

February 14, 1980

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SECY-80-90

CONSENT CALENDAR ITEM

For:

The Commissioners

From:

Howard K. Shapar
Executive Legal Director

Harold R. Denton, Director
Office of Nuclear Reactor Regulation

Thru:

William J. Dircks *WJ Dircks*
Acting Executive Director for Operations

Subject:

RESPONSE TO STAFF REQUIREMENTS MEMORANDUM (AFFIRMATION
SESSION 79-40) WITH RESPECT TO POST-CP DESIGN AND OTHER
CHANGES

Purpose:

To submit (as requested by the Staff Requirements Memo-
randum of December 13, 1979) a Staff proposal which can
serve as a basis for Commission action to clarify "what
design and other changes the holder of a construction
permit may make during the course of construction with-
out (a) notifying the NRC; (b) securing prior approval
of the Staff; and/or (c) obtaining a construction permit
amendment."

Category:

This paper covers a major policy question.

Issue:

How may the Commission clarify the design and other
changes a CP holder may make without notifying NRC,
securing prior Staff approval, or obtaining a CP
amendment?

Decision
Criteria:

1. The alternative chosen should not diminish protec-
tion of health and safety or result in undue Staff
effort in its implementation.
2. The alternative chosen should not result in undue
controversy, including litigation, over the basis of
the choice and the meaning of the terms.
3. The alternative chosen should provide an efficient,
stable, and, yet, flexible licensing process.

Alternatives:

1. Maintain the status quo.
2. Borrowing from 10 CFR §§ 50.55(e) (dealing with
notifications of significant deficiencies having safety

Contact:

T. Dorian, X. 28690
D. Vassallo, X. 27595

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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 could not be changed without prior Commission approval.

Discussion:

The subject Staff Requirements Memorandum grew out of the Commission's December 12, 1979, decision in the Bailly short pilings matter (Northern Indiana Public Service Company, (Bailly Generating Station, Nuclear-1), NRC (1979). In that memorandum, the Commission stated that it "is concerned that at present, it is unclear precisely what design and other changes the holder of a construction permit may make during the course of construction without (a) notifying the NRC; (b) securing prior approval of the Staff; and/ or (c) obtaining a construction permit amendment."

The Commission requested "preparation of a Staff proposal by January 30, 1980, which can serve as a basis for Commission action to clarify these issues."

The following Staff proposal is divided into five sections. The first describes how the present system works; the second section explains the 1969 rulemaking; the third summarizes two Staff task force reports; the fourth discusses briefly the Federal Energy Regulatory Commission's (FERC) licensing process with respect to hydroelectric facilities; and the fifth section presents the alternatives in light of the background in the previous four sections.

STATUS QUO

The Atomic Energy Act and NRC's regulations provide a framework for issuance of construction permits (CPs) but

do not define precisely the commitment to which an applicant is legally bound when NRC grants it a CP for a nuclear power plant. As a result, there have been and are conflicting opinions about the requirements associated with a CP, particularly with regard to whether a permittee is bound by representations made in its application, including the PSAR, and on the hearing record. Because of this, for many years the Staff has been faced with the problem of not having any actual and objective way to regulate facility design changes between the time a CP is issued and a Final Safety Analysis Report (FSAR) is filed with an operating license (OL) application. Therefore, the Staff's actions and practices (as well as those of holders of CPs) in this matter have developed ad-hoc over the years.

The problem arises because the Commission does not require an applicant to supply initially all of the technical information required to complete the application and support the issuance of a CP which approves all proposed design features, so long as the Commission is able to make the requisite findings under § 50.35(a). This problem is mirrored in § 50.35(b), which states:

A construction permit will constitute an authorization to the applicant to proceed with construction but will not constitute Commission approval of the safety of any design feature or specification unless the applicant specifically requests such approval and such approval is incorporated in the permit. The applicant, at his option, may request such approvals in the construction permit or, from time to time, by amendment of his construction permit. The Commission may, in its discretion, incorporate in any construction permit provisions requiring the applicant to furnish periodic reports of the progress and results of research and development programs designed to resolve safety questions.

Historically, one reason for not having defined precisely an applicant's CP commitments, noted in a 1970 rule change with respect to § 50.35 (35 Federal Register 5317, "Backfitting of Production and Utilization Facilities; Construction Permits and Operating Licenses," March 31, 1970), was an awareness that "the rapidly expanding technology in the field of atomic energy means that new or improved features or designs that may enhance the safety of production and utilization facilities are continually being developed." This echoed the Supreme

Court's decision in Power Reactor Development Co. v. Electrical Union, 362 U.S. 396 (1961), where the Court recognized that (362 U.S. at 408), "[N]uclear reactors are fast-developing and fast-changing. What is up to date now may not, probably will not, be as acceptable tomorrow. Problems which seem insuperable now may be solved tomorrow, perhaps in the very process of construction itself."

This recognition underlined the Court's sustaining of the tentative nature of the safety finding required as a precondition of a CP, as opposed to the more definite finding required for an OL. Thus, the complexity of facilities, the time required for construction, and the continuously changing state of the art have supported the judgment that an applicant is bound only by the "principal architectural and engineering criteria."

CP holders have informed NRC in various ways of design changes from the Preliminary Safety Analysis Report (PSAR): from transmittal of formal letters and PSAR amendments, to submittal of informal drafts and oral communications, to delay of notification until submittal of the FSAR. The Staff's responses to notifications of such changes have run the gamut from preparation of a written safety evaluation to acknowledgement of the change and notification that the matter would be reviewed at the OL stage. The present system has no formal--or for that matter even informal--written guidance about the requirement for notification or the type of Staff response to be made. Most commonly, the Staff, after whatever initial review is deemed warranted, has taken the position that proposed design changes will be handled in the FSAR and reviewed in detail at the OL stage; this is consistent with the two-stage licensing process, allowing permit holders to make changes at their own risk, but inconsistent with a license to construct a facility of known characteristics. However, where the Staff has considered a proposed design change significant and judged that the matter must be resolved before construction proceeds too far, it has undertaken detailed reviews. In some cases, it has followed its reviews with formal letters to CP holders stating the Staff's view about the proposed change.

The existing process has led to three major problems. First, there is no clear basis upon which NRR can assess definitively whether post-CP facility changes require a formal CP amendment. Second, there is no clear basis on which IE can enforce requirements in a CP. Third, the present process is unfair to litigants (other than applicants) in CP hearings, because it prompts them to litigate every detail in order to bind applicants and provides no ground rules about the changes CP holders may make (in fact allowing the Staff and permittees to make numerous changes after a CP hearing outside the purview of litigants). These problems are reflected in part in the Kemeny Commission's recommendation that "[l]icensing procedures should foster early and meaningful resolution of safety issues before major financial commitments in construction can occur," and that "[i]n order to ensure that safety receives primary emphasis in licensing, and to eliminate repetitive consideration of some issues in that process... [t]he agency should be authorized to conduct a combined construction permit and operating license hearing whenever plans can be made sufficiently complete at the construction permit stage." (Report of the President's Commission on the Accident at Three Mile Island, October 30, 1979, Recommendation 10c on "Agency Procedures" at p. 65.)

These problems, and others, are also reflected in the Rogovin Report's recommendation that the Commission overhaul the licensing process, institute one-stage licensing and increase standardization. (Three Mile Island--A Report to the Commissioners and the Public, January 1980, Volume I at pp. 128-142 and Volume II, Part I at pp. 0041-0042.)

1969 RULEMAKING

It is evident that the view within the Staff has been that a CP binds the holder only to the principal architectural and engineering criteria for the design of the facility and to any additional conditions specifically set forth in the CP; yet, the exact boundaries of the term "principal architectural and engineering criteria" have never been formulated by the Commission; nor can these be determined by reading the PSAR or the Staff's SER. The customary PSAR section setting forth the "principal

criteria" is very general. The rest of the PSAR contains a great deal of information from which it would be exceedingly difficult to try to extract the "principal criteria." The SER does not identify the principal criteria. An attempt to resolve this problem was made by the Commission in a rule proposed in 1969 (34 Federal Register 6540, April 16, 1969) that would have required, among other things, specification of what constitutes the "principal architectural and engineering criteria," departure from which would require a CP amendment. The proposed rule, "Back. +ting of Production and Utilization Facilities; Construction Permits and Operating Licenses," was intended to "(1) define more precisely the significance of the issuance of a construction permit for a facility, (2) simplify and expedite the Commission's facility licensing process by eliminating the provisional operating license, and (3) clarify the Commission's position with respect to requirements for additional safety features after the issuance of a construction permit."

In the proposed rule the Commission stated that:

The proposed amendment would provide ... that in issuing a construction permit, the Commission would be approving the construction of the facility in accordance with the application, including the principal architectural and engineering criteria. (Such approval would, of course, apply only to the extent that a particular matter had been treated in the application, and would not extend to items or details not covered in the application.) The proposed amendment would permit the construction permit holder to depart from provisions of the application other than the principal architectural and engineering criteria in the construction of the facility, subject to the risk of subsequent disapproval by the Commission (unless prior approval is requested and given).

The proposed rule included a proposed § 50.2(w) which would have defined principal architectural and engineering criteria to mean:

- (1) The principal design criteria for the facility;
- (2) the essential elements of the proposed design of the following structures, systems, and components

of the facility: Reactor core, reactivity control systems, protection system, control room, reactor pressure vessel and internals, reactor coolant system and associated auxiliary systems, reactor coolant makeup system, decay heat removal system, cooling water system, fuel storage and handling system, radioactive waste system, emergency power systems, primary reactor containment, containment isolation system, secondary reactor containment, auxiliary buildings, emergency core cooling system, containment heat removal system, containment atmosphere cleanup systems, and such other structures, systems and components as may be specified by the Commission; (3) the design bases for protection against natural phenomena such as earthquakes, tornadoes, hurricanes, floods, tsunamis, and seiches; and (4) the essential elements of the quality assurance program to be applied to the design, fabrication, construction, and testing of the structures, systems, and components of the facility. (Footnote omitted.)

In explaining to the Commission the Staff's proposed amendment (AEC-R 2/74, March 7, 1969, and AEC-R 2/71, January 29, 1969) the Staff noted that:

The applicant would be bound by the principal architectural and engineering criteria (unless modifications were approved by the Commission), but would be free, at his own risk (i.e., the risk of subsequent disapproval by the Commission at the operating license stage), to depart from any provisions of the application except the principal architectural and engineering criteria. This is a significant change because the present § 50.35 merely gives the construction permittee the legal right to construct but does not "approve" any design feature unless specifically requested by the applicant.

Most commenters had grave problems with the proposed definition of principal architectural and engineering criteria. (A typical comment is enclosed as Enclosure 1 and ACRS comments as Enclosure 2). The key problem, according to most commenters, was that the proposed

definition in § 50.2(w) was so broad and so all-inclusive as to lead to the conclusion that the proposed rulemaking would make it mandatory that the design of the facility, as well as the quality assurance program, should be essentially complete and not subject to change at the CP stage, unless an applicant were willing to continuously propose changes and amendments to its CP (thereby undergoing constant and time-consuming formal Staff scrutiny). As one commenter put it, "Restraint on backfitting may mean less restraint on forefitting."

In promulgating the final rule (35 Federal Register 5317, March 31, 1970) the Commission deleted the proposed definition in § 50.2(w), saying:

On further consideration, it appears that the "essential elements of the proposed design" of the structures, systems and components of water-cooled nuclear power units referred to in the proposed rule require further definition involving additional study.

In sum, the proposed rule and its implementation would have involved not only a Staff effort to develop the criteria in more detail but would have required changes in the format of the PSAR to make clear the precise extent of approval sought by an applicant at the CP stage.

1975 AND 1977 STAFF STUDIES

Since 1970, two Staff studies were made in order to specify clearly what a holder of a CP could and could not change, to provide a regulation that would be enforceable, and to institute a new mode of doing business that would not cause a proliferation of CP amendments for minor changes. The results of the first study were reported in December 1975 (Enclosure 3) and the results of the second in March 1977 (Enclosure 4).

In both studies the Staff essentially tried to provide definitive guidance as to changes that would require a CP amendment by attempting to define the "principal architectural and engineering criteria" and establishing guidelines to determine when a proposed change does not fall within these criteria.

Essentially, the 1975 task force proposed a system in which the "design features" of a nuclear power plant

would be specified as part of the CP. Rather than use the terminology "principal architectural and engineering criteria," the task force proposed to use the concept of "design features," which is currently part of the Technical Specifications issued with the OL. The proposal was based on the fact that 10 CFR § 50.36 requires each applicant "for a license authorizing operation" to include proposed Technical Specifications in the FSAR. Among the items required by § 50.36 to be included in Technical Specifications are "design features," which are defined as "those features of the facility such as materials of construction and geometric arrangements, which if altered or modified, would have a significant effect on safety...." In other words, the proposal was to make the "design features" section of the Technical Specifications a binding part of the CP, in the same way that the entire Technical Specifications are made part of an OL.

In specifying the "design features," principal reliance would be placed on use of the Standard Review Plan, the General Design Criteria, Regulatory Guides, Branch Technical Positions, and industry criteria, codes and standards to the extent necessary. To effect this change, the task force also proposed changes to 10 CFR §§ 50.36, 50.55(e), and 50.35(b).

In its 1977 report, the Staff based its primary proposal on the proposition that the term "principal architectural and engineering criteria" is a reference to the General Design Criteria of Appendix A to 10 CFR Part 50, and has the same meaning as the term "principal design criteria" as used in § 50.34(a)(3)(i); this section, states, in part, that the General Design Criteria of Appendix A "establish minimum requirements for the principal design criteria." On this basis, the Staff proposed that the "principal architectural and engineering criteria" to be described in a CP application should be an elaboration or extension of the General Design Criteria. It concluded that this can be done best by providing a list of principal design criteria (based primarily on the Standard Review Plan, which defines a. . . those elements important to safety) and assessing these as a basis for issuance of a CP. To those involved in the study, it appeared that the acceptance criteria provided in each of the Standard

Review Plan sections constituted, in fact, the principal design criteria for the area of design addressed by that Standard Review Plan section.

Accordingly, it was proposed that the acceptance criteria of the Standard Review Plan be utilized to develop a document consisting of a list of the "principal architectural and engineering criteria." Using this approach, those involved in the study anticipated that when all sections of the Standard Review Plan had been included, the entire set of criteria would number in excess of 700. As envisioned, this entire set of criteria, to the extent practical, would be devoid of specific numbers and, in this aspect, would be similar to the General Design Criteria. It was proposed that the list of "principal architectural and engineering criteria" would be included in Chapter 1 of the Standard Review Plan, and that the Standard Format and Content Guide would be revised to require an applicant to provide in Section 1.2 of the Safety Analysis Report a list of the "principal architectural and engineering criteria" for its facility, based on the guidance provided in the Standard Review Plan.

In addition to a change in the "principal architectural and engineering criteria," the study group proposed 15 other changes, which, in its opinion, would require a CP amendment. Of these, 12 items relate to changes in the major features or components of a facility. Proposed guidance was provided to assist in determining when a proposed change would require a CP amendment.

Although both reports were subject to some peer review, no formal Staff action was taken because of time pressures, difficulties of definition similar to those of the rule proposed in 1969, and the feeling that the present system was workable.

FERC'S HYDROELECTRIC LICENSING PROCESS

Notable in light of the two studies described is an argument made by some that a CP holder under the present system is bound by almost all of its representations in the PSAR, on the hearing record, and with respect to the principal architectural and engineering criteria, subject only to some de minimus changes such as the color

of a building. Under this argument, changes to the PSAR, for example, may be made only after an amendment to the permit--upon which interested persons have a right to be heard under Section 189a of the Atomic Energy Act.

At first glance, this argument appears consistent with the licensing of hydroelectric facilities by the Federal Energy Regulatory Commission (FERC). Under a statute promulgated in 1920 (16 U.S.C. 802), the Federal Power Commission, now FERC, in a one stage review process (like NRC's OL review) requires each applicant for a hydroelectric facility license to submit:

Such maps, plans, specifications, and estimates of cost as may be required for a full understanding of the proposed project. Such maps, plans, and specifications when approved by the commission shall be made a part of the license; and thereafter no change shall be made in said maps, plans, or specifications until such changes shall have been approved and made a part of such license by the commission....

However, a review of FERC's regulations in 18 CFR Parts 0 to 141 (See also 33 CFR Part 221) shows that an applicant for a hydroelectric facility license has to provide only general information such as a map showing the "principal structures and other important features of the project" (18 CFR 4.41, Exhibit J(1)); or

General design drawings showing plans, elevation, and sections of all principal structures and appurtenant works or other features of the project. These drawings shall be in sufficient detail and shall be accompanied by sufficient information relating to controlling factors (such as character of foundations and explorations thereof, materials and types of construction, important elevations, gradation of filter and riprap material, design and ultimate strengths for concrete and steel, stress and/or stability analysis for important structures, water levels, spillway rating curves, etc.) to enable the Commission to have a full understanding of the project and to check safety, adequacy, and desirability in the development of the resources involved. (Emphasis supplied.) (18 CFR 4.41, Exhibit L.); or

General descriptions of mechanical, electrical, and transmission equipment and their appurtenances in sufficient detail to enable the Commission to have a full understanding of the project, to determine the installed capacity in horsepower and kilowatts, and to determine the safety of the project works and their adequacy and suitability for the development and utilization of the resources involved, also proposed name plate ratings for generators and turbines, and when required by the Commission or the Secretary performance data for generators and turbines and general specifications of mechanical, electrical, and transmission equipment. (Emphasis supplied.) (18 CFR 4.41, Exhibit M.)

Clearly, under FERC's regulations a FERC applicant is bound only by its somewhat general representations, and only with respect to changes to these does it have to seek FERC approval. An informal, oral survey of FERC Staff practice pointed out that a FERC applicant has to provide more detail than the regulations seem to indicate, but that, nonetheless, a FERC licensee may, without prior formal FERC approval, make changes to its facility during construction that are not major or do not involve significant design changes and safety considerations. In fact, as a practical matter, FERC's on-the-spot inspectors are usually able to immediately grant or deny a proposed change where approval is needed or requested.

It is clear from a review of the present procedures, the 1969 rulemaking, and the two studies cited that a rule should be considered that would improve the present licensing process, develop specific descriptions of the essential features of a facility (including the quality assurance program) to which the CP holder would be bound (whether under the rule, license conditions, or through a Licensing Board decision), and withstand legal attack. The key problem, then, is to clarify and specify to what information the CP holder should be bound, at what point in the licensing process, under what circumstances, and through what means. There is also a need to control the way in which a CP holder implements NRC criteria.

The following five alternatives range from keeping the present system to adopting a one-step licensing process requiring final design details in a PSAR at the CP stage. Thus, each successive alternative presents a "finer mesh" for "straining" details.

Aside from Alternative 1, a composite of the alternatives should also be considered. This approach, for example, might combine Alternatives 2 and 5 or 3 and 5 in the type of one-step licensing procedure suggested in the Rogovin Report; provide for issuance of an OL upon a finding by the Staff that the facility has been constructed in accordance with the SAR; recognize that new safety concerns may arise after CP issuance and provide for amendment of the CP for this purpose; and provide a future effective date for the changed licensing procedure as well as provisions for retrofitting present applications and CPs.

ALTERNATIVES

Alternative 1. Maintain the status quo.

- Pro: (1) Provides applicants and the Commission substantial flexibility during the lengthy construction process.
- (2) Does not require the Staff to process numerous minor changes.
- (3) Avoids time-consuming contested hearings on minor or unimportant matters, i.e., matters not involving changes to the principal criteria.
- (4) Allows for making changes in implementation of the final design as well as changes in light of new technology.
- Con: (1) May appear to some to be arbitrary and capricious; allows for conflicting opinions and time-consuming arguments about the requirements associated with a CP (particularly with regard to whether a permittee is bound by representations made in its application, including the PSAR, and the hearing record); and does not provide the public with a clear basis for understanding NRC regulatory practice.

- (2) Provides no objective criteria to regulate facility design changes during construction and no definitive guidance as to when a CP amendment is required.
- (3) Because "principal architectural and engineering criteria" are not defined, allows CP holders substantial discretion to depart from design and engineering features in the PSAR.
- (4) Provides no basis for IE enforcement of CP requirements.
- (5) Is unfair to litigants in CP hearings, for it prompts them to litigate every detail in order to bind an applicant and provides no ground rules about the changes a permittee may make after a hearing (in fact allowing the Staff and permittee to make numerous changes outside the purview of litigants).

Alternative 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 notification and a CP amendment.

The difference between this alternative and Alternative 3 is that here the focus is on criteria relating to CP amendments--as opposed to criteria relating to CPs and their review--allowing for a "coarser" filter and, thus, fewer and broader criteria. For example, the focus could be a significant change in design parameters, bases, or criteria; configuration (a change in major features or components) of the facility; safety analyses; siting parameters or procedures focusing on whether or not the design (a) conforms to the criteria and bases stated in the PSAR (and CP) or (b) calls into question whether the regulatory acceptance criteria on which the CP was issued are still satisfied.

- Pro: (1) Avoids the necessity of developing a list of principal architectural and engineering criteria (which could turn out to be an endless process).
- (2) Places the burden and responsibility on CP holders in a manner similar to §§ 50.55(e) and 50.59, thus allowing the Staff to conserve its resources.
- (3) Permits some latitude in regulatory decisions.
- Con: (1) Leaves some room for interpretation by CP holders and the Staff, and does not place the responsibility on the Staff, where, some believe, it should be placed.
- (2) Makes IE enforcement of CP requirements difficult by allowing for "broader" interpretations.

Alternative 3. Define "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.

- Pro: (1) Binds a permittee to criteria the Commission considers significant, while allowing it freedom (at the risk of disapproval at the OL stage) to depart from any provisions of the application except the principal architectural and engineering criteria.
- (2) Provides a clear basis to assess definitively whether or not post-CP facility changes require formal CP amendment.
- (3) Provides a clear basis on which IE can enforce CP requirements.
- (4) Provides the public with a description of NRC regulatory practice and resolves conflicting opinions.

- (5) Does not require the Staff to process numerous minor changes.

Con: (1) Puts the Staff in the position of attempting to develop difficult to define principal architectural and engineering criteria, i.e., criteria that may be too broad and too inclusive, and, perhaps, endless.

- (2) Creates difficulties in implementation as regards review of CP applicants versus CP holders.

Alternative 4. Adopt a rule that all details of the application, including the PSAR, be made conditions of the CP and not be changed without prior approval of the Commission.

Pro: (1) Binds a permittee and provides a stable licensing system.

- (2) Provides clear basis for IE enforcement of CP requirements.

Con: (1) May require the Staff to process numerous amendment requests about inconsequential matters.

- (2) May be beyond the manpower capability of IE.
- (3) May be unrealistic to expect field inspectors to check construction progress against a multi-volume PSAR.

- (4) Might open the Commission to numerous further hearings.

Alternative 5: Restructure the licensing process to require that complete plant design details be provided in the PSAR (i.e., essentially final design), which,

upon review and approval, would be made conditions of the CP and could not be changed without prior Commission approval.

This alternative is consistent with Recommendation 10c on "Agency Procedures" of the Kemeny Commission (Report of the President's Commission on the Accident at Three Mile Island, October 30, 1979, at p. 65) and with the recommendations of the Rogovin Report (Three Mile Island-- A Report to the Commissioners and the Public, January 1980, Volume I at pp. 138-142 and Volume II, Part I at pp. 0041-0042).

- Pro:
- (1) Binds a permittee, and minimizes the need for interpretation by the Staff and permittee.
 - (2) Provides a clear basis to assess definitively whether or not post-CP facility changes require a formal CP amendment.
 - (3) Leads to more thorough, definitive reviews early on in the licensing process, thus stabilizing the process and assuring that a decision will stand and not be reexamined.
 - (4) Reduces escalation of regulatory requirements during construction, except where backfitting is needed with respect to significant new safety issues.
 - (5) Provides a clear basis for IE enforcement of requirements during construction.
- Con:
- (1) May tend to delay submittal of CP applications to permit applicants time to prepare complete plant design details. (However, use of approved standard designs, i.e., those with Final Design Approval, would eliminate this problem over time and, in fact, in the long run could reduce licensing review time.)
 - (2) Represents a major change in the licensing process, and may require legislation if this option is pursued to "one-stage" licensing.

- (3) Cannot be applied to current CP applications and facilities under construction without a licensing pause to consider the problems of backfitting.
- (4) May require some flexibility during construction to permit limited design changes as a result of, for example, changes in assessment of site and soil foundation conditions.

Aside from the alternative of retaining the present system (Alternative 1), as noted before, each successive alternative presents a "finer mesh" for "straining" design details during the licensing process. The central issue is the size of the mesh at the CP stage. Since no consensus exists within the Staff and considerable Staff effort will be required to refine and focus the issue, it appears that public comment may be in order.

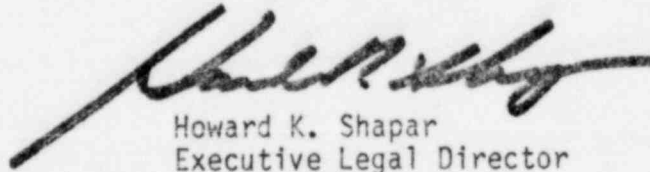
Recommendation:

That the Commission

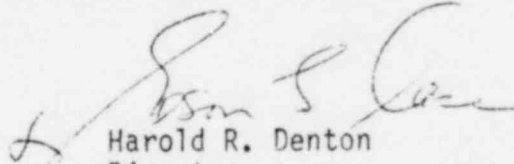
1. Approve further Staff investigation of Alternatives 2 through 5 and publish in the Federal Register for comment an Advance Notice of Proposed Rulemaking describing the issue and alternatives and noting that the Staff is particularly interested in Alternatives 2 through 5, or a mix of these.
2. Note
 - a. The Staff would prepare the Advance Notice of Proposed Rulemaking.
 - b. The Staff would prepare a Value-Impact Statement and a Resource Analysis.
 - c. The priorities for the development of the Advance Notice, the Impact Statement, and the Resource Analysis would be established in conjunction with the priorities established in the TMI Action Plan.

Coordination:

The Offices of Inspection and Enforcement and Standards Development concur in the recommendation of this paper.



Howard K. Shapar
Executive Legal Director



Harold R. Denton
Director
Office of Nuclear Reactor Regulation

Enclosures:

1. A comment on the 1969 rulemaking
2. ACRS comments on the 1969 rulemaking
3. 1975 "Task Force Report on Staff Review of Post-CP Design Changes"
4. 1977 Staff study on "Post-CP Application Amendments"

Commissioners' comments or consent should be provided directly to the Office of the Secretary by c.o.b. Monday, March 3, 1980.

Commission Staff Office comments, if any, should be submitted to the Commissioners NLT February 25, 1980, with an information copy to the Office of the Secretary. If the paper is of such a nature that it requires additional time for analytical review and comment, the Commissioners and the Secretariat should be apprised of when comments may be expected.

This paper is tentatively scheduled for affirmation at an Open Meeting during the Week of March 10, 1980. Please refer to the appropriate Weekly Commission Schedule, when published, for a specific date and time.

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May 27, 1969



Secretary
U. S. Atomic Energy Commission
Washington, D.C. 20545

Attention: Chief, Public Proceedings Branch

Gentlemen:

This letter is in response to the Commission's invitation for comment on proposed amendments to Part 50 of the Commission's regulations published in the Federal Register for April 16, 1969.

My comments are confined to those provisions which would establish ground rules for making changes in facilities after the issuance of a construction permit. I agree wholeheartedly with the need for ground rules in this area. I am concerned, however, that the scheme proposed by the Commission would prove extremely cumbersome, if not impractical, in its application to new projects and unsuitable for application to those projects for which construction permits have been issued or which are well along in construction permit reviews.

Under the proposed regulation, the holder of a construction permit would require the approval of the AEC before making changes in the "principal architectural and engineering criteria" as described in the application. Such criteria are defined to include, among other items, the "principal" design criteria for the facility and the "essential elements" of a number of structures, systems and components. Obviously, further identification of what constitutes a "principal" design

Secretary,
U.S. Atomic Energy Commission

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May 27, 1969

criteria and especially what constitutes an "essential element" of the facility will be necessary, and it is this process of identification which, I am afraid, will prove extremely cumbersome and perhaps unworkable.

It will not, I believe, ever be possible to identify these items by regulation. Instead, it will be necessary for the AEC staff and the applicant to identify for each application a long list of "principal" criteria and "essential elements" of the facility. The process could be an endless one. While many changes which might be made would have no safety implications, with a little imagination it is probably possible to conceive of other changes in almost any component of the facility which could have safety significance and the list of "principal" criteria and "essential elements" will grow accordingly. Since most of the conceivable changes will never occur, the effort expended in concocting the list will be out of all proportion to its regulatory purpose.

It is particularly difficult to visualize the application of the proposed regulation to projects already under construction or well along in the AEC construction permit review. License applications for these projects were not prepared by the applicant nor reviewed by the AEC staff with a view to identifying those elements of the facility which would be subject to the new change procedure. It would be an onerous task both for the AEC staff and the applicant to do so retroactively.

As previously indicated, I believe the AEC scheme of regulation is in need of ground rules for making changes during construction, for existing as well as new projects. In my view, more workable ground rules could be established by borrowing from the Commission's existing regulations governing changes in a licensed facility after the issuance of an operating license.

Section 50.59 of the Commission's regulations defines for holders of operating licenses the conditions under which AEC approval is or is not required for changes in the licensed facility. All changes in the facility as described in the application are subject to Section 50.59. The test for determining whether AEC approval is required is not whether the change involves something previously identified as an essential element

Secretary,
U.S. Atomic Energy Commission

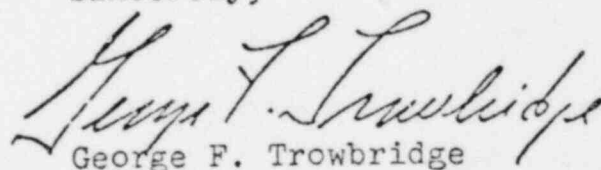
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May 27, 1969

of some structure, system or component. The test is whether or not the particular change proposed has a safety significance. More specifically, the test is whether or not the change involves an "unreviewed safety question", i.e. whether the change might increase the probability or consequences of an accident, might create the possibility of an accident or malfunction not previously evaluated, or might decrease margins of safety.

It may well be that simply lifting the language of Section 50.59 applicable to changes in operating facilities is not a fully adequate solution to handling changes during the construction period. The Commission, might, for example, wish to review not only changes involving an "unreviewed safety question" but also any change which has safety implications or requires safety analyses not previously considered in the AEC and ACRS safety evaluations or which involves significant component designs not previously evaluated by the AEC. The important point is the concept behind Section 50.59 and not its detailed language. This concept is to deal with specific changes when and as they occur and to resolve the question of AEC approval in terms of the safety implications of the specific change. Section 50.59 does not attempt the next to impossible chore of seeking to identify in advance all of the components of the facility where changes might have safety significance nor to list in advance the "essential elements" of the components which cannot be changed without AEC approval.

Sincerely,


George F. Trowbridge

GFT:lc

cc: Harold L. Price

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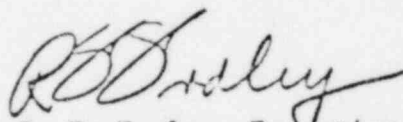
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
UNITED STATES ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

January 27, 1969

Mr. H. L. Price, Director of Regulations

PROPOSED REVISION OF 10 CFR PARTS 2 AND 50

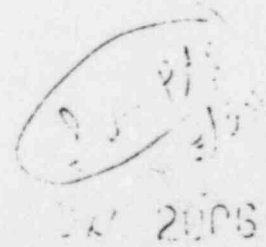
The ACRS Subcommittee dealing with proposed changes in the Commission's regulations in Parts 2 and 50 feels that it may help Committee review to pose a list of questions suggested by individual ACRS members relating to the matter under discussion. Some but not all of the questions were discussed at the Subcommittee meeting on January 15, 1969. However, they are repeated, first to provide a fuller picture and second to allow you to provide further comment, if you wish. If it is possible for you and your staff to develop written comments on some of these questions prior to the next full Committee meeting, it would be helpful if such comments (in 18 copies) were provided to me by the day before the next Committee meeting (February 5) so that they can be reviewed by the Committee members. If not, these questions may serve as part of the basis for further discussions between the Committee and you and your staff.



R. F. Fraley, Executive Secretary

Attachment:

Proposed Revision of 10 CFR
Parts 2 and 50



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Enclosure 2

1. What is the suggested timing for publication of the proposed amendments for comment? Are there considerations which make delays in this timing extremely difficult?

2. Is it currently proposed that the same regulations would apply to all future power reactors? Is there any practical limitation on the allowable amount of R and D required or the number of uncertainties remaining in design or performance when a construction permit is issued? How would new technology be handled, for example, 2000 MWe water reactors, very large HGR's, large LMFBR's, reactors with provisions to cope with displacement, and metropolitan reactors having radically new engineered safety features included?

3. If amendments such as those proposed were adopted, how would the Regulatory Staff deal with matters such as the following in recommending issuance of a construction permit for a given FWR or BWR:

1. Design of protection systems
2. Provision against common or systematic modes of failure in protection systems
3. Use of a failed fuel detector
4. Use of strong-motion accelerometers
5. Use of and criteria for a recombiner
6. The LOCA-induced thermal shock matter
7. Containment spray and air filter performance, and the need for such features
8. Protection of fuel storage pools against tornadoes
9. Protection against fuel handling accidents
10. Testing of steam-line isolation valves
11. R and D on fuel-failure modes in LOCA
12. Provisions with regard to positive moderator coefficients
13. Provisions for in-core instrumentation
14. Provisions to cope with xenon oscillations
15. Possible instabilities in jet-pump BWR's
16. Thermal distortion around jet-pump support structure (leading to leakage which detracts from LPCI flooding capability)
17. Provisions for inspectability
18. Flywheels in containment
19. Fuel damage limits as function of burnup and rating
20. Development of criteria and requirements for instrumentation and test results on containment as at Ginna.
21. Development of radically improved ECCS, as at Indian Point 2 and Dresden 3
22. Reservations on acceptable power level, as at Brown's Ferry and Diablo Canyon.

4. What is the interpretation of "principal design criteria" and "essential elements of the preliminary design" as used as Page 1, item 4 of the attachment which proposes a new paragraph to 50.2? How and when will this interpretation be defined? Would it not be useful to illustrate this by trying it out on the next few construction permit reviews? Should this be done quickly to try out the proposed amendments before publication for comment (as was done with the General Reactor Design Criteria)?

Is the proposed list of structures, systems and components intended to include all items required to be covered?

5. What is meant by "the design bases for protection against earthquakes, etc."? Are the design approach, the acceptable stress limits, etc., covered?

6. If an adequate detailed interpretation of "principal architectural and engineering criteria," as it would be used, is lacking, how is this to be obtained? Has the Commission considered the possibility that specific construction permit reviews will incur delays while this is being worked out?

7. It appears that a major step away from the "two-step" review process toward a "one-step" process (with a review of lesser magnitude at the operating license stage) is intended. Is this correct? Has the Commission accepted the possibility that additional information may be required at the construction permit stage and that delays may be incurred?

8. With regard to proposed new paragraph 50.109, to whom would the Regulatory Staff have the "burden of showing such action will provide appreciable additional protection?" If to a hearing board, would a separate hearing be required for each reactor, assuming a common failing was discovered in several plants? If so, how would one get uniformity of decisions from diverse hearing-boards?

Since the applicant (as the operator) has ultimate responsibility for the protection of the health and safety of the public, should it not be his responsibility to assess the significance of knowledge and experience gained since the granting of a construction permit, as well as any failures of the actual, as-built facility to meet the original architectural and engineering criteria or the originally proposed product quality, and should he not have the burden of showing that further steps on his part are not warranted to ameliorate any adverse trends? (This is not necessarily instead of the burden placed on the regulatory staff, but a separate responsibility placed on the applicant.) If it is intended that the applicant accept this responsibility, why not so state in writing?

9. What falls under the term backfitting? Is a change in in-service inspection requirements after issuance of an operating license "back-fitting"? Would a periodic comprehensive (ten-year) review be backfitting? Could the Regulatory Staff provide diverse examples illustrating where they believe they could have satisfactorily met "the burden of proof" requirement?

10. With regard to the proposed single-stage review for an operating license, how would the Regulatory Staff have handled Oyster Creek, San Onofre and Connecticut Yankee in this fashion (with regard to such things as radiolysis, emergency diesels, ECCS, in-service inspection, continued confirmation of pressure-vessel integrity, etc.)? What would the Regulatory Staff do with the first jet-pump BWR? The first of the Brown's Ferry class or the Diablo Canyon class? Fort St. Vrain? The next LMFBR?

Is there a possibility of considerable delay at the Operating License Stage if everything must be resolved or neatly catalogued before criticality of the reactor? Is it likely that a multi-step process (like SEFOR) will actually be used?

If differences occur between the applicant and the Regulatory Staff during the Operating License review, or after a plant is in service, and if an ASLB hearing is required, are the proposed procedures compatible with both the prevention of excessive reactor down-time (or delayed startup) and the protection of the health and safety of the public?

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December 1975

TASK FORCE REPORT
ON
STAFF REVIEW OF POST-CP DESIGN CHANGES

Office of Nuclear Reactor Regulation
Division of Reactor Licensing

Submitted by:
Karl Kniel, Chairman
Task Force to R.G. Boyd
on 12/23/75.

DUPLICATE DOCUMENT
Entire document previously
entered into system under:
ANO 8005200851
No. of pages: 42

Enclosure 3

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

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July 5, 1977

Note To: E. G. Case

THRU: R. S. Boyd *RSB*

PROPOSED REGULATORY GUIDE ON POST-CP CHANGES

Bill Kane and I have prepared a REG GUIDE on post-CP changes in accordance with your suggestions several weeks ago. Can we proceed to the RRRC or would you prefer an alternative course of proceeding?

R. C. DeYoung
R. C. DeYoung

cc: W. Kane

DUPLICATE DOCUMENT

Entire document previously
entered into system under:

ANO 8005200852

No. of pages: 17

REGULATORY GUIDE 1.XXX

PROCESSING OF LIGHT-WATER REACTOR FACILITY CHANGES
SUBSEQUENT TO THE ISSUANCE OF THE CONSTRUCTION PERMIT

A. INTRODUCTION

Section 50.35, "Issuance of construction permits," of 10 CFR Part 50, "Licensing of Production and Utilization Facilities," states in part that "When an applicant has not supplied initially all of the technical information required to complete the application and support the issuance of a construction permit which approves all design features, the Commission may issue a construction permit if the Commission finds that (1) the applicant has described the proposed design of the facility, including, but not limited to, the principal architectural and engineering criteria for the design and has identified the major features or components incorporated therein for the protection of the health and safety of the public;".

Section 50.34, "Contents of applications; technical information," of 10 CFR Part 50, states in part that the minimum information to be included shall consist of "an analysis and evaluation of the major structures, systems, and components of the facility which bear significantly on the acceptability of the site" and "the principal design criteria for the facility."

Each construction permit issued by the Commission states in part that "This construction permit authorizes the applicant to construct the