications as incorporated into a license; provides for departure from technical specifications in an emergency.

10 CFR 50.55a, "Codes and standards."

If an inservice inspection program revision conflicts with the technical specifications, the technical specifications are to be revised to conform to the ISIS.

10 CFR 50.71, "Maintenance of records, making of report."

Maintenance of records required by technical specifications.

10 CFR 50.72, "Immediate notification requirements for operating nuclear power reactors."

10 CFR 50.73, "Licensee event report system."

10 CFR Part 50, Appendix I, "Numerical guides for design objectives and limiting conditions for operation to meet the criterion "as low as is reasonably achievable" for radioactive material in light-water-cooled nuclear power reactor effluents."

10 CFR Part 50, Appendix J, "Primary reactor containment leakage testing for water-cooled power reactors."

Provides test requirements to assure that allowable leakage rates in technical specifications are not exceeded; provides guidance for establishing appropriate containment leakage test requirements in technical specifications.

10 CFR Part 50, Appendix K, "ECCS evaluation models."

Provides guidance on acceptable evaluation models using the maximum peaking factor allowed by the technical specification.

10 CFR Part 50, Appendix H, "Reactor vessel material surveillance program requirements."

Indicates a change in the technical specifications must be made if mandated by the pressure-temperature limits.

10 CFR Part 50, Appendix R, "Fire protection program for nuclear power facilities operating prior to January 1, 1979."

Refers to Standard Technical Specifications for definition of hot standby and hot shutdown.

10 CFR Part 55.22, "Content of senior operator written examination."

Need for operators to know design and operating limitation in the technical specifications.

10 CFR Part 55, Appendix A, "Requalification programs for licensed operators of production and utilization facilities."

Technical specifications are to be included in any requalification program.

10 CFR 70.32, "Conditions of licenses."

Any change which would decrease the effectiveness of the plan for physical protection of special nuclear material, as incorporated in technical specifications must be submitted for a license amendment.

10 CFR 72.16, "Contents of Application: Technical Specifications"

Sets forth technical specification requirements for independent spent fuel storage installation.

Table A-2

Additional Guidance for Technical Specifications

ANSI/ANS-58.4	Criteria for Tech Specs for Nuclear Power Stations
GENLTR-82-16	NUREG-0737 Tech Specs - PWR's
GENLTR-83-02	NUREG-0737 Tech Specs - BWR's
GENLTR-83-13	HEPA Filters-Standard Tech Specs
GENLTR-83-26	D/G Fuel Oil Requirements
GENLTR-83-27	Surveillance Intervals in Standard Tech Specs
GENLTR-83-30	D/G Testing
GENLTR-83-36	NUREG-0737 Tech Specs
GENLTR-83-37	NUREG-0737 Tech Specs
GENLTR-83-43	Reporting Requirements of 10 CFR 50.72 and 50.73 and Standard Specifications
GENLTR-84-13	Tech Specs for Snubbers
GENLTR-84-15	Proposed Staff Actions to Improve and Maintain Diesel Generator Reliability
NUREG-0103	Standard Tech Specs - Babcock & Wilcox
NUREG-0123	Standard Tech Specs for General Electric Boiling Water Reactors
NUREG-0133	Preparation of Radiological Effluent Tech Specs for Nuclear Power Plants
NUREG-0212	Standard Tech Specs for Combustion Engineering Pressurized Water Reactors
NUREG-0452	Standard Westinghouse Tech Specs
NUREG-0472	Draft Radiological Effluent Tech Specs for PWRs
NUREG-0473	Radiological Effluent Tech Specs for BWRs
NUREG-0839	A Survey by Senior NRC Management
NUREG-1024	Tech Specs-Enhancing the Safety Impact
NUREG/CR-3082	Probabilistic Approaches to LCOs and Surveillance Requirements for Standby Safety Systems
RG-1.16	Reporting of Operating Information-Appendix A Tech Specs
RG-4.8	Environmental Tech Specs for Nuclear Power Plants

RG-10.1	Compilation of Reporting Requirements for Persons Subject to NRC Regulations
SECY-82-003	10 CFR 50.73 Establishing the Licensee Event Report (LER) System
SECY-83-487	Revised General Statement of Policy and Procedure for Enforcement Actions
SRP-2.4.14	Tech Specs and Emergency Operation Requirements
SRP-16.0	Tech Specs

Appendix B: The Paperwork Burden of the Sholly Regulations

Background

At one point during the TMI-2 accident, it became necessary to vent the containment atmosphere to the local surroundings. At the request of the licensee, the NRC approved a license amendment that allowed the venting which would have normally been outside existing operating requirements. Steven Sholly, a participant in the TMI-1 restart hearings, brought suit against the NRC in 1980 because the licensee of TMI-2 was allowed to release some gaseous radioactivity into the atmosphere without local residents being permitted meaningful participation through the hearing process prior to the release. In Sholly vs. NRC a D.C. Circuit Court ruled that a prior hearing is required if requested even in cases where the NRC has determined that the subject of the proposed amendment to the license involves "no significant hazards" consideration.

The specific regulations resulting from the Sholly decision are contained in 10 CFR 50.91 and 10 CFR 50.92. They require that, for any license amendment, the licensee/NRC are obliged to take three actions: 1) make notice in the Federal Register for public comment, 2) initiate consultations with the applicable state's designated official and 3) make a finding of "no significant hazard" consideration. The nuclear industry is concerned that these obligations: 1) cause an unnecessary paperwork burden for all parties due to Federal Register noticing, form memos, evaluations, etc., 2) that the opportunity for hearing will be abused by opponents of nuclear power in trivial license amendment cases, 3) that reaching a finding of "no significant hazard" consideration is subject to many levels of scrutiny.

Discussion

Although the Sholly regulations are applicable to all license amendments, the purpose of this discussion is to address the impacts of the Sholly regulations on matters related to technical specifications initiated license amendments. The primary connection is by way of changes, tests and experiments as described in 10 CFR 50.59. This regulation requires that any proposed change, test or experiment be evaluated to determine whether or not it involves an unreviewed safety question (USQ) or a change to the technical specifications. If the change, test or experiment does involve a USQ or a technical specification change, prior NRC approval and a license amendment is required. Although 10 CFR 50.59 provides criteria that identifies USQs according to degree of impact on FSAR and other licensing bases, there is no such criteria provided to evaluate a technical specification change. In other words, any change to the technical specifications, however slight, assumes the same degree or severity in regard to the projected adverse impact on health and safety of the public as a USQ. In regard to license amendment aspects, 10 CFR 50.91 and 10 CFR 50.92 (i.e., Sholly regulations) require that notice be published in the Federal Register, the State be consulted and that "no significant hazard" consideration be determined for all license amendments.

The process of amending many items contained in current technical specifications now imposes an unnecessary, costly, and useless burden on the NRC and licensees to meet administrative requirements which seem not to serve the needs of the public or the nuclear industry.

Under the current amendment system implemented in 1983, the Commission requires an applicant requesting an amendment to its operating license or revision to technical specifications to provide its appraisal on the issue of whether or not the amendment involves a significant hazards consideration using the standards in 10CFR50.92; and if the amendment involves the emergency or exigency provisions, to address the features upon which the Commission must make its findings. The licensee also is required to notify the State authorities of the amendment and the results of its significant hazards consideration review.

When the Commission receives the amendment request, it first decides whether or not there is an emergency or an exigency. If there is no emergency, it then makes a preliminary decision, called a "proposed determination" about whether the amendment involves a "no significant hazards" consideration. At this stage, if the Commission decides that no significant hazard consideration is involved, it can issue an individual Federal Register notice or list the amendment in its next bi-monthly publication in the Federal Register. This bi-monthly publication lists not only the amendment requests received for which the Commission is publishing notice under 10 CFR 2.105 to provide opportunity to request a hearing, but also provides a reasonable opportunity for public comment by listing this and all amendment requests received since the last such bi-monthly notice, providing a brief description of the amendments and the facilities involved, noting the proposed "no significant hazards" consideration determinations, soliciting public comment on the determinations, and providing for a 30-day comment period. The notices are lengthy and sometimes difficult to prepare because of their judgmental character. While awaiting public comment, the Commission proceeds with the safety analysis, and the State in which the licensee is located is consulted on the Commission's proposed determination of "no significant hazards".

After the public comment period, the Commission reviews the comments, considers the safety analysis, and reaches its final decision on the amendment request. If it decides that "no significant hazard" consideration is involved, it can publish an individual "notice of issuance" or publish the notice of issuance in its system of bi-monthly Federal Register notices and thus close the public record. Note that the Commission would not have to make and publish a final determination on its "no significant hazards" consideration for most cases because such a determination is needed only if a hearing request is received and the Commission decides to make the amendment immediately effective and to provide a hearing after issuance rather than before.

The 1983 Sholly legislation has greatly increased the amount of paperwork involved for both the utility and the NRC in issuing license amendments.

These complications include such things as: internal controversy between technical staff and legal staff which could necessitate extensive rewrites and meetings, disagreements between NRC staff and licensees, extensive comments to the Federal Register notices, and opposition resulting in the need to hold a public hearing.

The public does not appear to benefit from these hearing opportunities for many items now included in the technical specifications. Many licensing amendments are sought to change corporate structure, or update equipment lists which are currently contained in the technical specifications. The administrative log jam which has been established has had the overall effect that processing of the most routine uncomplicated licensing amendments now normally requires a minimum of 90 days to

accommodate the reviews and pre-noticing required by the new regulations. Slightly more complicated amendments require six months or longer for review and approval. The possibilities for abuse of the administrative process already has had an effect on utility initiatives to improve their nuclear stations since it reduces the utility's incentive to make such changes. A reduction in the scope of the technical specifications to those issues which are clearly important to the safe operation of the station reduces the risk the utility faces in proposing improvements, as well as minimizes unnecessary paperwork burdens for both licensees and NRC staff.

In the past, when the volume and level of detail routinely included in the technical specifications was much less than it is today, the impact of Sholly regulations would most likely have been much less. This is primarily due to the fact that as design evolution changed minor details in the plant, the technical specifications were written to such a general level of detail that no associated technical specifications changes would be required. However, since today's technical specifications contain information in a greater level of detail, minor plant changes may give rise to the need for a technical specification change; which as discussed above, potentially giving rise to the hearing process.

Federal Register notices, state consultations and findings of "no significant hazard" consideration creates a wealth of paperwork. Table B-1 provides a list of new forms and reporting documentation that the Sholly regulations have generated. Table B-1 is taken from NRC DLOP-228. It is not clear that this proliferation of paperwork could survive a cost/benefit analysis when reviewed from the aspect of positive impact on the health and safety of the public; especially in the case of minor changes to the technical specifications. That should be the bottom line criterion by which the amount of paperwork is judged.

In addition to the amendment process itself, there is the paperwork burden associated with any hearing, especially a protracted hearing. The paperwork commitment to any hearing effort may be unestimatable.

In a letter from C.R. Anderson and John A. Van Wagenen of the Investigative Staff of the House Committee on Appropriations to the Commission on March 15, 1985, it was stated that, "The Sholly legislation has greatly increased the amount of paperwork involved in issuing license amendments. The monthly Federal Register notice is typically 50 pages long. The notices are lengthy and sometimes difficult to prepare because of their judgmental character. Since the NRC Sholly rule went into effect in May, 1983, 1,625 notices have been issued for amendments involving no significant hazard consideration. Only 14 public or state comments have been received on these determinations, and only 15 hearing requests have been received."

The changes currently suggested by the AIF Subcommittee make no direct effort to alter "the Sholly Process". It is the Subcommittee's conclusion that suggested changes will significantly reduce the volume of the technical specifications. Futhermore, many of these items moved from technical specifications are precisely those which have generated trivial license amendments (for example: minor changes to lists or fuel-cycle dependent variables).

Table B-1

1. Interim Final Rule - Notice and State Consultation

2. Interim Final Rule - Standards for Determining Whether License Amendments Involve No Significant Hazards Considerations

3. Flow Diagram - State Consultation, Noticing and No Significant Hazards Consideration Procedures

4. Initial No Significant Hazards Consideration Determination and Noticing Action (Form)

5. Sample Individual FR Notice of Opportunity for Prior Hearing

6. Sample Individual Notice of Issuance of Amendment

7. Sample Monthly FR Notice

8. Sample Memorandum Requesting Input into Monthly FR Notice

9a. Sample Individual FR Notice of Proposed No Significant Hazards Consideration Determination and Opportunity for Hearing

9b. Sample Memorandum Requesting Input into Monthly FR Notice

10. Sample Memorandum to Regional Public Affairs Officer and Press Release

11. Sample Memorandum Requesting Input into Monthly FR Notice

12. Final NSHC Determination (Form)

13. Sample Individual Notice of Issuance of Amendment and Final Determination of NSHC

14. Sample Memorandum Requesting Input into Monthly FR Notice

15. Sample Memorandum Requesting Input into Monthly FR Notice

16. Sample Individual FR Notice of Consideration of Issuance and Proposed NSHC Determination (Short Notice)

Appendix C: Public Comments Regarding the 1982 NRC Proposed Rulemaking on Technical Specifications

The majority of commentors (27 of 29) supported the essence of the proposed rulemaking in that it would establish two separate categories which define those specifications which are part of the operating license (OL) and of immediate importance to safety and thus subject to direct NRC control and those specifications which are not part of the OL but include other items important to safety and under licensee control. However, there was disagreement among the commenters over suitable nomenclature for these categories. Some commentors recommended that the new technical specifications be submitted as a draft, 18 months prior to the scheduled issuance of the OL and not be included in the final safety analysis report (FSAR) until issuance of the OL.

Several commenters expressed concern that implementation of the proposed rule on plants issued OL's relatively soon after the effective date of the final rule could adversely affect plants in the licensing process and therefore recommended that the effective date be extended from 180 days after publication to one year after publication. A few commenters recommended that the proposed rule not become final and implemented until the existing Standard Technical Specifications (STS) are revised to be consistent with the proposed rule and suggested that the proposed rule should not apply to the second unit of a two unit plant if the first unit is licensed with technical specifications developed before the effective date of the proposed rule.

One commenter proposed that the rule allow licensees to request an amendment to the OL designating those sections of the OL that may be revised without prior NRC approval provided the licensee complies with the provisions for changes to supplemental specifications. Several commenters suggested further that the Operational Specifications section of the technical specifications should contain only requirements that are of immediate importance to safety and under direct cognizance of the operator or that they be limited to the first three types of safety analysis assumptions:

1. Values of process variables that must be kept within certain bounds;

2. Operating state of equipment (e.g., valve position) that must be maintained;

3. Operating status (or operability) of equipment that must be maintained.

Commenters recommended revising the definition of "limiting safety system settings" to clarify that these are chosen so that the automatic protection actions they initiate will prevent the violation of a safety limit during normal operation and anticipated operational occurrences but not during accident conditions. One commenter stated that the proposed narrowing of the operational limits and conditions category of the operational specifications to those items of an immediate importance to safety should be rejected because in an unanticipated series of events, items not of immediate importance to safety could become of primary and immediate importance to safety while others felt that the definition of operational limits and conditions should more clearly define the manner in which an operational limit and condition is associated with the performance of the four safety functions:

a. controlling reactivity

b. cooling the fuel

c. protecting the integrity of fission product barriers

d. limiting the release of radioactive fission products following an accident

Some commenters felt that the four safety functions were broad, vague and somewhat overlapping (e.g., (c) & (d)) and consequently one commenter suggested expanding them to ten critical safety functions:

a. Reactivity Control

b. Reactor Coolant System Inventory Control

c. Reactor Coolant System Pressure Control

d. Core Heat Removal

e. Reactor Coolant System Heat Removal

f. Containment Isolation

g. Containment Pressure and Temperature Control

h. Combustible Gas Control

i. Indirect Radiological Release Control

j. Maintenance of Vital Auxiliaries

A few commenters stated that check and test requirements should be part of the supplemental specifications since all surveillance requirements can safely be part of the supplemental specifications provided corrective action requirements remain in operational specifications under the direct control of a licensed operator. Other commenters recommended that at least one check and test requirement correspond to each limiting safety system setting. Some commenters suggested that the provisions for operational staffing and reporting requirements be either deleted entirely or included in the supplemental specifications while one commenter strongly recommended that the use and control of procedures (presently Section 6.8.1, 6.8.2, and 6.8.3 of the STS) be retained as operational specifications to assure uniform treatment of the procedural requirements.

Several commenters recommended relocating the principal design feature specifications to supplemental specifications since they are not under direct control of the operator while several others recommended deleting them entirely since changes in design features will be tracked in FSAR updates and are subject to evaluation in accordance with 10 CFR 50.59 in addition to the reason stated above.

Some commenters recommended allowing licensees the convenience and flexibility of maintaining supplemental specifications in a separate document from the FSAR and that the method for changing these specifications be the same as for changing the FSAR (10 CFR 50.59). A few commenters recommended revisions to the text to make

absolutely clear that specifications should cover only primary safety concerns to plant operations and to reduce or prevent expansion of the overall specifications. One commenter recommended eliminating the need for, or at least reducing the timeliness of Licensee Event Reports to events under the supplemental specifications and that the rule be written to reduce or eliminate enforcement actions under these specifications so that plant operators could focus their attention on matters important to safe plant operation.

One commenter requested that the reporting requirements for failing to meet the control provisions be carefully examined to assure that they are appropriate for the circumstances and that the rule explicitly state that a change in plant operating mode is not required when a control provision is not met. Others recommended that requirements for control provisions be based on an evaluation which attempts to optimize the relationship between safety needs, plant capabilities and power production and that time intervals associated with monitoring provisions be derived from a detailed study of system needs, safety needs, equipment considerations and the ability to perform the required surveillance. One commenter also recommended that the administrative provisions be deleted from the supplemental specifications and be allowed to exist in other forms and documents.

One commenter stated that the provisions for changing supplemental specifications involving a decrease in their effectiveness are excessively restrictive and that licensees should be given the opportunity to evaluate surveillance frequencies at their discretion and make changes which reduce them if justified. Another commenter stated that exact guidelines are required to provide an interpretation of a decrease in the effectiveness of a provision. Some commenters suggested that a change to the method or timeliness of management review of supplemental specification changes does not necessarily contribute to a decrease in the effectiveness of a provision.

Several commenters stated that the time limit for reporting changes to supplemental specifications was too restrictive and recommended extending it from 3 day to 10-30 days. Many others recommended that the NRC Resident Inspector's role in the acceptance or rejection of change be clearly defined and that the NRC ensure sufficient communication between Washington and Regions to assure uniform implementation of the acceptance/rejection policy. One commenter recommended that licensees be allowed to implement proposed changes 30 days after the NRC is informed of them. Other commenters suggested that Sections 50.36(f)(6) and (7) which deal with changes and proposed changes to supplemental specifications that involve conflicts with technical specification in the OL, a decrease in the effectiveness of a provision or specification or an unreviewed safety question be deleted in favor of 10 CFR Section 50.59.

Two commenters suggested that an amendment to the license under Section 50.36(g)(2) should only be at the initiative of the licensee.

In regards to the Conditions of License (Section 50.54), several commenters recommended that licensees be allowed to submit any information in support of reinstatement or modifications of proposed changes for those that were revoked and that licensees be provided protection against arbitrary and discriminatory revocation of changes by Regional Administrators and suggested that the licensee be given advance notice of revocation with an opportunity to contend the revocation.

APPENDIX D. ESTABLISHING CRITERIA

Table D-1 presents seven general steps required to establish criteria for any purpose. Not all of these steps will be formalized in the establishment of most criteria one deals with, but they should be considered. In the case of the AIF Subcommittee's effort to develop criteria for the improvement of technical specifications by clearly defining their scope, these steps have been formalized and have been used.

Table D-1
Steps Required to Establish Criteria

1. Problem definition
2. Requirement definition
3. Establishment of expected results
4. Establishment of proposed criteria and bases
5. Testing of proposed criteria and bases
6. Documentation of problems with proposed criteria
7. Iterate and finalize criteria.

Problem Definition

The first concern to be addressed in the establishment of criteria is to define the problem one is attempting to solve. Without this, the criteria established may achieve something entirely different than what is actually intended. By proper definition one may also find that criteria are needed for both the form and content of the subject, in order to solve the problem. Such is the case with the present technical specifications: both their form and content need to be addressed.

The problems addressed were:

1. How to change the form of the technical specifications to optimize their effectiveness as an operational tool; and
2. How to control the content of the technical specifications to limit their scope to items of highest safety significance.

Our goal is safe and economical nuclear plant operation. In 1984 the NRC processed about 1500 license amendments. This large number of requests distracts the regulators and the utilities from matters of real safety potential. Likewise, the complexity of the present technical specifications confuses both the regulators and the regulated. What is needed is a document which will assist the operators in running the plant safely, rather than distracting them from those things of most importance to safety. Clean, clear rules on the content of technical specifications are needed to assist the regulators and the regulated to ensure safety.

Requirement Definition

There are restrictions, limits, or bounds on what one can hope to accomplish through the criteria to be established. These restrictions can be Constitutional, legal, regulatory, practical, political, financial, temporal or simply perceived, for example. The difficulty of the task defines how formally

limits are defined. Simple criteria may not require conscious recognition of any requirements, while complex tasks can be led astray by unrecognized or artificial requirements.

One has the legal requirement of the Atomic Energy Act to include special nuclear material in the technical specifications, as well as provisions to protect the health and safety of the public. This has been broadened through the regulatory requirements of 10CFR50.36 to include "such other things as the Commission may require". There is a political requirement in that the interests of many parties, within the industry and without, must be satisfied. There is a financial requirement in that a complete study done from scratch could cost more than what is to be gained. It is more practical to use information that is presently available. There are also time requirements; for example, the TSIP report on methods to improve the technical specifications was completed October 1, 1985.

Rather than undertake a complete study from scratch to establish a set of technical specifications which demonstrably provides adequate protection to the health and safety of the public, one can start from the fact that the NRC has determined that the public health and safety are adequately protected if the consequences of certain accidents meet established criteria. These established criteria relate primarily to the radiological consequences of severe accidents. The accident analysis presented in Chapters 6 and 15 of each plant's Final Safety Analysis Report (FSAR) describes the results of these evaluations, and demonstrates that the criteria can be met if the plant is operated within certain assumed bounds. Thus the validation of assumptions of the accident analysis is a logical requirement for a set of technical specifications that are sufficient to protect the public health and safety. However, this approach alone can lead to a seemingly unbounded set of technical specifications. One must ask, "Is it necessary to validate all the assumptions of the accident analysis through the technical specifications?"

There are other means to validate many of the assumptions of the accident analysis, other than using the technical specifications. The question is, which of these other means should be used, and for which assumptions?

Establishment of Expected Results

With the establishment of criteria, it matters very much where one wants to go. One of the requirements is that the end result be usable. One of the earlier alternatives proposed, to a plant's adopting a set of technical specifications, was to use the plant's FSAR as its technical specifications. Evidently that is one place the industry did not want to go; no plant has chosen that option. It would yield a maximum of complexity combined with a minimum of operational usefulness.

The expected results of the early-1985 industry effort were twofold:

First, it was expected that the plant operators would be relieved of some of their burden of non-safety-related activities.

Second, it was expected that the number of license changes to be processed by the NRC would be cut about in half due to the division of the technical specifications as proposed by the draft rule (47FR 13369, 3/30/82).

Let us examine these expectations:

First, it is expected that, after the division, the volume of technical (operating) specifications will be about half their present volume. Based on the result of a pilot study conducted by the AIF Working Group on Criteria Development, this expectation appears reasonably achievable. It is also expected that this division will produce a proportionate reduction in license amendments. Such a proportionate reduction presupposes that the items to be relocated to other documents are equally troublesome in the number of license changes they are responsible for. There is skepticsm that this is true. For example, in a recent group of changes being processed for a reload at a C-E plant, only two out of eleven items would be expected to be located in other documents. Another four items in this group were what are termed cycle dependent variables. If cycle dependent variable, or their values, are removed from the technical specifications, reducing the licensing changes by half could be realized. Establishment of effective criteria will be realized bv recognizing the results the chosen criteria, as well as other improvements, will produce and ensuring that these results are the ones desired.

Second, it is not clear that any appreciable benefit will accrue to the plant operators unless something is done to the form of the technical specifications, as well as to their content. While relocating items to other documents will concentrate the operators attention on the items of more immediate importance to safety left in the technical specifications, bv itself, this does not reduce the volume of information and requirements the operator must deal with. Without an improvement in form as well as content, the proposed improvements could have less affect than is attainable.

One thing that can be done to reduce the volume of information the operator must deal with is to remove some things completely from the technical specifications. Suggestions are discussed in Appendix G.

Establishment of Proposed Criteria and Bases

Once one has an idea where one is going, a proposed draft criteria can be established. It should also be possible to set down sound bases for the criteria proposed. If adequate bases cannot be established, different criteria must be sought. Such was the case with using the operator's span of control as a criterion. This was one of the criteria in the Subcommittee's initial draft, but was subsequently rejected as having no demonstrable relationship to the protection of the public health and safety.

It is better to start with a less complete set of criteria and build on it as one works with it than to expect perfection at the first attempt. Any complex set of criteria will require iteration, and this should be expected as part of the process.

The bases for any proposed criteria should be clear. If they are not, one is not sure why he is doing whatever he is doing, and will inevitably misapply the criteria in some cases. In the case of the technical specifications, the ultimate concern is protection of the health and safety of the public. The public's health is protected by operating the plant within limits and under conditions which have been demonstrated through the accident analysis to minimize radiological releases due to normal and anticipated operational evolutions. The public's safety is protected bv operating the plant such that the probability and consequences of accidents are adequately controlled.

Testing of Proposed Criteria and Bases

A proposed criterion is tested by applying it against a sample population and examining the results. In the case of the draft criteria, this was done by applying a number of proposed criteria to two sections of each Nuclear Steam Supply Systems (NSSS) vendor's standard technical specifications.

The results of the pilot study were as expected. Some of the proposed criteria were more effective and/or easier to apply than others. About half of the tested specifications were found to be subjects for relocation. The important part of this test of the proposed criteria was the identification of the problems associated with the draft criteria.

Documentation of Problems with Draft Proposed Criteria

During testing of any proposed criteria one uncovers unexpected problems. This is especially true when someone not involved in the development of the proposed criteria is used to perform the test, and documents his or her rationale for specific decisions.

Some of the problems with the draft criteria of April 19, 1985 that were found in the pilot study to split the technical specifications are provided in Table D-2. These are used as examples of what might be found from such a study, and are not intended as criticism of the study. They are an example of the application of the steps this Appendix advocates.

Table D-2
Problems with the Draft Criteria of April 19, 1985

1. Definitions of terms were not clear, particularly what is meant by design basis accident analysis.

2. Needs to address what the other means are of validation besides the technical specifications.

3. Need to address level of importance in the accident analysis.

4. Need to consider level of importance of support systems.

5. Need to consider imminent failure.

6. Need to consider the definition of operability and how it is applied in the technical specifications.

7. Use of the Critical Safety Functions (CSFs) as a criterion presented potential problems. CSFs involve the emergency procedures, which may invoke violations of the technical specifications. CSFs involve multiple success paths, without specificity as to which one should be the one validated by the technical specifications.

8. Use of the operator's span of control as a criterion, although appealing, was not particularly useful.

Through the documentation of such problems one can get to the core of the issue being dealt with. Such problems can lead to the rejection of some criteria, and the modification of others. The problems also point out where supporting information must be developed.

Interate and Finalize Criteria

From the above discussion, one can see the need for iteration. The draft criteria of April 19, 1985 was the first round discussed with the NRC. For historical purposes, Figure D-1 shows the April 19, 1985 draft screening criteria. A second version of the screening criteria (May 16, 1985) is shown in Figure D-2, and the third (June 27, 1985) version of the screening criteria is shown in Figure D-3. The final criteria will be discussed later.

Figure D-1
Draft Screening Criteria of April 19, 1985

Is the existing technical specification limitation applicable to a structure, system, component, or process variable that:

a. Is under the direct control of the control room staff?

b. Validates those assumptions relied on in the design basis accident analysis which are not validated by other means?

c. Is necessary to fulfill the critical safety functions?

Figure D-2
Draft Screening Criteria of May 16, 1985

Is the existing technical specification limitation applicable to a structure, system, component, or process variable that is necessary to fulfill the critical safety functions and validates those assumptions relied upon in the design basis accident analysis?

This criterion can be reflected as three Questions:

1. Is the limitation required to validate an assumption relied on in the accident analysis?

2. Is the assumption adequately validated by some other means (i.e., is it necessary)?

3. What is the level of importance to safety of the assumption being validated?

Figure D-3
Draft Screening Criteria of June 27, 1985

Is the existing technical specification LSSS/LCO applicable to a structure, system, component, or process variable that:

a. Is used to reduce the likelihood of a design basis accident by early detection of a significant abnormal condition, or

b. Is part of the primary success path of a safety sequence analysis and automatically actuates to mitigate a design basis accident, or

c. Is an initial condition of a design basis accident analysis.

As can be seen from these three examples, the development of a suitable criteria set is an evolutionary and iterative process.

Historical Development of Criteria

In the past a number of different criteria for the content or division of the technical specifications have been proposed or discussed. It is of interest to examine certain of these.

First, there was the proposed use of the FSAR as a plant's technical apecifications, as discussed briefly above. Under present regulations, this would have involved incorporating the whole FSAR into the plant's operating license. This would have been difficult to maintain and change.

Second there are the criteria contained in the present version of 10CFR50.36. These are the criteria which have resulted in the present set of technical specifications. One of the problems with these criteria is the inclusion of the phrase "and such additional information as the Commission finds appropriate". This sometimes has been interpreted to give carte blanche to the NRC staff to include pet items. Actually this is a sympton of a larger problem: a mechanism is needed to ensure that commitments are not lost, without having to resort to including them in the operating license.

Third, when the NRC's proposed rule of March 30, 1982 came out, a criterion was developed based on the frequency of the surveillance requirement associated with each specification. If the surveillance was longer than a given period, say daily, the item was considered not to be of immediate importance to safety, and thus could be relocated. This criterion was not totally accepted by the NRC staff.

Fourth, was a proposal from a group of seven utilities that met with the NRC to discuss the March 30, 1982 draft rule. This proposal was to retain in the Technical Specifications those primary plant systems essential to achieve the four safety functions considered to be of immediate importance to safety: protecting the integrity of fission product barriers, controlling reactivity, cooling the fuel, and limiting the release of radioactive fission products following an accident. These are the safety functions discussed in the General Principles section of the proposed rule. Specifically, this would include the three active safety function activities that are under the direct and constant control of the plant operations staff: values of process variables, operating state of equipment, and operating status of equipment.

Fifth, a number of form criteria were considered in early drafts of the AIF criteria. These included: equipment or component listings, programmatic requirements, surveillance requirements, cycle dependent variables, and bases as candidates for relocation. It was decided that these should be addressed elsewhere than in the criteria for division of the technical specifications.

Sixth, the operator's span of control was considered as an attractive criterion. Unfortunately, no real basis could be found for this criterion. It did not relate to the protection of the public's health and safety, except in so far as the operator has immediate and direct responsibility for the safe operation of the plant. It was also found that this criterion did not do anything that other criteria did not do, particularly the criterion of preserving the accident analysis assumptions.

Seventh, the critical safety functions received a lot of support as a criterion for division of the technical specifications, and perhaps, for the content of them. This criterion is more defensible than the others previously presented, although it must be linked with the accident analysis to establish those items necessary to establish the initial conditions for normal operation. This is an appealing criterion as much of the information is already available to support its application. One drawback of this criterion is that critical safety functions have been used extensively to develop emergency procedures. This can result in an improper linkage between technical specifications and the emergency procedures of a plant, which may call for violations of the technical specifications under accident conditions. The critical safety functions have an additional drawback in that there is usually more than one success path to accomplish each safety function. The use of a safety sequence analysis, as contained in the June 27, 1985 screening criteria, is needed to determine which path is the primary success path. The primary success path is the one which assures a safe plant response, even without immediate operator intervention, as assumed in the accident analysis.

Eighth, the assumptions of the accident have been the criterion of the ANS 58.4 standard and the subject of previous work. Although these have a logical basis, they are believed to be more difficult to apply than some other criteria. There are problems associated with this criteria, which are not unique to it, but have been more closely identified with it. These include the question of other means of validation, and of level of importance to safety. Also, does this criterion mean the Chapters 6 and 15 accident analysis, or the whole FSAR? As used in this section it means Chapters 6 and 15 only.

Ninth, a criterion was suggested based on the allowable outage time of a specification. The logic is that if the plant is not required to be shutdown within, say, twenty-four hours, the item cannot be of immediate importance to safety. An adequate basis for this criterion could not be established.

Tenth, a risk-based criterion is possible. Due to the inherent problems with the acceptability of risk-based safety goals, it is believed that such a criterion would be difficult to quantify at this time. Additional discussion on the use of probabilistic methodology is found later in this section and in Appendix I.

Other criteria which have been suggested include:

a. All systems and components which automatic actuation to prevent or mitigate an accident;

b. Provide control of radiological releases; and

c. Provide protection of the health and safety of the public (A very broad ranging criteria).

Combinations of the above concepts have been considered. The suggested improvements include the fifth, sixth, seventh and eighth criteria in various combinations. The end product of the industry effort are a set of recommendations (Section II of this report) which addresses both the form and content of the technical specifications.

Discussion of the Final Criteria

In establishing a necessary set of criteria, it was first necessary to establish the intent of technical specifications. It was concluded that the intent is to specify the limiting conditions for operations to maintain the facility in a configuration during normal operation such that if an accident occurs, there is a high degree of assurance that the facility can be successfully brought to a safe shutdown state. These are automatic protection systems and components designed to correct the abnormal situations before a safety limit is exceeded. In some cases, operator action may be relied on as well as automatic actuation.

The regulatory basis for what limiting conditions should be included in technical specifications are those associated with the individual facilities design basis accidents. An analysis of a spectrum of design basis accidents by the staff is the principal means of performing a reactor safety evaluation. The "single failure criterion" concept used in the design of existing plants is preserved in this approach in that it is applied in the individual design basis accident analyses and is reviewed by the staff. The NRC's decision to issue an operating license is based partially on the conclusion that the consequence of the design basis accidents are acceptable and that reasonable assurrance is thereby provided that the protection of the health and safety of the public is adequately maintained.

Considerable discussion was held on whether the design basis events should include natural events as well as transients. It was concluded that they should not. Design basis transients are analyzed to assure fuel integrity and adequate system response capabilities. Natural events (floods, tornadoes, seismic events etc) are addressed to assure that equipment is not adversely affected by the event.Adequate procedural guidance is provided to ensure that the plant is placed in a safe condition given the occurence of a natural event. Additionally, equipment is qualified to survive such an event and still provide assurance that the primary success path is available.

Specific Criteria

The three criterion selected and a discussion of the basis for each are provided.

Criterion 1: An installed system that is used to detect, by monitors in the control room, a significant abnormal degradation of the reactor coolant pressure boundary.

Discussion: A basic concept in the protection of the public health and safety is the prevention of accidents. Systems are installed to detect significant abnormal degradation of the reactor coolant pressure boundary so as to allow operator actions to either correct the condition or to shutdown the plant safely, thus reducing the likelihood of a loss of coolant accident.

This criterion is intended to ensure that technical specifications control those systems that detect excessive reactor coolant system leakage. Two specific examples of systems which are selected using Criterion 1 are:

Secondary system radiation monitors

Reactor Building sump level instrumentation

Criterion 2: A process variable that is an initial condition of the design basis accident analysis.

Discussion:

The intent of this criterion is to preserve in the technical specifications those initial assumptions in the design basis accident analyses for the specific facility that established the assumed facility configuration at the initiation of the design basis accident event. Process variables are parameters for which specific values or ranges of values have been chosen as reference bounds in design basis accident analyses and which are monitored and controlled. Examples of these would include suppression pool water level, reactor coolant system pressure and temperature, condensate storage water tank level etc. It would not include fuel characteristics set by the initial design and configuration of the fuel assembly.

As discussed above, as long as these variables are maintained within their technical specification limits, there is reasonable assurance that the structures, systems and components will perform as designed in protecting the health and safety of the public.

Criterion 3:

A structure, system or component that is part of the primary success path of a safety sequence analysis and functions or acuates to mitigate a Design Basis Accident.

Discussion:

This criteria includes in technical specifications those limiting safety system settings and limiting conditions for operation associated with structures, systems and components that represent the first line of defense and that functions or actuates to mitigate the accident. The facility is designed with the necessary redundancy and diversity to address a multitude of design basis accidents. Although there are several ways to respond to a particular accident (use of non-safety as well as safety-related designed systems), those associated with the primary success path of a safety sequence analysis should be included in the technical specifications.

A safety sequence analysis is a systematic examination of the actions required to mitigate the consequences of events considered in a plant's design basis accident analysis, as presented in Chapters 6 and 15 of the plant's Final Safety Analysis Report. Such a safety sequence analysis considers all applicable events, whether explicitly or implicitly presented. The primary success path of a safety sequence analysis consists of those actions assumed in the design basis accident analysis which limit the consequences of the events to within the appropriate acceptance criteria.

Use of Probabilistic Methodologies

There was considerable discussion within the Subcommittee on why the criteria selected were deterministic rather than probabilistic methodologies. The criteria as defined do not in fact preclude future use of probabilistic approaches. In fact, as the probabilistic methodology matures it may be used to decide what design basis accident analyses should be addressed in Sections 6 and 15 of future FSARs. Additionally, as discussed in other sections of the report and in the conclusions, the industry and NRC are encouraged to continue to develop this tool and use it, where applicable, in the regulatory process.

As has been stated before, probabilistic analyses should support, not supplant, deterministic requirements. Whatever their basis, regulatory requirements are applied to the licensing of new facilities or regulation of operating facilities and must ultimately be reduced to a set of criteria, guidelines or directives which, ideally, should be (1) rational, (2) unambiguous to both regulator and applicant or licensee and (3) enforceable. While the great value of PRA methodology is in its rationality, it is complex in its implementation and interpretation. Therefore, while the current deterministic approach to setting requirements may be considered imperfect, it must be retained as the only practical approach. PRA should be used to make these deterministic requirements more rational, using plant operating experience and analytical approaches to identify additional design criteria which should be included or to identify areas where excessive conservatism should be eliminated Examples of improvements that have actually utilized this methodology to develop the necessary technical bases for the changes are changes to surveillance intervals and allowed outage times in technical specifications.

The Use of ANS 58.4(1979)

ANS 58.4 (1979) "Criteria for Technical Specifications for Nuclear Power Stations" is the nuclear community's present standard for both the content and format of technical specifications. It provides a conceptual framework for addressing the preparation of technical specifications. It contains criteria for selecting the subjects and values to be included in technical specifications, as well as criteria for developing the bases for the technical specifications. Such a standard is a necessary tool to collect the industry's thinking as to the philosophy behind the development and use of such an important part of a plant's operating license.

Revision to the industry standards take place every five years. It is appropriate that this should coincide with the other industry efforts now taking place. Actually, the revision of ANS 58.4 will lag the other industry efforts slightly, to take advantage of their experience, and to avoid a duplication of effort. Right now there are two criteria for the format and content of technical specifications: the old 10CFR50.36 criteria, and the new criteria proposed by the draft rule. Out of the present industry efforts will come a better definition of the criteria. The industry standard is an appropriate place to collect and explain this criteria. A writer's guide for technical specifications is also needed; it is planned to add this as an appendix to the standard. A revision is also needed to clean up some minor problems which have been discovered through application of the present standard.

Appendix E: Examples of Technical Specifications Under the New System

As a result of the pilot studies performed using the final criteria (see Appendix D), the following examples of structures, systems or components that may remain in the technical specifications are listed:

Reactor Trip System Instrumentation
Engineered Safety Features Actuation System Instrumentation
Radiation Monitoring for Plant Operations
Reactor Coolant Loops and Coolant Circulation
Safety Valves
Leakage Detection Systems
Reactor Coolant System Pressure/Temperature Limits
ECCS Systems
Containment
- Integrity
- Leakage
- Air Locks
- Air Temperature and Pressure
- Isolation Valves

Main Steam Isolation Valves
A.C. Electric Power Sources
D.C. Electric Power Sources

Some examples of structures, systems or components that would no longer remain in the technical specifications are:

Boration Systems (separate from those used as part of the ECCS injection function)
Seismic Monitoring Instrumentation
Meteorlogicial Monitoring Instrumentation
Remote Shutdown Monitoring Instrumentation
Fire Detection Instrumentation
Turbine Overspeed Protection
Combustible Gas Control
Penetration Room Exhaust Air Cleanup System
Vacuum Relief Valves
Flood Protection
Sealed Source Contamination
Fire Suppression Systems

Appendix F: Disposition of Requirements not Appropriately Contained in Technical Specifications

The criteria outlined in Sections IV (B) and (C) can be applied to:

- o Existing operating license technical specifications, custom or standard in origin;
- o Technical Specification under development for an NTOL plant; or
- o Proposed future changes to existing or new technical specifications.

Such applications will determine whether a given specification should remain (or be included) in technical specifications or be incorporated into other documents.

It is evident that after the criteria have been applied certain requirements will still exist that no longer will be controlled by the technical specifications. Under this suggested procedure, these items would be incorporated into documents, each having a level of associated regulatory control. The major existing generic documents and associated controls include:

- o The FSAR: 10CFR 50.59 currently allows a licensee to make changes to the facility or to procedures as described in the FSAR, or to conduct tests or experiments not described in the FSAR as long as no unreviewed safety question exists. Therefore, for the former specifications which are appropriate to incorporate into the FSAR, a definite link between the actual procedures which control the item and the FSAR is proposed. This link would consist of a statement in the appropriate section of the FSAR such as, "The specific operating limits, associated actions, and test requirements will be as detailed in the appropriate facility procedures". Then, if a change is proposed to one of these procedures, a safety evaluation would have to be performed and submitted as part of the required annual report to the NRC.

  It should be noted that a similar FSAR statement will be provided for surveillance requirements, i.e., tests associated with those LCO's which, per the criteria, will remain in the technical specifications (See Section IV.B) of this report for discussion of relocation of surveillance requirements).

  Although it is recommended that surveillance requirements no longer be included in the technical specifications, it is recognized that they are still a significant measure of the fulfillment of the OPERABILITY requirements of a given LCO. Therefore, the appropriate level of control in the following areas must be applied:

  - "3/4.0" requirements: these generic requirements will continue to be valid for surveillances. Therefore, their administrative application must be visible and tightly controlled. As a minimum, this will be done via surveillance procedures, each documenting these provisions (or by reference to a single administrative procedure which documents the provisions).

- Interpretation of Operability: For ease of operator and NRC inspector understanding, the surveillance procedures should clearly indicate (again, appropriate references are acceptable) how each requirement affects the operability requirements of the associated LCO. Each procedure should provide a clear reference to the LCO it supports.

- Surveillance Matrix: One document should provide a clear reference for which procedures implement the surveillances supporting each LCO. This could be referenced in the FSAR.

o The QA plan: those items chosen to be incorporated into the QA Plan shall be controlled by the existing 10CFR 50.54a and 10CFR50, Appendix B.

o Inservice Inspection/Inservice Test Program: Those items chosen to be incorporated into ISI/IST Programs shall be controlled by the existing 10CFR 50.55a, (a) through (g) and 10CFR 50.59 if the items are also located in the FSAR.

o Fire Protection Programs: those items chosen to be incorporated into a Fire Protection Program shall be controlled by 10CFR 50.59 if the program is part of the FSAR. Otherwise, it is proposed that a commitment be provided by the licensee to perform a "decrease in effectiveness" evaluation similar to that required for the physical security plan.

o ODCM/PCP: those items chosen to be incorporated into either the Offsite Dose Calculation Manual or Process Control Program are proposed to be given the same level of review and control as currently provided via the RETS requirements.

The documents listed above will become the major sources for the relocated requirements. If, however, a licensee justifies the use of alternate documents with sufficient control, this should be acceptable.

Finally, the locations of the bases for technical specifications should remain the licensees option, but in reviewing its options, the following should be considered:

1. Is the information correct and up to date?

2. Will the information be controlled as changes are made?

3. Is the information located in a manner that will allow ease of use by those needing to make interpretations (i.e., plant operators, supervisors, licensing, NRR, I&E, etc.)

To more fully explain the suggested process for those items no longer located in the technical specifications, Figure F-1 provides an example. The following steps would be taken:

- The criteria would be applied to existing, new or suggested technical specifications;

- For those items not meeting the criteria, they would be located in other documents (FSAR, QA Plan, ISI/IST Plan etc., as discussed above);

- For those topics located in the FSAR, a statement would be made in the appropriate section of the FSAR that, "The specific operating limits, associated actions and test requirements will be as detailed in the appropriate facility procedures";

- The detailed requirements (Operating limits, Action Statement, Reporting Requirements, Applicable modes, etc) would be placed in the appropriate procedures, whether operating, test, maintenance, surveillance, etc. exactly as they are presently found in the technical specifications; and

- The regulatory control suggested is the present 10CFR 50.59. It allows the holder of an operating license to "make changes in the procedures as described in the safety analysis report" if it does not involve an unreviewed safety question.

The use of this regulatory standard to control changes to those items no longer required in the technical specification is of equivalent control in that:

- It requires a detailed review to determine if (1) the probability of occurrence or consequences of an accident previously evaluated may be increased, (2) the possibility of a new or different kind of accident may be created and (3) the margin of safety is reduced;

- It is auditable by I&E in that the records of the evaluations of the changes must be maintained by the licensee (10CFR 50.59 (b));

- The licensee must furnish to the NRC Regional Office with a copy to the Director of Inspection and Enforcement, a report on the changes at least annually or at shorter intervals as may be specified in the license (10CFR 50.59 (b));

- The licensee must update, pursuant to 10 CFR 50.71, the FSAR annually in addition to providing a brief description of changes made under 10CFR 50.59

For those LSSS/LCO's remaining in the technical specifications, the associated surveillance requirements would be located either in surveillance procedures, a surveillance plan or a specific licensee program addressing surveillance. It is recommended that only these be labeled "surveillances".

Those associated with items no longer located in technical specifications should be labeled "tests" or some other appropriate title. This would distinguish those checks associated with technical specification requirements from the other requirements.

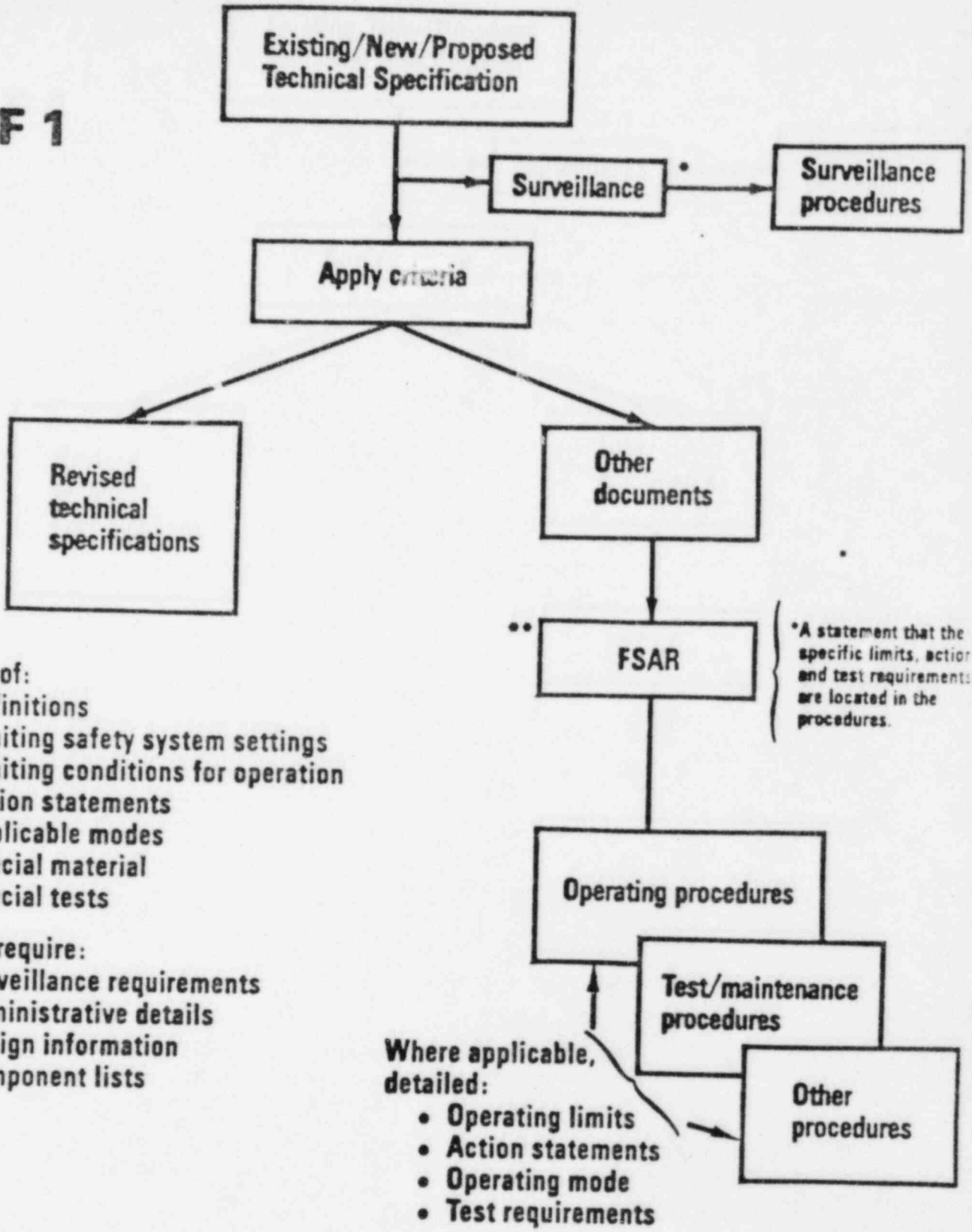
The location of the Administrative Sections of Chapter 6 of the technical specifications describing the facilities' staff qualifications and both the Facility Safety Review and Corporate Nuclear Review and Audit Groups could be relocated in a licensee document such as the QA plan, FSAR, etc.

Conclusion

Having reviewed the existing generic documents available for those topics presently in the technical specifications that would be located elsewhere, there are adequate documents and existing regulations controlling those documents. There is no need to establish a new document entitled "supplemental specifications". This would unnecessarily add to the already overburdened administrative process that both the licensee and NRC staff have to use. There is no need to establishing additional regulatory controls other than those that presently exist. These include, but are not limited to, 10CFR 50.54a, 50.59 and 50.55 (a) thru (g).

It is the position of this Subcommittee that the process outlined above will provide an appropriate level of control of those items which will be removed from the technical specifications via the criteria. The present regulatory controls will not degrade the current level of safety of plant operations.

Figure F 1



Consists of:

- Definitions
- Limiting safety system settings
- Limiting conditions for operation
- Action statements
- Applicable modes
- Special material
- Special tests

Will not require:

- Surveillance requirements
- Administrative details
- Design information
- Component lists

*A statement that the specific limits, action and test requirements are located in the procedures.

Where applicable, detailed:

- Operating limits
- Action statements
- Operating mode
- Test requirements

**Alternative generic document
— QA plan (App. B)
— ISI/IST (10CFR50.55)
— Fire protection (10CFR50.59)
— ODCM (RETS program)
— PCP (RETS program)

Note: There may be acceptable specific licensee alternative documents.

Appendix G: Discussion on Short Term Solutions Not Requiring Rulemaking

There are several significant improvements in technical specifications that can be realized without requiring rulemaking. These improvements can go forward now by, for example, the issuance of generic letters as was done with snubbers. The following six short term improvements and suggested actions are discussed in this Appendix:

- Federal Regulations duplicated in the technical specifications;
- The definition of Operable-Operability;
- The 18 month surveillance intervals;
- Cycle specific variables; and
- Applying Specification 3.0.4 consistently.
- Removing Lists of Components

The short term solutions are not limited to just these six and this list should be augmented as appropriate.

1. Federal Regulations duplicated in the Technical Specifications.

The problem to be addressed is the need to place duplicate requirements in the technical specifications that are found in the regulations. It is recommended that these requirements be deleted from the technical specifications.

In cases where the requirement needs to remain in technical specifications for clarity, the requirement would be replaced with a reference to the regulations or the program that implements the requirement.

The primary basis and justification for this recommendation is that the following statement taken from operating licenses issued by the NRC indicates that licensees are required to comply with federal regulation as well as plant technical specifications.

> "This license shall be deemed to contain... and is subject to all applicable provisions of the Act and to the rules, regulations... and is subject to the additional conditions specified or incorporated below.
>
> (2) Technical Specifications...."

As a result of this license condition, there is no need to repeat federal regulations in technical specifications to ensure compliance with these requirements. The duplication of requirements only adds to the administrative burden of both the NRC and licensee.

Additionally, NRC Generic Letters 82-17 and 82-23 indicated that licensees are required to meet the requirements in regulations regardless of provisions in technical specifications prior to the issuance of the regulation or the provisions that have been added to technical specifications since the regulations were issued.

The implementation of this recommendation will not relieve the licensee of the requirement to comply with any current applicable regulations or technical specifications. As a result, the change will have no safety significance but will relieve the administrative burden of the NRC and the licensee. This will allow both the NRC and the licensee to redirect manpower resources to other areas of plant operations.

Suggested Regulatory Action to be Taken

An NRC Generic Letter should be prepared for issuance. This letter would provide guidance to licensees for the deletion of requirements from technical specifications that are also present in federal regulations. It would also request that licensees submit technical specification changes which incorporate this guidance.

2. The Definition of OPERABLE-OPERABILITY

The current definition of OPERABLE-OPERABILITY in the technical specifications is ambiguous. This ambiguity leads, in many cases, to overly conservative application of the definition, and unnecessarily declares equipment or components inoperable. In addition, there is no well-defined regulatory basis for the current definition of OPERABLE. This problem is exacerbated by the provisions of technical specification 3.0.3. and 4.0.2, which imply if you cannot positively assure that equipment is OPERABLE, inoperability must be assumed.

The problems with the current application of the definition of OPERABILITY stem from a conservative application of the definition to cases which do not warrant such application. The definition in itself does not recognize conditions where it is still possible to demonstrate the equipment is capable of performing its design function, even though all administrative conditions may not be fulfilled "to the letter."

Clearly, the design basis includes application of all accidents and transients analyzed in the FSAR, but does not include simultaneous application of those accidents with a SSE (Safe Shutdown Earthquake) or DBE (Design Basis Earthquake). This is reinforced by the NRC in a recently drafted internal position statement regarding "Technical Specification Operability Requirements." Technical Specification LCO's are designed to assure "those systems, subsystems, trains, components or devices which directly provide the capability to mitigate the consequences of design basis events, as well as generally specifying LCO per those which indirectly provide this capability as a support function."

In the Environmental Qualification Rule, 10 CFR 50.49, (48FR2729) the NRC published certain criteria to demonstrate that near term operating license plants (NTOLs) could continue operation in spite of not fully meeting the requirements of the rule. This proposed change applies those same standards to all decisions regarding equipment qualification problems (both seismic and environmental). This analysis would demonstrate acceptable determination of OPERABILITY, by showing that the equipment is capable of performing its design function, or that alternative equipment can satisfy the safety function.

Regarding missed surveillances, the current application of the OPERABILITY definition, as well as Standard Technical Specification 4.0.3, leads to unnecessarily declaring equipment inoperable. This concept implies "guilty until proven innocent" philosphy, and subjects the plants to unnecessary transients, shutdowns, and improper application of valuable resources. If a surveillance interval is missed for a piece of equipment, the surveillance should be performed as soon as possible. Should the equipment fail to satisfy its surveillance requirements, it should be declared inoperable. However, declaring equipment inoperable due to an administrative oversight without regard for the actual equipment condition is unnecessarily conservative.

All of these changes clearly fall within the intent of the definition of OPERABILITY, which is to ensure that "equipment is capable of performing its specified function when all necessary instrumentation, controls, normal and emergency electrical power sources, cooling, or seal water, lubrication, or other auxillary equipment that are required for the system to perform its function are also capable of performing their related support functions."

SUGGESTED REGULATORY ACTION TO BE TAKEN

Recommend suggested changes be issued via Generic Letter, saying "the NRC staff has determined these clarifications are acceptable and licensees may submit proposed changes for NRC approval at their option." These should be incorporated into all 4 NSSS Vendor Standard Technical Specifications. The following additional language that is underlined is suggested.

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

3/4.0 APPLICABILITY

LIMITING CONDITION FOR OPERATION

3.0.5 When a system, subsystem, train, component, or device is determined to be inoperable solely because a supporting system, subsystem, train, component or device is inoperable and a Limiting Condition for Operation and ACTION requirement(s) for that support equipment are specified in the Technical Specifications, operation may continue consistent with the ACTION requirement(s) for the LCO for that support equipment.

APPLICABILITY

SURVEILLANCE REQUIREMENTS

4.0.1 Surveillance Requirements shall be met during the OPERATIONAL MODES or other conditions specified for individual Limiting Conditions for Operation unless otherwise stated in an individual Surveillance Requirement.

4.0.2 Each Surveillance Requirement shall be performed within the specified time interval with:

a. A maximum allowable extension not to exceed 25% of the surveillance interval, but
b. The combined time interval for any 3 consecutive surveillance intervals shall not exceed 3.25 times the specified surveillance interval.

4.0.3 Failure to perform a Surveillance Requirement within the specified time interval shall constitute a failure to meet the OPERABILITY requirements for a Limiting Condition for Operation from the time of discovery. The Surveillance Requirements shall be completed within the time limits of the associated ACTION requirement(s) if plant conditions permit. Those Surveillance Requirements that cannot be completed due to plant conditions must be completed at the earliest opportunity when plant conditions permit. Exceptions to these requirements are stated in the individual Specifications. Surveillance Requirements do not have to be performed on inoperable equipment.

OPERABLE - OPERABILITY

1.6. A system, subsystem, train, component or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified function(s), and when all necessary attendant instrumentation, controls, normal and emergency electrical power sources, cooling or seal water, lubrication or other auxiliary equipment that are required for the system, subsystem, train, component or device to perform its function(s) are also capable of performing their related support function(s). Under certain conditions where a component or device is not fully OPERABLE, the associated system, subsystem or train may be demonstrated OPERABLE or to have OPERABILITY, so long as an analysis is satisfactorily performed. Under these circumstances, the licensee may perform an analysis to justify continued operation. This analysis can include, where appropriate, consideration of:

1. Accomplishing the specified safety function by some designated alternative component or device if the principal component or device has not been demonstrated to be fully OPERABLE.

2. No significant degradation of any safety function or misleading information to the operator as a result of failure of a component or device resulting from a design basis event.

3. Limited use of administrative controls over a component or device that has not been demonstrated to be fully OPERABLE.

4. Completion of the safety function prior to exposure to the accident environment resulting from a design basis event and ensuring that the subsequent failure of the component or device does not degrade any safety function or mislead the operator, if applicable.

5. The validity of partial test data in support of the original qualification, if applicable.

3 - The 18 Month Surveillance Interval

With the advent of longer fuel cycles and less frequent and longer outages, the nuclear industry is encountering difficulty meeting the 18 month surveillance interval specified by Technical Specifications. As more utilities go to longer cycles this problem will intensify.

Initially the average fuel cycle lasted 12 to 18 months dependent on plant performance. Outages, which before served primarily to allow refueling and surveillance outages, are now predominantly to make modifications. Refueling and surveillance outages are typically five to six weeks long while modification outages are generally three to four times longer. These outages have become this long primarily due to the extensive modifications mandated by new regulations and requirements (NUREG-0737, Equipment Qualification, Appendix R, Regulatory Guide 1.97). Consequently, over the past several years utilities have gone to 18-24 month cycles to improve power availability, fuel utilization and to reduce shutdowns. Thus, where utilities had a total interval of 12 to 18 months between shutdown tests, the current trend is toward an interval of 18 to 24 months.

Over one hundred of the Standard Technical Specifications (STS) surveillances must be performed at 18 month intervals. Specification 4.0.2 allows this interval to be extended by as much as 25%. Specification 4.0.3 allows an even longer interval between tests provided that the equipment is not required to

be operable. For a single interval these allowances generally provide sufficient flexibility to reach the next planned outage. Over time however, the limit, not to exceed 3.25 times the stated interval for any three consecutive intervals, becomes impossible to meet. For example, recent reviews of the upcoming cycle indicate that a B&W plant will exceed the 1.25 limit for six surveillances and that over thirty surveillances will exceed the 3.25 limit. If a forced shutdown does not occur during mid-cycle, either a surveillance outage or massive technical specification relief will be necessary. In many cases the 18 month surveillance test must be done in Modes 4 and 5 resulting in making forced outages longer without proper preplanning. Thus efficient operation of the unit is punished by a shutdown solely to comply with 18 month intervals. Neither the additional shutdown and associated transient nor the "band aid" solution of one time Technical Specification relief are desirable

The 18 month surveillance interval is based on what was perceived to be the expected fuel cycle length. This surveillance interval was established during the original development of STS after discussions with senior NRC staff members and reactor and fuel vendors. A maximum time period of 22.5 months was thought to be sufficient to accommodate scheduling and performance considerations. A nominal interval of 24 months allows a maximum interval of 30 months which is considered unacceptably long by the staff. The staff has not supplied a technical basis for this unacceptability.

It is recommended that, because the 18 month surveillance interval applies to so many surveillances, several options should be pursued to alleviate the problem. These options are:

1. Delete the 3.25 criteria for all 18 month surveillances.

2. Delete "during shutdown" from those tests which can be safely and efficiently performed during operation.

3. Change some surveillance intervals to 20 to 24 months.

The basis for this recommendation is that in general, when evaluating a technical specification change, an evaluation of the revised specification pursuant to its initial basis is sufficient to assure an adequate level of protection. However, the current trend by the staff appears to be the application of an arbitrary, undefined level of reliability as a basis for technical specification frequencies. This trend is illustrated in the March 30, 1982 draft rule Section (f) (3):

> A change to monitoring provision is deemed to involve a decrease in the effectiveness of the provision if: (1) the frequency of the monitoring inspection, testing or calibration is decreased without a compensating change in the acceptance criterion or an increase in the sensitivity of accuracy or the method used, unless the cumulative history of the test results clearly supports a reduction in frequency.

As a result, it appears that any extension of the surveillance interval must address compensatory actions or reliability.

There are several problems with the use of the draft rule's criteria. One problem is that all equipment is treated equivalently regardless of its importance. This leads to the imposition of overly conservative requirements. It also assumes that

the current interval is not overly conservative even for the most important equipment. An additional problem is that acceptance criteria in several specifications is already as tight as possible. Although not specifically required by the technical specifications, it is common practice to take "as found" and "as left" data before and after test adjustment. Typically the "as left" tolerance allowed is much more stringent than the "as found" acceptance criteria. This practice helps to assure that equipment found close to the allowable limit is not allowed to go through the next cycle without recalibration. Finally, efforts to establish a cumulative history of a piece of equipment are generally very involved and tedious. Especially so, since testing practices may have changed over the history of the equipment.

Deletion of the 3.25 Criteria:

Deletion of the requirement "any three consecutive intervals must not exceed 3.25 times the interval" will not significantly effect equipment reliability. The current criteria allows a 22.5 month interval for as many as two intervals during a three interval period. Deletion of the 3.25 criteria will allow all three intervals to be 22.5 months long. Per specification 4.0.2.a the staff has already accepted that a 22.5 month interval will provide a sufficient level of protection. Allowing this interval to be applied to all cycles will maintain a constant level of protection.

Deletion of "During Shutdown"

The staff has already accepted this option, at least in part, since the Standard Technical Specifications allow performance of several 18 month Surveillances during operation. Additional tests which are currently required to be performed "During Shutdown" by STS, but which could be safely performed during operation should be addressed individually. A review and evaluation of the STS to determine if additional specifications should be revised to delete "During Shutdown" could be performed by Owners Groups.

Extension of Specific Intervals:

There are several reasons that interval extension should be allowed. These are:

1) Some equipment should not be significantly affected by the addition of four to six months to the interval. For example: the visual inspection of the containment sump for debris or structural distress would generally not indicate significant additional degradation due to extending the surveillance interval.

2) Enough operability tests and checks are performed during operation such that extension of some intervals should not be a concern.

3) Some equipment is not important enough to warrant an 18 month interval surveillance. For example, post accident instrumentation does not perform any automatic safety function nor is accuracy a major concern with these instruments.

SUGGESTED REGULATORY ACTION

The staff should issue a Generic Letter allowing the implementation of the

recommended options. Implementation of these options should not generically necessitate the utilities' acceptance of additional STS requirements. The Generic Letter should clarify the acceptance criteria that must be applied to allow lengthening of surveillance intervals. This criteria should be sufficiently flexible such that a detailed analysis or extensive document search is not required in every case. The resultant technical specification changes would be permanent.

4. Cycle Specific Variables

Cycle specific variables are presently included in technical specifications. The basis for this is found in 10CFR 50. 36(b) as well as 10CFR 50.36, Sections (ii) (A) and (2). It is recommended that these variables be relocated to another document, specifically the FSAR, and controlled by 10CFR50.59.

The NRC and industry are aware that a significant number of requests for license amendments involve a change of those variables that still clearly remain within the acceptance criteria previously approved by NRC, but change only because of a fuel reload for a later cycle. Tnis fact is reinforced in the "Current Problem" discussion published by the NRC in a proposed change to 10CFR Part 50, Technical Specifications for Nuclear Power Reactors, 47 FR 13369 dated March 30, 1932:

> "Moreover, the increased volume and detail of Technical Specifications and the resultant increase in the number of proposed change requests that must be proposed have increased the paperwork burden for both licensees and the NRC staff."

The industry documented the same problem in a letter from J.J. Shephard, Chairman, Westinghouse Owners Group, to J.H. Sniezek, NRC, dated October 4, 1983.

Under current regulations, 10CFR 50.59 permits licensees to evaluate new core reloads without prior NRC approval, unless the reload involves an unreviewed safety question or a change in the technical specifications.

Industry and NRC experience have demonstrated that core reloads that do not involve an unreviewed safety question also do not represent a significant hazards consideration as defined in 10CFR 50.92.

Therefore, the need for public scrutiny in these instances is obviated, and the application of the prenoticing requirement becomes little more than paperwork shuffle and unnecessary delay in issuing the reload license. In some instances, the date of issuing the reload has been critically close to the facility restart date, thus presenting the risk of delaying the facility's restart. Although this has not yet occurred, the large number of reload license requests could eventually result in a case where the NRC staff faces a choice to either delay restart or forego the public notice process.

Since the 10CFR Part 50.59 process has been in effect since December 1968, the industry and NRC have had substantial experience with application of these criteria to proposed changes to the facility. This process is already applicable to core reloads which do not involve a change to the technical specifications. NRC approval would be required if the reload were determined to involve an unreviewed safety question.

SUGGESTED REGULATORY ACTION TO BE TAKEN

NRC publish a "position letter" stating that cycle specific parameters may be relocated to the FSAR and changed via 10CFR 50.59. The LCOs should remain and the ACTION, MODE APPLICABILITY, and SURVEILLANCE requirements should not be changed.

5. Applying Specification 3.0.4. Consistently

Exceptions to the provisions of Specification 3.0.4. are not consistently applied throughout the technical specifications. This lack of flexibility restricts plant startup for no apparent reason.

As stated in the Standard Technical Specifications:

> 3.0.4 This specification provides that entry into an OPERATIONAL CONDITION must be made with (a) the full complement of required systems, equipment or components OPERABLE and (b) all other parameters as specified in the Limiting Conditions for Operation being met without regard for allowable deviations and out of service provisions contained in the ACTION statements.
>
> The intent of this provision is to ensure that unit operation is not initiated with either required equipment or systems inoperable or other limits being exceeded.
>
> Exceptions to this provision have been provided for a limited number of specifications when startup with inoperable equipment would not affect plant safety. These exceptions are stated in the ACTION statements of the appropriate specifications."
>
> It is recommended that the NRC place definitive generic criteria for 3.0.4 exceptions in the bases, review the Standard Technical Specifications and ensure consistent application of the criteria.

As the basis for this recommendation, Specification 3.0.4 states:

> 3.0.4 Entry into an OPERATIONAL CONDITION or other specified condition shall not be made unless the conditions for the Limiting Condition for Operation are met without reliance on provisions contained in the ACTION requirements. This provision shall not prevent passage through or to OPERATIONAL CONDITIONS as required to comply with ACTION requirements. Exceptions to these requirements are stated in the individual Specifications."

As defined in Bases Section 3.0.4, "exceptions.... have been provided... when startup with inoperable equipment would not affect plant safety." Therefore, if it can be shown that this general criteria is met, an exception is appropriate.

A review of the Standard Tech Specs results in the following more definitve criteria for applying an exception to 3.0.4:

1. If an alternate means is provided within an action statement to achieve the LCO, and unrestricted continued operation is then permitted. Examples are:

   - o isolating valves to achieve containment integrity
   - o placing instrument channels in a tripped condition to ensure their safety function is met
   - o instituting a "preplanned alternate method"

2. If continued operation is allowed based on the submittal of a Special Report.

3. If, under one specification, an action requires an affected system that is governed by a different specification to be declared inoperable, a 3.0.4 exception should be allowed if it is provided in that different specification, regardless of the lack of a 3.0.4 exception in the originating action.

These criteria for judging the appropriateness of an exception to 3.0.4 are based on exceptions currently allowed by Standard Technical Specifications: unfortunately they have not been applied consistently.

Suggested Regulatory Action To Be Taken

The above criteria should be advocated via an NRC Generic Letter. The Generic Letter should encourage licensees to do the following:

1. Add the criteria to the Bases for 3.0.4

2. Review their technical specifications against the criteria and propose changes to achieve consistent application.

6. Removing Lists of Components

Standard Technical Specifications currently contain several different component listings, such as:

1. Fire Detection

2. RCS Pressure Isolation Valves

3. Containment Isolation Valves/Dampers

4. Spray/Sprinkler Systems

5. CO_2 Systems

6. Halon Systems

7. Fire Hose Stations

8. Containment Penetration Overcurrent Protection

9. MOV Thermal Overload Protection

10. Steam Line Safety Valves

11. Secondary Containment Bypass Leakage Paths

The existence of these listings of equipment numbers creates the need for license amendments to change a number, to add a component, or to delete a component regardless of the safety significance. Some of these amendments have to be treated as "emergency" changes because the level of detail in the listing has legally created non-compliance with an LCO when no safety concern exists.

The following excerpts are taken from Generic Letter 84-13, "Technical Specification for Snubbers" (May 3, 1984):

- "During the last several years, a large number of license amendments have been required to add, delete or modify the snubber listing within the technical specifications. We have reassessed the inclusion of snubber listings within the technical specifications and conclude that such listings are not necessary provided the snubber technical specification is modified to specify which snubbers are required to be operable."

- Since any changes in snubber quantities, types, or locations would be a change to the facility, such changes would be subject to the provisions of 10 CFR Part 50.59 and, or course, these changes would have to be reflected in the records required by paragraph 4.7.9.f."

In the enclosure to the generic letter, the LCO for snubbers is altered to be more explicit as to which snubbers were required to be operable, apparently based on the deletion of the tables.

Based upon the above precedent, the NRC position appears to be as follows:

1. Listings of components enforced by an LCO cause unnecessary problems.

2. Changes to the components affected by an LCO are governed by the requirements of 10CFR50.59

3. Licensees must keep documented records associated with such changes; this is currently covered by the following item under "Record Retention" in Section 6.0:

The following records shall be retained for the duration of the Unit Operating License:

> ...Records of review performed for changes made to procedures or equipment or review of tests and experiments pursuant to 10CFR50.59

This position is easily applied to each of the listings provided above.

Suggested Regulatory Action to be Taken

It is suggested that the NRC provide a generic letter similar to 84-13 that would allow deletion of the aforementioned listings and any other approximately justified plant-specific listings. The letter would:

1. Direct each licensee to incorporate the current listings into the surveillance procedures which are associated with the affected equipment,

2. Either propose or request proposal by the licensee of any necessary LCO clarifications based upon deletion of the listings, and

3. Allow deletion of the listings (and all reference thereto) based upon a proposed amendment that acknowledges 1 and 2 above.

It is the industry position that any enforceability concerns would be rendered moot by the above requirements.

Appendix H: Suggested Changes to the Regulations

No law or rule precludes the use of the suggested criteria discussed in this report. The Atomic Energy Act and rules do require Technical Specifications and do specify format and derivation ("from the safety analysis"). They do not specify the scope of Technical Specifications nor the proper level of detail.

Since 1974, the scope of the "Standard" Technical Specification has greatly expanded. This is reflected in the almost 50 percent increase in document volume for many licensees. This increased bulk is due to lack of firm criteria delineating scope and level of detail appropriate for technical specifications.

The AIF Subcommittee and the NRC-TSIP have had discussion on the criteria and have now come to an agreement on what the criteria should include. That understanding is spelled out in the three criteria discussed in Section IV and Appendix D of this report. Just as technical specifications have grown enormously in the last decade without rule change, so too could they be cut back without rule change.

However, the same forces that caused growth over the last 10 years would remain. Without formalization of the scope of technical specifications, the documents will resume their inflationary growth.

The industry believes that the formalization of scope should be arranged through inclusion in 10CFR 50.36 of the three criteria. Other processes (Policy, Regulatory Guidance, NRC Manual changes) are subject to unilateral modifications with limited industry or public participation. Rulemaking allows industry and public participation in both the initial rule and, more importantly in this case, in any change to the rule.

This formalization of the change process yields confidence in the long-term stability of the boundaries within which the industry must operate. It is this stability which is needed for the long-term improvements in technical specifications.

The following changes to 10CFR 50.36 as underlined are suggested.

Proposed changes to 10CFR 50.36

(a) Each applicant for a license authorizing operation of a production or utilization facility shall include in its application proposed technical specifications in accordance with the requirements of this section. The technical specifications must be derived from the analyses and evaluation included in the safety analysis report, and amendments thereto submitted under 50.36. These specifications are described in paragraphs (c), (d), and (e) of this section. The bases or reasons for the specifications must be also included in the application, but will not become part of the technical specifications.

(b) Each license authorizing operation of a production or utilization facility of a type described in 50.21 or 50.22 of this part will include technical specifications. For a nuclear reactor operating licensing issued before (180 days after the effective date of this amendment) and for a fuel reprocessing plant, the license will include technical specifications in the categories set forth in paragraph (c) of this section. For a nuclear reactor operating license issued on or after (180 days after the effective date of this amendment) the license will include technical specifications in the categories set forth in paragraphs (d) of this section. The Commissioners may include additional technical specifications as they find appropriate.

(c) Technical specifications for a nuclear reactor operating license issued before (180 days after the effective date of this amendment) and for a fuel reprocessing plant will include items in the following categories:

. . . . .

(d) Technical specifications for a nuclear reactor operating license issued on or after (180 days after the effective date of this amendment) will include in appropriate detail only those:

1. Installed systems that are used to detect, by monitors in the control room, a significant abnormal degradation of the reactor coolant pressure boundry; or

2. Process variables that are an initial condition of the design basis accident analysis; or

3. Structures, systems, components that are part of the primary success path of a safety sequence analysis and functions or actuates to mitigate a design basis accident.

The function of the technical specifications is to maintain the facility in such a configuration as to maximize a successful and safe shutdown and preserve the validity of the design bases of the facility. They address structures, systems, components and process variables needed to support the primary success path to bring the facility to a safe shutdown. They are designed to control reactivity, cool the fuel, protect the integrity of the fission product barriers and limit the release of radioactive fission products immediately following an off-normal event. Technical specifications are to be imposed on all normal modes of facility operation including shutdown and refueling and are to consist of items of the following types:

(i) Safety limits Safety limits for nuclear reactors are limits upon important process variables which are found to be necessary to reasonable protect the integrity of certain of the physical barriers which guard against the uncontrolled release of radioactivity. If any safety limit is exceeded the reactor must be shut down. The licensee shall notify the Commission, review the matter, and record the results of the review including the cause of the condition and the basis for corrective action taken to preclude recurrence. Operation may not be resumed until authorized by the Commission

(ii) Limiting safety system setting Limiting safety system settings for nuclear reactors are settings for automatic protective devices related to those variables that meet one of the categories set forth in paragraph (c) of this section. Where a limiting safety system setting is specified for a variable on which a safety limit has been placed, the setting must be chosen so that automatic protective action will correct the abnormal situation before a safety limit is exceeded. If, during operation, the automatic safety system does not function as required, the licensee shall take action as stipulated in the specification, which may include shutting down the reactor, notify the Commission, review the matter, and record the results of the review including the cause of the condition and basis for corrective action taken to preclude recurrence.

(iii) Limiting Conditions for Operation (LCO) Limiting conditions for operation are the lowest functional capability or performance levels of equipment required for safe operation of the facility. When an LCO is not met, the licensee shall shut down the reactor or follow specified remedial action as stipulated by the specifications to place the facility in a safe condition until the operational limit or conditions can be met. The licensee shall notify the Commission, review the matter and record the results of the review including the cause of the condition and the basis for corrective action taken to preclude recurrence.

(e) (1) This section does not modify the technical specifications included in any license issued before (180 days after the effective date of this amendment). A license which does not contain technical specifications is deemed to include the entire safety analysis report as technical specifications.

(2) At the initiative of the licensee, any license may be amended to include technical specifications of the scope and content which would be required if a new license were being issued.

Rulemaking - "Other Rule Changes"

At least two dozen parts of 10CFR have references to Technical Specifications. Each of the parts must be examined with the new understanding of what is or is not proper for inclusion in Technical Specifications.

Appendix A, Table A-1, ennumerates these CFR parts. The first and most important change is 10CFR 50.36 and has been discussed above. Other references (10CFR 50.36a, 10CFR50.48, etc.) specificy for inclusion in technical specifications, items which may not meet the recommended criteria and are not necessary to be included in technical specifications.

Several sections of the Code duplicate or overlap with specifications currently in the technical specifications (for example: 10CFR50, Appendices I,J,K,H, and R). In the new understanding of the regulatory basis for technical specifications, it becomes clear that only items meeting the criteria should be in technical specifications and that there is no need to place anything in both regulations and technical specifications. Federal regulations are requirements, there is no need to replicate such matters in individual technical specifications. Similarly, if items meet the Criteria and are included in technical specifications, they need not also be included in regulations.

Appendix I Probabilistic Methodology

Probabilistic methodologies for technical specification evaluation and improvement, which are under continuing development and are beginning to gain acceptance throughout the nuclear community, have also been considered by the Subcommittee. While these methodologies appear very promising, the present licensing basis for nuclear plants is deterministic, being directly based on FSAR accident analyses which do not rely on probabilistic methods to demonstrate acceptability.

To support NRC's use of probabilistic methods for technical specification improvements, the NRC's Office of Research is developing and providing information to the Office of Nuclear Reactor Regulation (NRR) regarding the use of probabilistic techniques to make decisions in the technical specification area. This program is known as the Procedure for Evaluating Technical Specifications (PETS). The NRC's prime contractor on this project is Brookhaven National Laboratory. Their objectives are to:

- o Develop and demonstrate approaches incorporating risk and reliability insights for determining AOTs and STIs in the technical specifications;
- o Develop and demonstrate approaches for granting extensions to present technical specifications; and
- o Develop a procedures guide for determining acceptable AOTs and STIs.

The industry has utilized the probabilistic evaluation approach in evaluating the present technical specification requirements. For example, the Westinghouse Owners Group issued WCAP-10271, "Evaluation of Surveillance Frequencies and Out-of-Service Times for the Reactor Protection Instrumentation System" NRC review has been completed allowing the following technical specification revisions:

- Change channel tests from monthly to quarterly;
- Change allowed out-of-service time from 1 to 6 hours;
- Change the time that a channel may be bypassed to allow testing of another channel from 2 to 4 hours; and
- Allow routine channel testing in the bypass mode (with some restrictions).

The BWR Owners Group has an on-going program for development of a methodology using PRA techniques in justifying STI and AOT extentions. NEDE-30851P, dated May 1985, utilized this methodology in justifying SI extentions from monthly to quarterly and AOT extentions from 1 to 12 hours for reactor protection system instrumentation. NRC review of NEDE-30851P is scheduled for completion by the end of 1985. The report documenting the generic application and the demonstration cases for ECCS Instrumentation, NEDE-30936P, is scheduled for submittal to the NRC in October, 1985.

All four Owners Groups are planning to utilize probabilistic methodology on specific technical specification improvements.

EPRI also has a program on reliability and risk-based evaluation of technical specifications. The development of a theoretical foundation for a method of reliability-based technical specification changes has been completed (EPRI RP 2142). Additionally, the SOCRATES code has been developed and has been used on two utility applications. A third application is underway at this time, not to validate SOCRATES, but to critically evaluate the usefulness of the method. This should be completed in 1985.

In early August 1985, the NRC and the AIF Technical Specification Improvement Subcommittee jointly sponsored a 2-day meeting for the exchange of information on the development and applications of probabilistic methods for technical specification improvement. The meeting participants included representatives from the NRC TSIP, RRAB, and Office of Research, and NRC contractors on the PETS program; from the industry side the AIF, EPRI, Owners Groups, various utilities and other interested parties were present. The status of various NRC and industry activities was discussed.

Some specific areas of immediate significance in the application of probabilistic methods to technical specification improvement which were discussed during the meeting include:

- Applications of generic analyses in support of plant-specific technical specification change requests;

- Criteria for acceptability of proposed changes (including those which envision risk trade offs);

- The use of cumulative risk as a measure for defining the limits of potential Technical Specifications change acceptability;

- The concept of cumulative allowed outage time for systems and components, and requirements for its implementation; and

- The future potential applications of probabilistic methodologies and their implications on licensing bases, data collection requirements, etc.

The industry and NRC representatives at the August meeting agreed that a continuing dialogue on the development of methods, procedures and criteria for application of probabilistic methods to technical specification improvement should be maintained. The industry representatives requested an opportunity to review the products of the PETS program as they become available. In return, industry representatives, through the AIF Technical Specification Improvement Subcommittee, agreed to provide comments on these products and other issues to the responsible organizations within NRC.

Regarding the need to also establish cumulative allowed outage times in the technical specifications, it is noted that no problem has been identified with the existing process that requires this regulatory action. Additionally, it is noted that probabilistic methodologies address anticipated future events, not historical performance. The Working Group noted that considerable administrative detail would be required. It is not clear what times (component, system etc.) have to be tracked. It is not clear what action would be required if the allowed outage time is exceeded. But more importantly, additional emphasis on returning equipment to operation too quickly may compromise quality repairs in order to minimize expenditure of outage time allowances resulting in questionable benefit to the overall safety of the facility.

Appendix J - Abbreviations and Acronyms

Act - Atomic Energy Act of 1954, as amended, 42 USC 2011, et seq

ALARA - as low as reasonably achievable

AIF - Atomic Industrial Forum

ANPR - advance notice of proposed rulemaking

ANS - American Nuclear Society

AOT - allowed outage time

ASEP - Accident Sequence Evaluation Program

ATWS - anticipated transient without scram

BCL - Battelle Columbus Laboratories

BNL - Brookhaven National Laboratory

BWR - boiling water reactor

B&W - Babcock and Wilcox

CE - Combustion Engineering

CFR - Code of Federal Regulations

DBA - Design Basis Accident

ECCS - emergency core cooling system

EPRI - Electric Power Research Institute

ESF - engineered safety features

FR - Federal Register

FRANTIC -Formal Reliability Analysis including Normal Testing Inspection and Checking

GE - General Electric Company

GENLTR - generic letter

INPO - Institute of Nuclear Power Operations

LCO - limiting condition for operation

NRC - Nuclear Regulatory Commission

NRR - (Office of) Nuclear Reactor Regulation, NRC

NTOL - Near Term Operating Licensee

PACRAT - Probability Analysis Code with Repair and Testing

PETS - Procedure for Evaluating Technical Specifications

PRA - probabilistic risk assessment

RCIC	-	reactor core isolation cooling
RES	-	(Office of) Research, NRC
RPS	-	reactor protection system
RV	-	reactor vessel
STI	-	surveillance test interval
STS	-	standard technical specifications
Tech Spec	-	technical specification
TSIP	-	Technical Specification Improvement Project
USC	-	United States Code
USQ	-	unreviewed safety question (10CFR 50.59)
W	-	Westinghouse Electric Corporation