December 19, 1973 SECY-R-74-95

INFORMATION REPORT

For: The Commissioners

Subject: REGULATORY PROGRAM FOR MINIMIZING AND CONTROLLING RATCHETING

Ratcheting is the third point discussed as internal improvements that can be made to the Regulatory process in SECY-R-74-94, "Reducing Reactor Licensing Time" (see Appendix A, "Measures to Improve Schedules"). The enclosed report discusses the program for minimizing and controlling ratcheting and can be used as a background paper for SECY-R-74-94.

Briefly, the program to control ratcheting involves (1) the present Regulatory organization (Technical Review and Reactor Projects groups in Licensing), (2) development of an improved guide to the format and content of Safety Analysis Reports, (3) use of Regulatory Guides as a rapid means for promulgating new staff positions to the nuclear industry, (4) the development of comprehensive standard review plans for each of the technical disciplines in the Technical Review group, (5) a practice whereby any significant ratcheting decision that develops during the review of a case is escalated to Licensing management, and (6) the formation of an in-house Regulatory committee to review significant ratcheting decisions and to decide whether, when, and for what plants ratcheting is required.

Consistent with present practice, and interwoven in this process, applicants may challenge the ratcheting decisions and are encouraged to meet with the Director of Licensing for further consideration of these matters.

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Director of Regulation

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Enclosure:
Program for Controlling Ratcheting

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REGULATORY PROGRAM FOR

MINIMIZING AND CONTROLLING RATCHETING

Over the past several years, the Regulatory staff has frequently been accused of causing undue delay in the design and construction of nuclear power plants by apparently random imposition of new safety requirements. These changing safety requirements were generally applied to new plant reviews as they evolved ("forefit") and, if considered necessary for safety, were also applied to plants whose reviews were already completed ("backfit"). This practice resulted in additional, unplanned manpower being expended in the design and construction of plants and resultant delay was alleged or encountered in the granting of some CP's and OL's. The term coined by the nuclear industry for this process of changing Regulatory requirements is "ratcheting."

Ratcheting can occur during various phases of the licensing process with a resulting broad spectrum of impact that ranges from extremely high to minimal. Changes in Regulatory requirements that are judged by the staff to be of such safety significance as to require immediate implementation are likely to be of the former extreme, particularly when they arise during the final stages of construction of a plant. A delay in the fuel loading date may result. Changes in Regulatory

requirements that occur prior to preparation of a particular PS/ are usually of the latter extreme. While these changes are not looked upon with favor by the nuclear industry, they can usually be accommodated in the plant design with minimum perturbation. Industry spokesman have often stated that changes in Regulatory requirements can be tolerated providing these requirements are fixed at the time plant design is initiated. It is the changes that occur subsequent to this milestone that cause difficulties of increasing magnitude as the fuel loading date approaches.

In assessing the ratcheting process, it is important to observe that the design, construction, and licensing of nuclear power plants are relatively short-lived activities with little more than 15 years of development and experience available. Thus, it must be expected that a new industry with new and varied power plant designs that depend upon an evolving technology will result in the development of increasingly sophisticated design and analysis techniques and the simultaneous evolution of associated safety requirements. Although many safety requirements for the design of nuclear power plants are already identified and well defined as evidenced by the availability of numerous regulations, regulatory guides, codes, and standards, some of these requirements are general in nature and, therefore, are subject to additions, changes, and interpretations as more experience is gained. The result is that

new or modified codifications are evolved, and decisions regarding their implementation on applications that are new or in process or on operating plants must be made. These new requirements are generally developed over periods of time encompassing months to years so that most applicants and licensees are aware of them well before the need for implementation.

Another factor that enhances the need for ratcheting is the lack of sufficient design information at the CP stage of review. In the interest of speeding the issuance of CPs, the Regulatory staff in the past has often based its acceptance of a design upon the availability of conceptual design information and/or an applicant's commitment to meet certain criteria in lieu of the more desirable preliminary design level of information. The lack of definitive designs often results in misunderstandings and unacceptable designs that require modifications during the final OL stage of review which, as previously mentioned, can produce high impacts on the construction schedule. It is expected that this source of ratcheting will be virtually eliminated by the requirement of preliminary design information and a more complete review under standardization.

An additional aspect of the licensing process that the nuclear industry claims promotes ratcheting is the degree of conservatism demanded by the Regulatory staff in determining the acceptability of a design. Again, due to the evolving nature of the technology, the lack of operational

experience, the lack of sufficient test data, and other ad hoc considerations, the staff may not have the degree of confidence in a design to justify the margin of safety that an applicant feels is adequate. These are areas where honest differences of opinion exist between the regulated and the regulators, and tough, unpopular decisions often result. In many cases, the regulator has no choice but to cause a redesign and possibly a "tear down and reconstruct" activity in the field, depending upon the stage of the review process.

As indicated above, a number of compelling reasons exist for the continued occurrence of the ratcheting process. Also, the problems associated with ratcheting have been recognized by the Regulatory staff management for sometime, and a number of important steps have already been undertaken in an attempt to minimize the effect of this process. These steps consist of the following:

1. Staff reorganization
2. Guide to the format and content of safety analysis reports
3. Regulatory Guides
4. Standard review plan
5. Chain of command - levels of management
6. Establishment of a new decision-making committee.

Each of these steps is discussed in more detail below.

In early 1972 the Regulatory staff was reorganized with one of the purposes being to improve the safety review process by dividing the total review effort along technical disciplinary lines and assigning the review of these areas for each plant to the same organizational unit. One of the principal benefits of the reorganization was to increase the capability for identifying new safety requirements earlier in the review process with a consequent reduction in the effects of ratcheting.

A guide to the format and content of safety analysis reports was developed and issued to define more precisely the information concerning plant design and plant siting that applicants must present for AEC review. To further improve the SARs submitted for review, this guide was used as a basis for judging the completeness of the applicant's submittal prior to docketing. Revision 1 of this document was issued in October 1972. This document is being updated presently on an interim basis by means of information guides, with a complete reissuance planned for late 1974.

As suggested additions, changes, and interpretations of present criteria arise, the staff responsibility is to pursue, with appropriate assistance from industry representatives, a resolution to the new issue. When an

acceptable resolution has been developed, the staff position is codified and announced to the nuclear industry by means of a regulatory guide. The regulatory guide series provides a rapid means for promulgating new staff positions to the nuclear industry.

Standard review plans are being developed for each of the technical organizational units involved in the safety review of nuclear plants for issuance by July 1, 1974. These review plans will identify and define, as precisely as possible, all of the safety requirements and criteria for acceptance that the staff considers essential for the safety of nuclear power plants. These plans are expected to provide a significant improvement in the efficiency of the licensing process.

Under the present procedures, the Regulatory staff has developed a system of "highest needed level" of management decision and a system of checks and balances in determining what plant requirements should or should not be ratcheted. This systematic approach to ratcheting requires the Branch Chief in Licensing's Technical Review group to escalate any significant ratchet decision that develops during the review of a project to the Assistant Director level, and depending on the impact of the specific design change in question,

to the Deputy Director level. The high-impact decisions are, in turn, made by the Director o Licensing, and may in some cases be referred to the Director of Regulation, or the Commission itself. Another aspect of this process is the attempt by the staff to determine new requirements and the need for their implementation as early in the CP and OL review process as possible. The goal is to identify such requirements by the time of the "first round" request for additional information. These requirements are targeted to be specified to the applicants at ` ast by the time of the "second round" request for information. At this stage of review the staff communicates its positions on additional safety requirements developed as a result of the review to that date.

The need to make ratcheting decisions for specific projects triggers a chain response similar to that described above within Licensing's Reactor Projects group. The interaction of both groups on these kinds of problems provides a system of checks and balances so that unilateral decisions on ratcheting do not occur.

To further monitor the process that causes ratcheting, the Directorate of Licensing informs each applicant, at the time of docketing of the application, that if during the course of the review there is a need

to bring to the attention of the Director of Licensing matters which involve a disagreement with a staff position relating to their application, whether they consider it ratcheting or not, they should feel free to do so. A number of applicants have utilized this procedure in past licensing reviews.

These individual aspects of the staff's attempt to control ratcheting, combined with a maturation of the evolution of safety requirements, have enhanced the efficiency of the licensing process. Presently, ratcheting is not an extensive a problem it has been in previous years. However, the staff is taking further steps to regulate more formally the ratcheting process. This formal process incorporates the aspects of control discussed previously, and in addition creates a permanent management committee with the responsibility for assessing the need for particular proposed new safety requirements and for making specific decisions regarding the imposition of these requirements.

The permanent management committee will consist of senior management representatives of Technical Review and Reactor Projects, as well as representatives from Regulatory Standards and Regulatory Operations. Following review of the particular situation, the committee will decide whether, when, and for what plants the particular requirements should

be imposed. The decisions of the Committee and the basis for the decision reached would be documented. If the decision is to implement the new safety requirement, applicants and licensees will be appropriately notified. The new requirement would then be factored into the standard format and content document to assure industry awareness for subsequent applications.

With this new program in effect, ratcheting would be controlled in the following way. First, the updated content and format document will inform utilities of the information requirements for their applications. The standard review plans will provide a management-approved statement of: (1) the areas for which individual reviewers are responsible, (2) depth of review expected, (3) the identification of other review group interfaces, and (4) the bases for acceptance. With this information and guidance any new Regulatory requirements, including backfitting, can be readily identified. The use of the standard review plans as a basic tool in the control of ratcheting is one of the major aspects of this program.

Once identified, the question of applicability of particular requirements for specific plants proceeds up the Licensing management chains. If the imposition of a requirement is recommended by the Technical Review and/or Reactor Projects groups, the question of the imposition is referred to the "ratcheting" committee for a final decision.

Consistent with present practice and interwoven in this process, applicants may challenge the ratcheting decisions and are encouraged to meet with the Director of Licensing for further consideration.

It should be noted that as more experience is gained in the various design and operational aspects of nuclear power plants, and with these procedures, ratcheting can be minimized and controlled, but will not be completely eliminated. The staff intent is to establish a system that provides suitable control over this necessary evolution of safety requirements. This program, however, by itself will impose sufficient discipline to make ratcheting a proper part of the licensing process. In addition, standardization of nuclear plants promises to assist considerably by means of more complete reviews and by the fixing of designs for established periods of time. The procedures developed to control ratcheting will be an important part of the Regulatory staff's standardization review process.