

ROUTING AND TRANSMITTAL SLIP

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REMARKS

Per your previous discussions with Ted Ankrum on the Congressional Amendment Item 13.b.1 Working Paper - More Prescriptive Criteria, I am sending you a copy of the latest draft of the paper. The paper has been extensively revised to emphasize the effect of design changes. You should pay particular attention to the conclusion that certain licensee PSAR commitments should be made conditions of the CP, as a method for improving the basis of the NRC enforcement program. A first draft of the Congressional Study Report is currently being prepared and we would appreciate your comments at this time. The formal interoffice comments period is presently scheduled for early January 1984.

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FROM: (Name, org. symbol, Agency/Post)

Room No.—Bldg.

James G. Partlow, Acting D/DQASIP

Phone No.

5041-102

OPTIONAL FORM 41 (Rev. 7-76)

Prescribed by GSA
FPMR (41 CFR) 101-11.206

GPO : 1981 O - 341-528 (109)

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- 13.b.1 Provide a basis for quality assurance and quality control, inspection, and enforcement actions through the adoption of an approach which is more prescriptive than that currently in practice for defining principal architectural and engineering criteria for the construction of nuclear power plants.

This issue has been approached from two aspects: 1) should the principal architectural and engineering (A&E) criteria, themselves, be more prescriptive or 2) should the NRC be more prescriptive in its procedures dealing with the principal A&E criteria. The NRC's analysis of quality assurance and quality control programs at representative sites where such programs have operated satisfactorily and at sites with remedial programs underway have not shown a direct connection between more prescriptive A&E criteria, themselves, and the achieved level of quality in the construction of nuclear power plants. Rather, the analyses have shown that it is changes in the design criteria or the design, whatever the source, which increase the likelihood of reduced quality in construction. The analyses have also shown that an improved basis for enforcement actions can be established by adopting more prescriptive procedures for handling changes to the principal A&E criteria.

A review of the discussion of the Amendment contained in the Congressional Record indicates that the supporters of the Amendment had in mind an approach similar to the NRC's technical specifications for operating plants. With the technical specifications, any nonconformance must be corrected and the nonconformance reported to the NRC. Any licensee desiring to continue operating under a condition which is not in compliance with the technical specifications must receive prior approval from the NRC. The NRC's requirements during the construction process are not nearly as prescriptive.

Under the current regulatory process the applicant generally submits the minimum amount of information required and makes whatever commitments are necessary to have the application for a construction permit (CP) accepted and the construction permit issued. The description of the design contained in the application/preliminary safety analysis report (PSAR) consists of the principal architectural and engineering criteria. These criteria are usually the performance specifications for the safety-related systems and major components. The applicant then commits to implementing the design and constructing the plant as described in the application/PSAR. These commitments also include such things as the consensus codes and standards, and NRC regulatory guides the licensee intends to follow. After the CP is issued, detailed design work continues, supporting analyses are completed, construction starts, and design changes occur. The permit holder can, under current regulatory procedures, unilaterally modify those portions of the PSAR which are not explicitly stated to be conditions of the CP, without notifying the NRC. In some instances the NRC is not informed of the change until the final Safety Analysis Report (FSAR) is submitted.

The Commission has been aware of the need for better controls on the type and extent of changes to design commitments by the licensee and changes to design basis by the NRC for some time. The first attempt at improving the situation took place in 1969 as part of an effort to stabilize the licensing process. As part of the proposed rule on backfitting, 10 CFR 50.109, the staff included a more prescriptive definition of principal architectural and engineering criteria. However, when the final rule was issued the more prescriptive definition was not included because the Commission decided that the definition needed further study. As a result of this determination, two studies were conducted; both of which were intended to define principal architectural and engineering criteria. The results of the first report were published in December 1975 and the results of the second in March 1977. Although both reports were subject to some peer review, no formal staff action was taken because of difficulties with implementing the definition and time pressures due to the licensing workload.

The issue was considered again in December 1979. As part of the Commission's decision on the need for a hearing and/or a construction permit amendment on the Bailly Nuclear Station short pile issue (SECY-A-79-24 & 24A), the staff was requested to prepare a proposal on precisely what design and other changes the holder of a construction permit could make without (a) notifying the NRC, (b) securing prior approval of the staff, and/or (c) obtaining a construction permit amendment. In response to the request from the Commission, the staff developed Commission Paper SECY-80-90. The paper detailed the historical background (the 1969 proposed rule, the 1975 and the 1977 studies) and

proposed five alternatives for addressing the problem. The five alternatives were:

1. Maintain the status quo.
2. Borrowing from 10 CFR §§50.55(e) (dealing with notifications of significant deficiencies having safety significance) and 50.59 (dealing with changes to previously approved designs having safety significance), adopt a rule that establishes general criteria for determining circumstances requiring a CP amendment.
3. Adopt a rule defining "principal architectural and engineering criteria" (in effect reviving the 1969 rulemaking on this subject) using information learned to date, including the 1975 and 1977 staff studies.
4. Adopt a rule that all details of the application, including the PSAR, be made conditions of the CP and may not be changed without prior Commission approval.
5. Restructure the licensing process to require that complete plant design details be provided in the PSAR (i.e., essentially a final design), which, upon review and approval, would be made conditions of the CP and may not be changed without prior Commission approval.

The staff then presented the five alternatives to the Commission for publication for public comment as an Advance Notice of Proposed Rulemaking (ANPR). In approving the publication of the ANPR the Commission added the following state-

ment to the ANPR: "The Commission tentatively prefers Alternative 3 now, with a shift to Alternative 5 in three years."

This specific rulemaking has been subsumed into a series of new initiatives. The initiatives include, in order of occurrence, establishment of the Committee to Review Generic Requirements (CRGR), submission of legislation on one step licensing, issuance of a proposed policy statement on severe accidents which includes standardization of design, and the issuance of an Advanced Notice of Proposed Rulemaking on the backfitting of new requirements to operating plants and plants under construction. The CRGR reviews all requirements proposed by the staff for imposition on one or more classes of power reactors, comparing the improvement in operational safety to the cost of the change and makes recommendations for their approval or disapproval to the Executive Director for Operations. Both the legislation on one step licensing submitted to Congress and the policy statement on standardization contained in the proposed severe accident policy statement require that a much more complete design be submitted for approval at the CP application stage. The most prescriptive A&E criterion, of course, would be a requirement for submission of a complete design. The design approval granted under the one step licensing proposal would be for 10 years and the design could not be changed in that time frame by either the licensee or the NRC without going through the hearing process again. The ANPR on backfitting would require the NRC staff to justify any change in requirements they wish to impose on operating plants. The incremental improvement to operating safety would have to be weighed against the cost of the change in terms of dollars and exposure.

It is important to keep in mind that previous NRC efforts in the area of more prescriptive A&E criteria have been directed toward stabilization of the licensing process rather than improving the basis for quality control, quality assurance, inspection and enforcement actions. While more prescriptive A&E criteria, themselves, may be the answer to a licensing issue, they have not been shown to ^{be} an answer to quality problems. For example, the NRC's case studies and supplemental inspections have shown that the welding and masonry construction problems at Zimmer, the soil compaction problems at Midland, and the voids in the concrete at Marble Hill were not related to the prescriptiveness of the principal A&E criteria. In these three cases the cause of the problem was inadequate management of the construction process to assure that the design criteria were met.

South Texas had problems with the design process as well as construction problems. The design problems resulted from failure to manage the design process and keep the design sufficiently ahead of construction to avoid redesign and rework due to physical interferences. The problem was not that the design did not meet the NRC's criteria but that changes in design coupled with an improperly managed design/construction interface made construction problems almost a certainty.

Diablo Canyon is generally considered to be an example of design errors. However, the errors that occurred in the Diablo Canyon design were, for the most part, in areas that had to be redesigned after the discovery of a previously unknown geologic fault. The errors occurred because of a need for changes in the design coupled with poor management of the design process. when information was sent to a subcontractor involved in the redesign effort.

When this subject is examined from the point of view of providing an improved basis for quality control, quality assurance, inspection, and enforcement actions, it becomes apparent that existing procedures for handling changes to principal A&E criteria and other licensee commitments provide an uncertain and unstable basis for NRC enforcement activities during the construction phase.

The NRC's enforcement policy contained in 10 CFR Part 2, Appendix C - General Policy and Procedures for NRC Enforcement Actions, paragraph IV.E.(3) states:

"Notices of Deviation are written notices describing a licensee's or vendor's failure to satisfy a commitment. The commitment involved has not been made a legally binding requirement. The notice of deviation requests the licensee or vendor to provide a written explanation or statement describing corrective steps taken (or planned), the results achieved, and the date when corrective action will be completed."

Because the licensee can unilaterally modify PSAR commitments which are not conditions of the CP, the answer to a Notice of Deviation is very often a change in the commitments. A much improved basis for NRC enforcement actions can be established through the adoption of an approach which makes significant licensee PSAR commitments conditions of the CP. The NRC plans to perform the prerequisite regulatory analysis in preparation of proposing a rule change which would provide that, during the NRC's review of the licensee's quality assurance program, the licensee's

commitments to certain codes, standards, and regulatory guides would be reviewed for inspectability and enforceability. Selected commitments would be designated as mandatory and made conditions of the CP. The designated commitments would then be binding and readily enforceable.

The NRC has concluded that increased quality in the construction of nuclear power plants will result from fewer changes in the principal A&E criteria and design during the course of construction rather than from more prescriptive A&E criteria. A number of initiatives are underway to systematically reduce opportunities for either the NRC or the licensee to change a design, once completed and approved. The NRC has also concluded that an improved basis for enforcement would result from including certain licensee commitments contained in the PSAR as conditions of the CP and will examine the advisability of promulgating a rule change to implement this conclusion.

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Date

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TO: (Name, office symbol, room number, building, Agency/Post)		Initials	Date
1. Darrell Eisenhut - D/DL			
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