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REPORT TO THE ATOMIC ENERGY COMMISSION  
BY THE REGULATORY REVIEW PANEL

July 14, 1965

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UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

July 14, 1965

Hon. Glenn T. Seaborg, Chairman  
U. S. Atomic Energy Commission  
Washington, D. C.

Dear Chairman Seaborg:

The Regulatory Review Panel which the Commission appointed on January 25, 1965, submits its report herewith. Our deliberations have resulted in agreement on a number of recommendations which we are presenting for the Commission's consideration. As indicated in the report, these recommendations are mutually dependent, and it is their cumulative effect which the Panel hopes will result in achieving substantial improvements in the regulatory process.

Our work has been greatly facilitated by the valuable assistance which we have received from the various individuals and groups who are mentioned more specifically in the appendix of the report. We appreciate the opportunity which has been afforded to bring our collective judgment to bear on this important area of the Commission's activities, and we trust that our suggestions will prove helpful.

Respectfully yours,

*Manson Benedict*  
Manson Benedict

*James F. Young*  
James F. Young

*Roger J. Coe*  
Roger J. Coe

*Walter H. Zinn*  
Walter H. Zinn

*Emerson Jones*  
Emerson Jones

*William Mitchell*  
William Mitchell  
Chairman

*C. Rogers McCullough*  
C. Rogers McCullough

*AC*

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I. INTRODUCTION

A. Appointment and Charter of the Panel

On January 25, 1965, Atomic Energy Commission Chairman Seaborg announced the Commission's appointment of a seven-member Regulatory Review Panel. The Panel consisted of:

Dr. Manson Benedict  
Head, Department of Nuclear  
Engineering  
Massachusetts Institute of  
Technology  
Cambridge, Massachusetts

Mr. Roger J. Coe  
Vice President  
Yankee Atomic Electric Company  
Boston, Massachusetts

Dr. Emerson Jones  
President  
Technical Management, Inc.  
Lincoln, Nebraska

Dr. C. Rogers McCullough  
Senior Vice President  
Nuclear Utility Services  
Washington, D. C.

Mr. James F. Young, Vice President  
General Manager--Atomic Products  
Division  
General Electric Company  
San Jose, California

Dr. Walter H. Zinn  
Vice President  
Combustion Engineering  
Windsor, Connecticut

Mr. William Mitchell (Chairman)  
Attorney and former General  
Counsel of the Commission  
Washington, D. C.

Roger H. Jones, Assistant to the Director of the Commission's Division of Reactor Licensing, has served as the secretary and staff assistant to the Panel. In this capacity Mr. Jones was relieved from his regular duties as a member of the AEC staff. The Panel wishes at this point to express its appreciation for the invaluable assistance which Mr. Jones has contributed.

The Panel has conducted its study and offers its recommendations under a charter encompassing two principal areas of inquiry. The first of these two areas is concerned with overall policies applied and being developed to administer the Commission's licensing and regulatory responsibilities with respect to nuclear facilities. The Panel was requested to review the several programs established by the Director of Regulation for studying such broad policy-procedural issues as technical specifications for reactor operation, construction permit procedures, and the Rules of Practice, 10 CFR Part 2. The Panel understood that the objectives of this request were an appraisal of the general approach to the safety evaluation effort which currently characterizes the licensing and regulation of reactors, and recommendations leading to the more expeditious handling of these matters.

The second principal area of inquiry outlined for the Panel is concerned with the decision making process in the AEC regulatory program, with emphasis upon the respective roles played by the regulatory staff, the Advisory Committee on Reactor Safeguards, the Atomic Safety and Licensing Boards, and the Commission itself. This part of the Panel's charter emphasized review of the experience gained since the 1962 amendments to the Atomic Energy Act, and it was suggested that the Panel should attempt to identify possible improvements in the decision making process under the existing legislation, rather than to suggest major new legislative amendments. It was

understood, however, that the Panel might discover a need for clarifying or perfecting legislative amendments and that recommendations in this respect might be offered.

At the outset, a target date of late June, 1965, was established for the fulfillment of this dual objective. The limits of the Panel's study have, of necessity, been narrowed with an aim toward focusing effort on major problems and making the best utilization of the time available. The resulting scope of this report is that which is described below. The appendix, found at page 69, outlines the chronological development of the Panel's deliberations during the period February-June, 1965, and the briefings received from the various groups and individuals within and external to the Atomic Energy Commission staff. The Panel takes this opportunity to express its appreciation for the splendid cooperation and assistance, individual and collective, of the persons listed in the appendix.

#### B. Scope of this Report

The primary emphasis of this report is on the process for licensing and regulating civilian power and test reactors. No consideration is given to production reactors, military reactors, or reactors for space propulsion, nor is consideration given to reactors which are Commission-owned and operated at Commission sites. The licensing and regulation of radioisotopes or special nuclear or

source material is not considered, nor is the transportation of nuclear materials or the handling of radioactive wastes.

The Panel's attention was focused on civilian power and test reactors because it was informed that it was for this class of reactor that the principal regulatory problems were developing. Research reactors, because of the lower public hazard involved, present less difficulty, and they were studied by the Panel only insofar as power and test reactor problems and licensing procedures apply to them. The Panel has noted several recent instances where actions of different regulatory groups dealing with civilian reactors were either contradictory or undesirably delayed. As the number of civilian reactors increases in accordance with present expectations, these difficulties with the regulatory procedures could multiply unless changes are made.

Most of the recommendations contained in this report are addressed to the licensing procedures and practices at the construction permit stage. This is a result of the Panel's feeling that in the three-years time since the Atomic Energy Act was amended, enough experience has been accumulated to indicate that problems are developing in connection with the licensing process at that stage, whereas there is, as yet, very little experience to indicate or define problems that may develop at the operating license stage.

C. Principal Problems Encountered

The Review Panel's investigation of the reactor licensing process disclosed four major problems. They are:

1. The length of the licensing process.

The shortest period between the time an applicant decides to proceed with a given project and the time of issuance of a construction permit for the project has been about one year. Nearly four months were required for preparation by the applicant of the Preliminary Hazards Report, four months for review by the Regulatory Divisions and the ACRS, and four and one-half months for the procedures of the public hearing and for issuance of the permit. In other instances, substantially more time was required at each step, but even one year places a burden upon the applicant and the industry. Selection of nuclear power for generation expansion must now be made one year earlier than a fossil-fired power selection. This diminishes the competitive advantage of concurrent selection, and often nuclear power is "traded off" against a subsequent choice of a fossil-fired plant. In addition, the extra time to make a nuclear addition adds inevitably to expense that penalizes the economic position of nuclear power. A shortening of the time required between decision to proceed and issuance of a construction permit

to approximately six months, combined with industry efforts to reduce the construction period, would be an important step in encouraging the growth of the nuclear industry. The Panel believes the recommendations herein will facilitate such a reduction, and at the same time actually improve the protection of public health and safety.

2. The indefinite nature of the licensing process.

Only a small number of power reactors have been licensed, so it is not surprising that the licensing process has not yet matured in its information requirements, in its definition of the roles of respective administrative mechanisms, in its public understanding and public acceptance, and in its predictability. Yet in all of these respects there is need for improvement so that applicants can have assurance of licensability of a proposed plant and can make plans to employ nuclear power with confidence of meeting their timetable. Recent events in the Oyster Creek, Nine Mile Point, Bodega, and Malibu cases underscore the need to clarify the licensing process to the benefit of the industry and the public.

Suppliers, too, are faced with indefiniteness in the information required at the time of a construction permit application, in the objectives that engineered safeguards should meet, and in responsibility for design decision-making in the course of

safety reviews. The areas of inquiry have continuously evolved and expanded in many instances covering in detail background that has been previously reviewed. In other instances, much that is not relevant to safety and safeguards is both documented and reviewed. Clarification in this area will also serve the third problem area.

3. The increase in regulatory manpower requirements.

As the number of reactors subjected to licensing and regulation increases, there will be a proportionate increase in the size of the regulatory staff unless the regulatory process can be simplified and advantage taken of the standardization now occurring in reactors. If the size of the regulatory staff were to grow in direct proportion to the number of reactors, this staff would soon number thousands of individuals.

So large an increase in regulatory staff need not take place. The trend in power reactors is toward replication of designs and standardization of components. This should lead to standardization and simplification of the safety review process and reduction in the growth rate of the regulatory staff concerned with reactor licensing. The Panel believes that purposeful steps can be taken by the Commission to simplify this aspect of the regulatory process while still preserving the thoroughness and care that are essential to protect the public.

there appears to be a multiplicity of actions that might be taken which collectively serve to meet the problems noted. Central to these, however, is the resolution of the roles of the Atomic Safety and Licensing Board, the Division of Reactor Licensing, and the ACRS. The Review Panel therefore devoted considerable attention to the alternatives available, their feasibility, and their practicability in serving the objectives of the licensing process.

It is recognized that relatively little experience has been gained in applying the present licensing procedures. Accordingly, first and primary emphasis was given to determining means whereby the administration of the present mechanisms could be improved in solving the problems outlined, particularly the roles of the reviewing bodies. In a few instances, desirable modifications that would go beyond mere change in the rules and regulations and might require an amendment to the law were considered.



A similar situation exists in the area of Compliance. The present tendency is for the size of the staff concerned with Compliance to increase in direct proportion to the number of reactors constructed. As the number of reactors increases it will be necessary also to simplify Compliance inspection procedures without sacrificing protection of the public.

4. The multiplicity of technical reviews in the licensing process.

At the present time, technical reviews and judgments on the safety merits of a particular reactor installation are being made at five different points in the licensing process: (1) the applicant and his supplier's internal reviews; (2) the Division of Reactor Licensing review; (3) the ACRS mandatory review; (4) the Atomic Safety and Licensing Board hearings; and (5) the Commissioners' review.

This adds to the time requirements, the manpower requirements, and the indefiniteness of the process. And it offers promise of detracting from the responsibility and attractiveness of the positions in the regulatory staff, to the detriment of maintaining competence and achieving continuity.

All of these problems are of a continuing nature. All will become more significant as the industry meets its predicted growth potential. Yet there appears to be no single or separate steps that are feasible to accommodate each problem. Rather

## II. CONCLUSIONS

As a result of its review of the licensing and regulatory operations of the AEC, the Panel has formed an opinion of the effectiveness of the process and has made an estimate of how well the process might function in the future. In order to permit the recommendations which follow to be read in the proper context, the general conclusions resulting from the Panel's review are presented first and set forth in the following numbered paragraphs.

1. The Panel has every confidence that the public interest is being protected by the regulatory process that now exists. All effort which could be reasonably expected is being exerted to insure that there is no undue hazard to the public health and safety, while at the same time no crippling obstacle is placed in the way of the development of an industry involving highly technical and complex new technology.
2. The regulatory process rests on three principal groups established by Congress and the AEC; namely, the Director of Regulation and his staff (collectively referred to as the regulatory staff), the Advisory Committee on Reactor Safeguards, and the Atomic Safety and Licensing Boards. The Panel finds that these three groups should be retained but that changes should be made in their functions and procedures. As enumerated under "Principal Problems Encountered", there are areas where the operation of the regulatory

process should be improved. In the Panel's judgment, the recommendations which follow, if implemented, would go a long way toward reducing these problems to manageable proportions.

3. On the whole, in the few years it has been in existence, the regulatory staff has done a remarkable job in organizing its work and in developing competence in the technology of reactor safety. The Director of Regulation has been successful in recruiting persons of a high level of technical skill and experience and also has been successful in establishing an esprit de corps which is necessary to attract additional competent scientists and engineers. With the increased workload anticipated in the future and the need for an enlarged staff, the matter of quality of the staff is of real importance. The contributions the staff has made to techniques of safety analysis and reactor technology and the opportunity to make further contributions doubtless contribute to developing a climate attractive to professional people. It is necessary that this climate continue into the future. The Panel believes that, increasingly, the work of the staff will be the principal component in the discharge of AEC safety responsibilities, and this premise is inherent in and vital to several of the recommendations.

4. The ACRS is the repository of the accumulated wisdom of this country concerning reactor safety. It has a remarkable record of maintaining continuity of membership and has a firmly established tradition which ensures a broadly based inquiry into the matters referred to it. Its membership is made up of senior professional people who have other responsible positions. Its major contribution is and should be in the fundamental areas of safety. As the nuclear industry expands, means must be found to avoid overloading the Committee with more or less routine safety questions. Due to the nature of its membership and method of operation, the ACRS has a highly beneficial influence on the staff which goes beyond purely technical matters. There are no means apparent to the Panel which better assure that the regulatory staff will maintain its competence than the critical inspection of the work of the staff by the ACRS.
5. As stated earlier, reactor safety is both highly technical and complex. Nevertheless, as a matter of policy established by the Congress, the public has the right to receive an explanation of the safety situation for any proposed civilian reactor and has the right to make such representations as are proper. The public hearing before a board, which includes members with technical backgrounds, is an effective means of obtaining such

public participation. Written reports alone are much less effective. While public hearings, even when the board includes members with technical backgrounds, cannot comprise a full-blown independent safety review, they can accomplish several very important things. The most significant of these are the following:

- a. The public gains a firsthand impression of the applicant's character and competence and his whole approach to safety and siting of nuclear facilities.
- b. The public is shown that the AEC has been diligent in protecting the public's interest. Especially, the hearing can make it unmistakably clear that the staff and the ACRS have only the public's interest in mind as they conduct their reviews, inquiries, and inspections.
- c. The public receives a convincing demonstration that the regulatory process includes a thorough and competent review of the applicant's proposal.
- d. A factual record is developed in public, and on that record the board adjudicates matters in dispute between the applicant and any person who has intervened.
- e. The public is provided a forum for recording its views, both pro and con, on the applicant's proposal.

6. As the number of applications for licenses for civilian reactors increases, the Panel fears that the present method of functioning of the three groups described above will prove too cumbersome and the need for competent staff and the expense may grow to unreasonable proportions. Clarification of the function of the groups is needed while the basic structure which is established by law and by AEC regulation remains intact. A clarification of function involves establishing procedures to the end that time and effort will be conserved. These procedures must, insofar as possible, limit or exclude extraneous matters which really have nothing to do with risk to the public health and safety. The procedures must ensure that the review of the application is thorough and highly competent but must recognize that a multiplicity of reviews is not the way to achieve maximum protection of the public. The current trend seems to be toward a multiplicity of reviews. This must be reversed and the recommendations in this report lead in this direction. Clarifying the functions of each of the groups by new and more sharply defined procedures should make more definite the time interval from the applicant's decision to proceed to the rendering of a decision, and should make this interval shorter than it is now.
7. The Panel is not under any illusion that changes in procedures and the necessary changes in Commission regulations or frames

of reference for these groups alone can accomplish such results. A key point will be the establishment of criteria and standards for the technical features of an installation which are the minimum which must be met in order to be acceptable as a licensed facility. Development of such criteria and standards is a major effort requiring skilled staff devoting full time and requiring help and cooperation from all segments of the industry. The effort should start with those reactors which are being proposed for commercial installations in the greatest numbers. Once established, such criteria and standards would conserve time as mentioned above and would be effective in permitting the staff and the ACRS to concentrate effort on new safety problems or on the safety problems of new types of reactors. In its testimony of June 22, 1965, before the Joint Committee on Atomic Energy, the Commission announced its intention to proceed in this direction.

8. The Panel does not find it possible in its recommendations to quote the precise language which would be changed in the present AEC regulations or frames of reference of the several groups to bring about the clarification of function inherent in the Panel's recommendations. The AEC staff will have to undertake the task of actual modification of the appropriate documents if these

recommendations are to be implemented. In addition, it must be pointed out that due to the complex nature of the situation, the recommendations are mutually dependent, and it is their cumulative effect which the Panel hopes will result in achieving substantial improvements.

9. The Panel has one additional conclusion which it did not believe should be incorporated in a recommendation at this time but which could be the basis for action in the future. It concerns the present requirement that a proposed site and reactor must be presented by an applicant as a combined package. As the industry matures, and as the regulatory process gains experience, it should be possible to develop a procedure whereby a site is approved for nuclear installations of a certain total capacity without requiring a specific design, a specific vendor, and the details of proposed operation now required. Utility companies must plan their system expansion including station locations with a lead time much more than the approximately four years it takes to order and commission a new generating plant. Also, the problem of finding suitable sites for any generating stations, much less nuclear reactor stations, is becoming increasingly difficult in much of the country. It appears that it would not be unreasonable for the utility industry to expect the regulatory process to provide a method for approval of a site contingent on an



understanding that the reactors ultimately to be built will conform to the published safety criteria and standards and will be of a type found acceptable for sites of similar characteristics.

A procedure similar to the above is now provided by informal reviews by the staff on proposed locations. The Panel has some doubts that the informal procedure would continue to have value after the first instance of controversy following a misunderstanding regarding the significance of the informal review. For this reason, the Panel believes a formal procedure for site approval as described above may become necessary in the future.

### III. RECOMMENDATIONS

The findings of the Regulatory Review Panel have to a remarkable degree borne out the foresight of the Joint Committee on Atomic Energy expressed in 1962 at the time of the regulatory amendments to the Atomic Energy Act. The Panel believes that the improvements suggested here are compatible with the spirit of flexibility advocated by the Joint Committee, in its conception of the Atomic Safety and Licensing Board as an experiment in new administrative law techniques, and in its desire to permit the Advisory Committee on Reactor Safeguards to give full attention to safety problems of broad importance. \*

While the recommendations are presented separately, they are closely related. As indicated in the conclusions, it is the cumulative effect of the suggested changes which the Panel expects will result in substantial improvements.

#### A. Primary Role of the Regulatory Staff

##### RECOMMENDATION

In the discharge of the Commission's regulatory responsibilities, the primary element in the safety review of every reactor project should be the analysis conducted by the staff of the Director of

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\* "Amendments to the Atomic Energy Act of 1954," H. R. Report 1966, 87th Congress, 2nd Session, July 5, 1962.

Regulation. This should continue to be the most thorough and complete analysis of safety conducted at any stage of the regulatory process and the only one required of every facility. The safety review staff of the Director of Regulation should continue to be made up of a sufficient number of individuals of sufficient maturity, experience, and competence to do this work expeditiously, thoroughly, and competently. The Commission should emphasize that this group is the public's primary protection in reactor safety matters, that its review of the safety of a reactor project is the most complete, thorough and objective review conducted during the regulatory process, and that its review is subject to the checks and balances provided by the ACRS and the Atomic Safety and Licensing Boards as described below.

#### DISCUSSION

In the early days of reactor licensing the number of projects to be considered simultaneously was small, each had novel characteristics and all were different. Under such circumstances it was both desirable and feasible to make the primary element in the safety review process the analysis conducted by the Advisory Committee on Reactor Safeguards, consisting of some of the leading U. S. reactor experts, serving part-time.

But circumstances are changing. The number of projects submitted for licensing has increased greatly and will continue to

increase. Many projects propose the use of reactors which may be termed conventional because their characteristics have become well-known through operation in earlier projects. Criteria for judging the safety of conventional reactors can be developed and procedures for evaluating their safety can be systematized.

At the same time, the number of individuals with reactor experience has increased greatly, giving the AEC a substantial population from which to fill positions on its regulatory staff. In fact, the regulatory staff now also includes some of the country's leading experts in reactor safety. The regulatory staff has demonstrated that it is capable of conducting thorough reviews of reactor projects. The concern once felt that the employees of the Commission dealing with regulation would not be able to divorce their thinking from the promotional and developmental objectives of the Commission is believed by the Panel to be wholly unfounded. At the present time the regulatory staff is fully capable of becoming the primary element in the review of reactor safety.

It is for these reasons that the Panel believes that the regulatory staff should be given the primary role in analyzing the safety of every reactor project submitted for licensing. The ACRS should be free to review the findings of the staff at will and should be asked to do so in novel cases; the regular, routine, thorough review of all reactor projects submitted for licensing should be performed

by the regulatory staff. As the number of reactors submitted for licensing increases, an increase in the size of the regulatory staff will be necessary to accommodate the additional workload.

Every effort should be made to demonstrate the high caliber of the regulatory staff and the fact that it does assure the protection of the public's interest. The testimony of the staff at the public hearing provides an excellent opportunity to display the thoroughness of its review of reactor safety and its concern for the public.

B. Role of Advisory Committee on Reactor Safeguards

RECOMMENDATION

A part-time, statutory, Advisory Committee on Reactor Safeguards made up of exceptionally well-qualified men who collectively have competence in disciplines bearing on reactor safety should be a permanent element in the AEC's regulatory system. As the regulatory workload of the Commission increases and as the primary responsibility for safety review is placed upon an increasingly competent staff, more of this Committee's attention should be directed to novel safety problems and new types of reactors, with correspondingly less attention given to routine safety review of more conventional types of reactors. The ACRS should also devote more time than it has in the past to developing criteria, standards and general principles for safety review. The statutory requirement

that the ACRS review and report on all applications for a license under Sections 103 and 104 of the Atomic Energy Act should be modified. The ACRS should be informed of each new license application, and should be privileged to undertake a review on its own initiative if it feels this to be desirable. The Director of Regulation should be free to request the ACRS to review the safety of any complete reactor project or any particular aspect of a project, but the ACRS should decide for itself whether or not to review, and in the case of a refusal of the Director of Regulation's request, should provide a statement in explanation of its action. The ACRS should be permitted and encouraged to decline to review the safety of a reactor-site combination very similar to ones already judged to be safe and proved to be so by operating experience. The talents and time of this uniquely qualified group should be reserved for the more difficult and novel reactor safety problems and not dissipated in repeating the work of the regulatory staff in routine review of the safety of conventional reactor installations.

#### DISCUSSION

The Advisory Committee on Reactor Safeguards has been an essential element in enabling the Commission to discharge its responsibilities in protecting the health and safety of the public. This Committee has always been made up of some of the country's leading experts in reactor physics, nuclear instrumentation, mechanical

engineering, meteorology, sanitary engineering and the other professions with important contributions to make to reactor safety. Its work has been highly regarded and its recommendations have commanded respect.

When this Committee was first formed, the number of specific reactor projects to be reviewed for safety was so small that this part-time group was able to handle both the review of particular reactor projects and general questions of reactor safety. As the number of reactor projects increased, the Commission created a full-time staff to conduct the initial analysis of reactor safety and assemble information regarding each facility in such a way as to facilitate subsequent review by the ACRS. When this regulatory staff was first created, Congress and the Commission both felt that the more experienced Advisory Committee on Reactor Safeguards should review the safety of all power and test reactors submitted for licensing after the regulatory staff had completed its own safety analysis. In the early days of reactor licensing, this dual review of all reactors was essential.

But this situation is changing. The number of reactor projects undergoing review for licensing is increasing rapidly and will continue to increase. The workload imposed by these reactors on the ACRS is so great that this Committee will soon no longer be able to consider general questions of reactor safety or provide

the leadership it should in this field. At the same time, certain types of reactors are becoming standardized and reactor safety problems which once were novel are becoming routine. The safety review staff of the Director of Regulation has gained experience and matured and now includes some of this country's most experienced reactor engineers and leading authorities on reactor safety.

The Panel therefore believes that the time has come to relieve the ACRS of the statutory requirement that it conduct an independent review of all test and power reactors and submit a report on them. For a reactor-site combination very similar to ones already judged to be safe and proved safe in operation, a second safety review by the ACRS following one by the regulatory staff is redundant and should not be required by law. The Director of Regulation should continue to inform the ACRS of every reactor project submitted for licensing and should continue to transmit to the ACRS the applicant's Hazards Summary Report and the regulatory staff's hazards analysis. He or the Commission should be free to request the ACRS to conduct independent reviews of the safety of any complete reactor project or of any particular aspect of a project. But the ACRS should be given discretion to determine whether safety questions referred to it are sufficiently novel or sufficiently important to take its time and attention after thorough analysis has already been made by a competent regulatory staff. Only in this way can the ACRS' workload



be reduced to the point where it can again give the proper share of its attention to general questions of reactor safety and function as an advisory committee instead of a second regulatory staff. The absence of a mandatory review and report by the ACRS would not preclude continuation of the close and informal contact with the staff which currently exists.

Important general questions of reactor safety to which the ACRS should make vital contributions are the development of safety criteria and standards and the procedures for review of reactor safety. As the number of reactors to be licensed increases, it is becoming imperative that progress be made in these areas. The ACRS should continue to play an important role in anticipating safety problems of new types of reactors being developed by the Commission and in guiding research on reactor safety.

C. Coordination Between Regulatory Staff and ACRS

RECOMMENDATION

Every effort should be made to continue the close working relationship between the Regulatory staff and the ACRS which has existed in the past. If it appears that the ACRS and the Regulatory staff are likely to reach different conclusions or make divergent recommendations, the two groups should hold joint meetings and make every effort to reconcile differences. Only after it is clear to

both parties that agreement cannot be reached should divergent reports be issued, simultaneously, and the divergence in views identified.

#### DISCUSSION

In the past, both the Regulatory staff and the ACRS have benefited greatly from the excellent working relationship which has been maintained between the two groups. Exchange of information between them has been free, in informal contacts and in formal meetings. The work schedules of both organizations have been developed in such a way as to minimize delay in safety reviews. This desirable relationship should be preserved.

In one instance, however, the ACRS and the Director of Regulation reached different conclusions about certain features of the reactor and site combination and the desirability of issuing a construction permit. The Panel recognizes that in the normal course of future events the ACRS and the staff may disagree. When this appears probable, before either group issues a public report the two groups should meet together and make every effort to understand each other's position and, if possible, reconcile differences. Only when it becomes clear to both groups that agreement cannot be reached should their two divergent reports be issued. These should be made public at the same time, and with a clear explanation of the nature and reason for their differences.

D. The Construction Permit Stage

D-1, Content of License Applications

RECOMMENDATION

The AEC should define more precisely and realistically the scope of information to be supplied by the applicant at the construction permit stage. It would be desirable also for the AEC to establish a format for the application and Preliminary Hazards Summary Report to facilitate use by the staff, the ACRS, and the Atomic Safety and Licensing Boards.

DISCUSSION

Because of the rather broad and general definitions set forth in Sections 50.34 and 50.35 of the Commission's regulations on the one hand, and the much too extensive and detailed information called for in the draft AEC Licensing Guide dated August 28, 1962 on the other, confusion exists as to the type and extent of information to be supplied by the applicant for a provisional construction permit in the form of the Preliminary Hazards Summary Report. As a result, there has been a tendency for applicants to submit voluminous documents containing large amounts of descriptive matter and detail not always relevant to the question of public health and safety, making the time required for the applicant to prepare his application undesirably long. The staff review is diluted and diffused by attention to matters not relevant to public health and safety and the

length of time required for their review is extended. The sheer volume and lack of organization of many applications also hampers the Boards in familiarizing themselves with the particular installation as they prepare for the public hearing.

The basic question at the construction permit stage is: Can a reactor of a particular type and power level be constructed and operated at a particular site without undue hazard to the health and safety of the public? To answer this question one must look not only at normal controlled operation of the reactor but much more importantly at the hazards presented to the public in various abnormal and accident situations. For this reason, the safety analysis which is made at the construction permit stage is concerned primarily with accident situations where significant hazards to the public are a possibility. Accordingly, the information submitted by the applicant must be sufficient to allow analysis of accident situations, including a postulated but not necessarily credible accident of extreme severity which will call for proper functioning of the containment and the engineered safeguards.

While the information which should be supplied by the applicant to permit appropriate analysis and review by the staff and the ACRS will vary from case to case depending on the novelty of the reactor and its design features, taken in conjunction with the site it falls into four general categories as follows:

1. Characteristics of the Reactor. The type of reactor and its general features should be described to the extent necessary (a) to establish that normal operation can be carried out within the limits established by 10 CFR 20, and (b) to identify the consequences of various accidents including the postulated accident upon which the safety evaluation will be based. Examples of matters of particular importance for this purpose are thermal power level, weight of fuel in the core, volumes, temperatures, and pressures of pressurized fluid systems, and maximum fission product inventory expected to occur in operation.

2. Characteristics of Site and Environs. Under this category the applicant should set forth relevant factual data pertaining to the site and environs. Particularly important are meteorology, geology, seismology and population patterns; the plant site should be described and the land area owned or controlled by the applicant should be established.

3. Design Criteria for Containment and Engineered Safeguards. The type of containment to be used (such as single, double, pressure suppression, etc.) should be identified and complete design criteria given including design pressure, leak rate at accident pressure, design for earthquake, protection against accident-generated missiles, and stress levels in relation to yield of load-carrying components under postulated accident conditions in combination with seismic loads. In the case of engineered safeguards, each system should be

described as to function or purpose, minimum performance required, testing to ensure availability, reliability of power supply, relation to and dependence on other engineered safeguard systems, and vulnerability to the effects of the postulated accident in which their functioning is required.

4. Analysis of Accidents. The application should contain identification, description and analysis of possible effects on the public of a wide range of accidents including the postulated accident which is used for evaluating the effectiveness of containment and engineered safeguards. The postulation of this accident, not necessarily credible, usually involves the release of a specified amount of energy and a specified portion of the fission product inventory to the containment atmosphere. The analysis should then go on to show that estimated off-site effects of radioactivity can be kept within the criteria established by 10 CFR 100 under these conditions.

D-2, Scope of Regulatory Staff Review

RECOMMENDATION

The regulatory staff review at the construction permit stage should deal primarily with design features and criteria that are directly related to the health and safety of the public. The report prepared by the regulatory staff, describing the results of its safety review, should be organized in such a way as to facilitate

demonstration at the subsequent hearing that a thorough review has been made of all relevant safety issues.

#### DISCUSSION

If the Commission accepts the preceding recommendation (D-1. Content of License Application-Construction Permit Stage), the ensuing regulatory staff review will be based on the information submitted by the applicant and thus will be directed primarily to design features and criteria of the proposed facility that are relevant to the health and safety of the public. As enumerated in the preceding recommendation, information which should be submitted by the applicant falls into four general categories, as follows:

1. Characteristics of Reactor;
2. Characteristics of Site and Environs;
3. Design Criteria for Containment and Engineered Safeguards;
4. Analysis of Accidents.

If the staff concentrates on the above categories of information, it will avoid dealing with other design details which are not needed at the construction permit stage and for which there will be ample opportunity for review at the operating license stage.

In formulating the report of its analysis and findings, the staff should lean toward brevity and clarity. The report should contain only enough descriptive matter to supplement that submitted by the applicant and should be written with an eye to supporting



the staff position in regard to safety when introduced as evidence at the subsequent public hearing.

D-3, Notices Prior to Hearings

RECOMMENDATION

Upon completion of the regulatory staff review and coordination with the ACRS as required, the Director of Regulation should come to a conclusion whether or not a construction permit should be issued. This conclusion should be announced in the Federal Register in the form of an intention either to issue or deny the requested construction permit, subject to a showing of cause at a public hearing why the announced intention should be set aside. Where practical this same notice should also be used to announce the public hearing.

DISCUSSION

Under the current practice, the position of the Director of Regulation and his staff is strongly implied by the staff hazards analysis which is issued before the hearing, but it is also implied that this position is subject to change in the event that new information is brought out at the hearing. The above recommendation does not seek to destroy this necessary flexibility. Rather, it seeks to redefine one basic purpose of the hearing and the process by which the basic decision to issue or deny a construction permit is reached.



As indicated above, the Panel believes that the regulatory staff must bear the primary responsibility for safety review. After the regulatory staff has conducted a careful and extensive review of the proposed facility, it is the Director of Regulation who must, in the first instance, come to a conclusion that the applicant has or has not met all the standards and requirements of the Atomic Energy Act and the AEC regulations for the issuance of a construction permit. This being so, it is appropriate that the Director announce this conclusion in advance of the hearing at which it will be tested. This statement would not reflect an irrevocable position or a closed mind. The conclusion would always be subject to change if important new information were brought out at a hearing.

In line with the Panel's belief that the multiplicity of safety reviews by separate bodies should be reduced, the recommendation which immediately follows is directed to a redefinition of the function of hearing boards and the purposes of the public hearing. The recommendation made here is closely related.

#### E. Atomic Safety and Licensing Boards

##### E-1, The Function of Atomic Safety and Licensing Boards

#### RECOMMENDATION

The function of the Atomic Safety and Licensing Boards in facility licensing cases should be redefined specifically to recognize that

a board cannot undertake, de novo, an independent technical review of the safety of a proposed facility. Rather, the function of the Board should constitute the following:

- (1) Determination on the record whether or not a proper application containing sufficient technical and other information has been filed by the applicant;
- (2) Determination whether or not a review of the application has been made by the regulatory staff and, in some cases, the ACRS, which is adequate to support either the granting or denying of a construction permit or license;
- (3) Provision of a formal public hearing opportunity for any affected person to show cause why the construction permit or license should or should not be issued in accordance with the previously announced intention of the Director of Regulation; and
- (4) In contested cases, determination as to which of the opposing arguments should prevail.

#### DISCUSSION

This recommendation in conjunction with recommendation D-3 above seeks to redefine the basic purpose of the public hearing. The Panel believes that the public hearing is not a proper instrument for the solution of complex technical problems bearing on reactor safety. Rather, it is an instrument for affirming or setting aside the

proposed action by the Director of Regulation, and recording the orderly process by which his conclusion supporting or rejecting an application has been reached. In addition, in a contested case it provides means for the resolution of controversy concerning complex technical issues highlighted by competent and comprehensive analysis completed prior to the hearing.

In line with discussion elsewhere in this report, the thrust of the above recommendation begins with the premise that the hearing board should be called upon to satisfy itself that protection of the health and safety of the public is afforded by determining that the staff has or has not made a thorough and complete safety analysis supporting the Director of Regulation's intention which is announced before the hearing. The regulatory system itself should be based on the further premise that the staff is competent and well-qualified to make such analyses, and it should reject any premise that the safety of the public depends upon a part-time, three-man board's ability to affirm in detail every procedure and judgment made by the staff in the course of its hazard analysis.

In this context, the Panel has noted a growing tendency for the hearing boards to interpret their general instructions as requiring a third, independent and full technical review of reactor safety issues over and above the comprehensive hazards analyses conducted by the ACRS and the regulatory staff. There is a lack of precise

definition of the function of the boards in the Commission's general instructions. Notwithstanding the earlier concept that the boards should develop their own roles based on experience to be gained, and should themselves interpret the necessarily general instructions, the Panel believes that there is now sufficient experience to indicate that new instructions are necessary to afford uniformity of interpretation and to better focus the technical expertise of the boards in both contested and uncontested cases.

This expertise must, of necessity, be relatively narrow in comparison to the variety of expertise to be found in the much larger and full-time staff. In addition, the hearing boards do not have the same span of time which is available to the staff for consideration of detailed safety aspects of an application, nor do the boards have the informal and ready communication with the applicant and the ACRS.

Therefore, the Panel concludes that the regulatory staff should and must assume ultimate responsibility for the conduct of the reactor safety analysis. What now appears to be an unwarranted "layering" of full scale technical safety reviews by the boards, as well as by the staff and the ACRS, makes no real contribution to reactor safety and should be eliminated. The board should consider that its function is to focus its adjudicatory and technical expertise on appraising the adequacy of the regulatory staff's safety review, the general sufficiency of technical and other information supplied by the applicant and other parties, and the adjudicating of controversy

expressed in a contested case. In the latter instance, the board may be called upon to make technical judgments of its own on those issues in controversy, but it should not attempt to make an independent technical review of those issues already evaluated by the staff which are not in controversy.

Under the concept now suggested, the hearing would be used to show cause why the Director of Regulation's conclusions about a proposed facility should be altered or set aside. It would not be the hearing board's function to conduct, de novo, its own independent safety review. Rather, in an uncontested case it would be the board's sole function to test and demonstrate for the record the adequacy of the staff review upon which the Director of Regulation's conclusion was based. If it develops that the staff has overlooked some important point, the board may wish to recess the hearing in order to give the staff an opportunity to fill the gap. In a contested case, the board would have the added function to decide whether sufficient grounds have been advanced to call for a denial of the action which the Director of Regulation has proposed.

#### E-2, Prehearing Conferences

##### RECOMMENDATION

The function of prehearing conferences in both contested and uncontested cases should be expanded. Such a conference should be held in every case to settle matters of procedure and to attempt to define any substantive issues.

## DISCUSSION

Some use has been made of pre-hearing conferences, but the Panel believes that they can be used more effectively.

The essential purposes of a hearing in an uncontested case are to determine whether or not the AEC Regulatory Staff has made a thorough and complete safety analysis supporting its conclusions, to provide an opportunity for a showing of cause why those conclusions should not be upheld, and to achieve a better public understanding of the regulatory process. In fulfilling these purposes, the prehearing conference can serve a useful function by identifying the principal points which should be aired at the hearing and by planning the order in which they will be presented.

In a contested case, the prehearing conference can be used in an attempt to find areas of agreement which can be stipulated at the hearing, to identify more sharply the issues which are in controversy, and to plan the order of their presentation. A more extensive and purposeful use of this process should be instituted to shorten the time required for the hearing.

### E-3, Conduct of Hearings

## RECOMMENDATION

During the conduct of public hearings greater emphasis should be placed on (1) the exclusion or limitation of extraneous and irrelevant

issues over which the Commission has no jurisdiction, (2) the preservation of continuity of the hearing, and (3) the use of the hearing as a legitimate instrument to enhance the public's impression of the regulatory staff's competence and objectivity.

#### DISCUSSION

The hearings serve a legitimate and important purpose in permitting the public to participate in the adjudicatory process and to become informed on the steps being taken to ensure that the public health and safety is being protected. At the same time, however, the hearing may be used, by interests opposed to the reactor project on grounds other than those properly within the cognizance of the hearing board, to discredit the project or delay or otherwise obstruct the issuance of a construction permit or operating license. As a matter of public relations, it would not seem wise to cut short the statements of those who make limited appearances, even though these deal with local issues other than safety. On the other hand, it would be helpful to emphasize in publicity regarding hearings, in prehearing conferences, and in opening statements by hearing boards and the AEC staff counsel, that the hearings are concerned solely with those issues which are stated in the notice of the hearing, and that other issues not within the purview of the board are to be determined elsewhere before other cognizant authorities. Furthermore, the hearing boards should exercise their discretion to limit or exclude evidence and testimony which is not relevant to the



issues which are properly before the board at the hearing. The intention to exercise this discretion should be clearly announced and explained at the pre-hearing conference.

The Review Panel has noted one instance in which the hearing board recessed the hearing in order to obtain additional technical evidence on a specific issue in controversy before all the evidence which had already been prepared was received. It is suggested that before determining that such recess is necessary, the board should receive on the record all evidence and cross-examination which is presently available on the issue in question and all other available evidence on the other issues to be aired at the hearing. If the board then finds that additional relevant evidence on one or more issues is needed, a better opportunity will be afforded to define the areas in which the evidence is deficient, the continuity of the hearing may be preserved by avoiding a recess which might prove to be unnecessary, and the possibility of a series of recesses will be precluded. In a case where it is clear that the AEC regulatory staff has overlooked some important point or where new information is presented at the hearing, it may be necessary to call a recess in order to give the staff an opportunity to assess the significance of these matters.

Under present practice in an uncontested case, the public may be given a false impression of the role which is played by the regulatory staff. Before the hearing commences, the staff has conducted a thorough review of the safety questions which are involved



in the application, has questioned the applicant extensively, and has supplemented the record with appropriate answers. In many instances the applicant has made changes in his proposal as a result of this staff review. Thus, at the time of the hearing the staff has already satisfied itself either that the major safety issues have been resolved or that there is reasonable assurance that they can be resolved. The nature and extent of this previous review is not apparent at the hearing unless reference is made to it.

It has been the policy of the AEC staff counsel to limit cross-examination of the applicant to clarification of those matters which have not already been resolved, with the one exception that cross-examination is normally used to bring out the fact that minimal discharges of radioactive material are to be expected from routine operations and to bring out some of the plant safeguards in accident situations. An additional presentation is necessary in order to clarify and emphasize the independent role which the staff has played in protecting the interests of the public. The opening statement by staff counsel and the oral testimony of the staff should elaborate on the major issues which have been identified in the staff's review and the manner in which they have been treated. The staff hazards analysis should be used as an exhibit in support of the Director of Regulation's conclusion rather than as the entire direct presentation of the staff.

E-4, Action by the Hearing Board

RECOMMENDATION

The action of the board at the close of a hearing should be modified as follows:

1. The initial decision should consist either of a determination that the Director of Regulation's proposed action be set aside, with an order to that effect, or a determination that no cause has been shown why this should be done;
2. A time limit should be established for action by the board;
3. The present machinery for granting expedited effectiveness should be modified; and
4. The jurisdiction of any board should end when Commission action in issuing or denying the construction permit becomes final.

DISCUSSION

In accordance with the recommendation made above in D-3 and E-1, the initial decision of the hearing board should consist of a determination which either upholds or sets aside the proposed action by the Director of Regulation announced in the notice of intent. If the board finds that good cause has been shown why the Director's proposed action should not be upheld, the initial decision of the board should set forth the reasons for its determination and the

decision should be accompanied by an order directing the Director of Regulation not to carry out his proposed action. The Director would then have no choice but to respond to the order. In the absence of a showing why the Director's proposed action should be set aside, the board's decision--which could be very brief--should consist merely of a finding that no such cause has been shown. In that event the Director of Regulation would be free to issue or deny the construction permit in accordance with his announced intent. In either case, as outlined below, time limits for action by the hearing board and the Director of Regulation should be prescribed in the Rules and Regulations.

In an uncontested case, within 15 days after the close of the hearing the board should take action. A 45-day time limit should be prescribed for board action in contested cases. The Panel believes that the establishment of such time limits is feasible and desirable when full account is taken of several factors. For one thing, existing uncertainty about the role of the boards has imposed an additional burden on the board members in the preparation of the initial decision. The necessity of combining a description of the framework within which the board operated with the product of its efforts has required several weeks for the exchange of correspondence between dispersed board members. Clarification of board responsibilities should greatly reduce the labor of preparing the written announcement of its action.

For another thing, when there has not as yet been any intervention the appointment of board members for a scheduled hearing will normally have to be accomplished under the assumption that intervention is at least a possibility. When intervention does not occur, the hearing of an uncontested case should proceed rapidly, and the board's decision can be rather brief, if the recommendations made in E-3 above and in this section are adopted. The Panel believes that many such hearings of uncontested cases would be concluded with enough time remaining in the original time commitment so that the board members could remain together after the close of the hearing and prepare the decision well within the 15-day limit.

The complexities of a contested case, on the other hand, might require a prolonged hearing, and the need of the part-time board members to disperse at the close of the hearing to attend to other responsibilities might be far more urgent. However, it is presently thought adequate for the Commission to review board decisions within a 45-day period, and the Panel believes that a like period of time should be adequate for the board members, even if dispersed, to take action after a hearing on a contested case.

The Panel believes that there is a need for the result of the current "expedited effectiveness" to be achieved, but that there is a better method of accomplishing this result. It is suggested that the AEC Rules and Regulations should prescribe a ten-day period

within which the Director of Regulation must act to issue or deny a construction permit following action by a hearing board. In the case of action favorable to the applicant, the applicant should be allowed to begin construction as soon as the permit is issued without having to request special permission to do so.

Nothing in the above would alter the 45-day period for Commission review. There would not, however, be any need for the applicant to request expedited effectiveness, nor would the Commission be faced with a hasty decision as to whether expedited effectiveness should be set aside. Rather it would be the applicant's prerogative to begin construction as soon as he received his permit, and such construction during the 45-day period designated for initiation of Commission review would be at the applicant's own risk.

The Panel believes that the jurisdiction of the hearing board should terminate when the Director of Regulation's decision to issue or deny a permit becomes final or is revised by the Commission. The date of such finality would be determined either by the passing of the 45-day time period during which Commission review may be initiated, or by a decision of the Commission, after review either on its own motion or on appeal, to uphold or set aside the decision of the Director of Regulation.

E-5, Composition of Atomic Safety and  
Licensing Boards

RECOMMENDATION

The present practice of including two technical members on Atomic Safety and Licensing Boards in both uncontested and contested cases should be continued. In addition, consideration should be given to the appointment of a third technical member as an alternate in future cases.

DISCUSSION

It is clear that the technical members of Atomic Safety and Licensing Boards serve an important function in both uncontested and contested cases. The subject matter makes it imperative that the presiding authority have a more broadly based knowledge than would normally be found in a single hearing examiner, and a better record is achieved when a three-man board presides at a hearing.

However, the problem of appointing future hearing boards in substantially increased numbers should be anticipated, and steps should be taken to provide hearing experience for all technical members of the hearing board panel. The appointment of an alternate technical member is suggested as a means of providing such experience in advance of service as a full-fledged member of the board. The alternate would be selected from among those members of the

hearing board panel with the least hearing experience. He would be present and hear all evidence at a hearing, but would normally not join in the formal decision of the board.

An additional benefit from the appointment of the alternate member would be the avoidance of any break in the continuity of a hearing. Unlike the full-time hearing examiner, the part-time board member is drawn from private life and he may be called away from a protracted hearing by other responsibilities of an unavoidable nature. Under the present system, if a board member becomes unavailable before a hearing is completed, it may be necessary to recess the hearing, perhaps for a considerable length of time, with resulting delay and expense to the applicant and dislocation of the increasingly full schedule of the AEC regulatory staff. This possibility is particularly evident in contested cases wherein the time required to complete a hearing is necessarily greater. An alternate member would be available to step in if one of the original technical members cannot sit throughout the course of a hearing.

#### F. Technical Specifications

##### RECOMMENDATION

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 reactor



such as is suggested in Appendix A of Part 50 of the Commission regulations. The Task Force on Technical Specifications, which has been working on this approach, should be encouraged to complete its work and issue a report. The regulatory staff should adopt the new approach as rapidly as possible and especially on new reactors.

#### DISCUSSION

In Part 50, the Commission now suggests that applicants include in the Technical Specifications, which are part of each license application, a detailed list of the characteristics of most of the components of the reactor, many of which have no direct bearing on safety. If the applicant finds it desirable to change any of these characteristics, he must go through a formal change procedure and obtain AEC approval before making the change. This delay in modifying components often works against safety. Consequently, there is a substantial body of opinion, with which the Panel agrees, that the number of items which should be included in the Technical Specifications should be substantially reduced and should contain only those characteristics of the reactor which have a real bearing on the safety of the public.

The Panel had the benefit of discussion with Dr. Marvin M. Mann, Chairman of the Task Force on Technical Specifications. This group has been working for over a year and as of early 1965 had derived certain guidelines for Technical Specifications which have the objectives of simplifying the specifications, focusing responsibility



upon the licensee, and improving the safety of reactors. Three kinds of technical specifications were identified: (1) those truly technical quantitative safety limits derived from full analysis of the reactor system, designated technical standards; (2) surveillance requirements for operational features and items which are not necessarily involved in routine operation of the reactor but which hold a high import for the safety of the public if and when they are called upon to do their job; and (3) administrative and managerial requirements.

The Panel was impressed by the amount of work done by the Task Force and the manner in which the various parts of the problem have been identified. As pointed out by the Task Force the proposed philosophy\* will result in a new form of Hazards Summary Report. This will also result in a better definition of the information that needs to be considered at the construction permit stage and at the operating license stage. Such a definition will therefore set the content of the staff hazard analysis since there must be consistency between the material presented by the applicant and the material reviewed by the staff at the various regulatory steps.

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\* It is worth pointing out that the basic concept and philosophy presented by the Task Force is that which has generally guided the review of reactor safety from the start. The Task Force is to be commended for having detailed and focused the concepts and put them in written form.

The need for criteria is sharpened by the technical specification approach. The effort in drafting such specifications by the applicant and the work required by the staff in reviewing and approving them would be materially reduced if criteria for the various items existed. To the extent that criteria can be made detailed and specific, the effort of writing and reviewing technical specifications will be reduced. A further benefit of this approach to specifications (and of criteria) is the improved consistency of regulation of different reactors. The Task Force recognized that the specifications for different reactors will vary, especially in regard to certain numerical values, but this is entirely consistent with a uniform standard of safety.

The Task Force acknowledged that a considerable amount of effort would be required to change from the present form of technical specifications to the new form. The Panel believes that the transition may be quite difficult and expensive. Nevertheless, because this approach is in the interest of improved regulatory processes the effort should be made.

G. The Role of the Commissioners

G-1, Procedures on Review

RECOMMENDATION

The present practice under which the Commission may review proceedings for issuance of reactor licenses on its own motion should be

continued. Where a party to a proceeding seeks Commission review, the present cumbersome procedure requiring preliminary petition for leave to appeal should be eliminated and Commission review should be permitted as of right. In review either on motion of the Commission or on appeal by a party, the function of the Solicitor's office should be limited to advising the Commission on questions of a legal nature and should not include substantive evaluations of the technical aspects of safety questions.

#### DISCUSSION

Since the issuance of reactor licenses may involve matters of policy which go beyond questions of the safety of the particular facility, it is appropriate that the Commissioners have an opportunity to review proceedings for the issuance or amendment of such licenses even though no party to the proceedings has requested such review. Accordingly, there would seem to be no reason for changing the present provisions of the AEC regulations permitting the Commission to review proceedings for issuance of reactor licenses on its own motion.

On the other hand, the present procedures for Commission review on application by a party to the proceeding are unnecessarily cumbersome. As now constituted, the AEC regulations require (§2.762) that a party seeking review must first file a petition and brief requesting

leave to appeal. Within ten days the respondent may file an opposing brief, and the Commission then has discretion to grant or deny the petition. If the petition is granted, the petitioner must, within twenty days, file exceptions and a brief in support of them, and within ten days the other parties may file opposing briefs. Thus, before an appeal can be heard on the merits, there must be two separate series of petitions or exceptions, supporting briefs, and opposing briefs.

This so-called "certiorari" rule was originally recommended by the Administrative Conference of the United States because of concern over the growing backlog of appeals in agencies such as the Federal Power Commission, the Interstate Commerce Commission, and the Federal Communications Commission. The requirement for obtaining leave to appeal was seen as a method of controlling the buildup of cases pending before agency heads. In the case of the AEC, however, there has never been a backlog of cases pending before the Commission and it has been the normal practice of the Commission to permit appeals. Thus, the certiorari rule has actually operated to prevent expeditious handling of appeals, since it has been necessary for the parties and the Commission to go through two processes on appeal where one would suffice.

One of the functions of the Assistant General Counsel (Solicitor) is to assist the Commissioners (1) in determining whether or not to review licensing proceedings on their own motion, (2) in passing

upon petitions for leave to review, and (3) in deciding appeals on the merits. If the Panel's recommendation for abolition of the "certiorari" rule is adopted, the second type of assistance would disappear, but the first and third would still remain. It is the Panel's understanding that the advice which the solicitor's office provides to the Commission sometimes includes a substantive evaluation of the nature and significance of safety questions which are involved in the proceeding under review. Furthermore, it appears that, as the workload increases, it will be necessary to provide the Solicitor with additional technical staff if the present practice is continued. Thus, the tendency is to introduce an additional stage into the safety review process.

As indicated in its statement of conclusions, the Panel believes that the current trend toward multiplicity of safety reviews in the licensing process must be reversed. The introduction of an additional review, even to a limited extent, of the substance of safety questions by the Solicitor's office is a step in the opposite direction. It is entirely appropriate for counsel to the Commission, in providing it with legal advice, to summarize and comment upon the facts on which his opinion is based; but his function should not extend to the exercise of technical judgments on matters of reactor safety. If the Panel's recommendation for relaxation of the ex parte rule is adopted, the Commissioners could obtain clarification and advice on safety issues, where necessary, from scientific and technical members of the AEC organization.

G-2, The Ex Parte Rule

RECOMMENDATION

The AEC Regulations concerning ex parte communications (Sec. 2.780) should be modified so that, in uncontested cases involving initial licensing, communication would be permitted between Commissioners, members of their immediate staffs, and AEC personnel who advise the Commission in the exercise of its quasi-judicial function, on the one hand, and members of the AEC organization, including the Director of Regulation and members of his staff, on the other hand. In contested cases involving initial licensing, the Commission should be free, in its discretion, to initiate such consultation. In any case, if the Commission's decision rests on fact or opinion, obtained in any such communication, which does not appear in the evidence in the record, the substance of the communication should be made a matter of public record in the proceeding with opportunity for rebuttal.

DISCUSSION

The present AEC Regulations (Sec. 2.780) prohibit the Commissioners, members of their immediate staffs, and other AEC officials and employees who advise the Commissioners in the exercise of their quasi-judicial functions, from communicating with any other person regarding any substantial matter at issue in any proceeding on the record involving licensing. This rule was adopted as a matter of policy. It goes beyond the requirements of the Administrative Procedure Act, section

5(c) of which exempts, from the prohibition against ex parte communications, (1) proceedings involving initial licensing and (2) the head of the agency (i.e., the Commissioners) in all cases.

One of the purposes of the 1962 amendments to the Atomic Energy Act of 1954 was to introduce further flexibility into the licensing process. Among other things, the report of the Joint Committee on Atomic Energy (Report No. 1966, 87th Cong., 2nd Sess.) stated that an Atomic Safety and Licensing Board, in initial licensing cases, would be free to consult with the AEC staff, including technical experts, as permitted by the Administrative Procedure Act. This rationale would apply with even greater force to the Commissioners themselves, who are granted a complete exemption by the Administrative Procedure Act. The AEC Regulation, on the other hand, introduces an unnecessary rigidity into the licensing process and isolates the Commissioners and their advisers from obtaining assistance on technical questions in which the staff is expert and from access to current developments on which the Commission should be kept informed.

Therefore, the Panel recommends that in uncontested cases of initial licensing (which would include issuance of construction permits) communication between the Commissioners and their immediate staffs, on the one hand, and members of the AEC organization, including the Director of Regulation and his staff, on the other hand, should be



permitted. A case would be considered "uncontested" until such time as a petition for leave to intervene in opposition to an application seeking Commission action, or an objection by the AEC staff to such an application, has been filed. In contested cases, consultation with members of the AEC staff should take place only at the initiative of the Commission, but the Commission should be free to request such consultation in its discretion. However, if a case is presented in which the applicant and the Director of Regulation are in opposition, the Panel suggests that the Commission should refrain from consulting with the Director of Regulation and members of his staff and should look to other members of the AEC organization for advice.

Such a rule would be in accordance with that recommended by the Administrative Conference of the United States of 1962, which states (Recommendation No. 16, Section 1) that parties and intervenors who are precluded from making ex parte communications in on-the-record proceedings should include any individual (whether in public or private life) outside the agency conducting the proceeding. The suggested definition of a contested case would be comparable to that adopted by the Federal Power Commission (FPC Rules Sec. 1.4(d)(1) ), an agency which, like the AEC, is required by statute to hold a mandatory hearing on all applications for certificates.



The AEC rule should provide that, in both uncontested and contested cases, if the Commission's decision rests on any fact or opinion, obtained in any such communication, which does not appear in the evidence in the record, the substance of the communication would be made a matter of public record in the proceeding and any party, on timely request, would be afforded an opportunity to show the contrary. Thus, the requirements of the Administrative Procedure Act (Sec. 7(d) ) and the court decisions regarding "on-the-record" proceedings would be preserved.

#### H. Commission-Owned Reactors

##### RECOMMENDATION

The principle of Part 115 of the AEC regulations, which requires that certain reactors exempt from licensing be given the same safety review as licensed reactors, is desirable and should be retained with changes in implementation to conform to the recommendations made elsewhere in this report. The division of the Commission with programmatic responsibility for a reactor of this class should participate with the operating contractor in applying for a construction or operating authorization rather than delegating all responsibility for obtaining these authorizations to the contractor.

##### DISCUSSION

Part 115 of the AEC regulations was issued in order to ensure that Commission-owned reactors operated as part of the facilities of

an electrical utility system would be subject to procedures paralleling those used for privately-owned reactors in obtaining construction permits or operating licenses. This is a desirable regulation because the circumstance of ownership of the reactor has no bearing on the safety of the facility. Commission-owned or not, reactors which are part of utility systems should meet the same tests and be subject to the same investigations.

It seems to the Panel, however, that the wording of Part 115 which requires the AEC contractor to carry the entire burden of applying for authorization to construct or operate the facility, without any direct participation by the Commission, removes this function too far from the owner of the reactor and the party which in the final analysis bears the ultimate responsibility for it. The division of the Commission with programmatic responsibility for the reactor should be an equal partner with its operating contractor in applying for these authorizations and in supplying information for review by regulatory boards. The fact that one division of the AEC would be appearing before another division does not seem to the Panel to present an insuperable difficulty.

An additional problem is noted that the contractor used as the applicant is frequently the design or construction contractor while the electric utility, as ultimate operator, finds itself in the

position of merely being named as a party to the proceedings. This practice should be avoided by designating the ultimate operator as co-applicant.

The Panel does not anticipate that many Commission-owned reactors subject to these parallel procedures will be built in the future, but a few very important ones, such as large desalination reactors, may require safety review. It is for this reason that the Panel recommends retention of this part of the regulations but with modification to facilitate a more active role of the interested Commission division.

#### I. Reactor Safety Research

##### RECOMMENDATION

The Atomic Energy Commission should establish a mechanism, which should include a Reactor Safety Research Committee, to coordinate the Commission's program of research on reactor safety, and to ensure that the needs of the Director of Regulation for experimental information to be used in developing reactor safety criteria and in evaluating the safety of reactor projects submitted for licensing will be met.

##### DISCUSSION

Under the capable direction of the Assistant Director of Reactor Development and Technology, the Commission is conducting a comprehensive

and valuable program of experimental research on reactor safety. The results of this program should be of great value in defining the safety problems of nuclear reactors, in determining the extent to which engineered safeguards may be relied on to prevent serious consequences of reactor accidents and in developing safety standards and criteria for Reactors. This safety research program is therefore of great importance to the Director of Regulation and his staff.

This program could be of greater value, however, if more effective coordination was achieved with the regulatory staff. At present, the regulatory staff has no direct voice in formulating the program of research on reactor safety and does not receive frequent and current progress reports on this research. Although there is a reactor safety liaison committee, with participation from all AEC Divisions concerned with reactor safety, its activity has been limited to presentation at a particular meeting of some of the work on reactor safety being done by a single division. No attempt is now made to use this committee to coordinate the research program with the current and future needs of the industry.

The Panel therefore recommends that the AEC establish a mechanism, which should include a Reactor Safety Research Committee, to coordinate the research being done by the Assistant Director of Reactor Development and Technology for Reactor Safety with the needs of the Director of Regulation. Such a mechanism would be designed to formulate the

Commission's program of research on reactor safety and to ensure that the needs of the Director of Regulation in developing reactor safety criteria and in evaluating the safety of reactor projects submitted for licensing will be met by the results of the research program. The Reactor Safety Research Committee should be made up of individuals representing the Director of Regulation, the Division of Reactor Development and Technology, the Division of Biology and Medicine and any other Division with a direct concern in reactor safety. The committee would meet at regular intervals with active participation of each member, and it should consult with and obtain advice from the Advisory Committee on Reactor Safeguards.

Unless close coordination between the regulatory staff and the Division of Reactor Development and Technology can be established through some such means, many of the advantages foreseen in keeping the regulatory function within the present Atomic Energy Commission instead of establishing a new, separate regulatory agency will not be realized. Close coordination between the group conducting research on reactor safety and the group regulating reactor safety is essential to an effective regulatory program.

J. Development of Criteria, Standards, and Codes

RECOMMENDATION

The AEC should continue and intensify its efforts, in cooperation

with industrial and professional groups, to develop criteria, standards and codes for nuclear reactors. In the case of criteria, the AEC should assume primary responsibility, with the assistance of industrial and professional groups. In the case of standards, industry, working through professional groups and with the assistance of the AEC, should assume primary responsibility. The AEC should also encourage and assist industry to develop codes for nuclear reactors following the same practices that have been used in other fields.

#### DISCUSSION

An explanation is necessary as to what is meant by the words "criteria" and "standards." These words, while used widely, do not have the same meaning to different individuals and groups. The Panel uses the word "criteria" to mean guidelines for performance specifications that are applicable to systems, components, and structures. The Panel uses the word "standards" to mean specification of the procedures for obtaining completed systems, components, or structures which will have acceptable performance in the safety sense. While the distinction between the two words is not sharp, "criteria" are concerned with objectives to be met and "standards" refer to procedures for obtaining and confirming related performance requirements. These criteria and standards will eventually be incorporated into codes, by action of the appropriate segments of

the industry. Such codes would be published and could be incorporated in regulations in the same manner as is now done for a wide variety of codes in use in engineering and construction in the United States.

There is an immediate need for criteria in the various phases of the licensing procedure. Most pressing of all is the construction permit stage. Criteria at this stage would inform applicants and equipment manufacturers of the requirements to be met. They would guide the regulatory staff in its study of the proposed design and tend to avoid exploration of detail unless there was a good reason to do so. They would give the applicant and the staff a framework for testimony at the public hearings. They would assist in limiting harassment by intervenors which is not based on relevant grounds. They would give confidence to the public. In these ways, the licensing process could be simplified, shortened, and made more exact and predictable, with attendant improvement in the time-efficiency of the regulatory staff.

The Panel believes it is possible now to advance the development of criteria and standards, because the safety problems of reactors of all types are becoming better understood, and because repetitive application of some reactor types is increasing. This is a normal course of a maturing technology, and the regulatory staff's alertness to the timeliness of this development is to be encouraged.



There are some cautions, however, that the Panel believes should be emphasized. As standards evolve, not all of them can have general applicability. There will be a need for some standards for specific reactor types. The interrelationships between the generally applicable ones and the specialized ones should avoid conflicting requirements, particularly before they have the force of law upon incorporation into the Commission's regulations. In addition, flexibility should be provided, either as to application or change. There have been cases in other fields where standards have held back the progress of an industry because of the difficulty of incorporating technical developments. In the nuclear field, variations in the design of reactors and their components can be expected and new designs will be created continually. It is essential that any standards which are prepared do not slow progress in improved design, since this in itself could impair safety in the long run.

It is also recognized that the development of criteria and the evaluation of standards are not accomplished easily. Various professional societies have worked for several years to generate safety standards useful in the nuclear industry. Progress has been discouragingly slow. There has been resistance to formulations that might stifle later changes needed for progress. There has been delay because of the part-time, voluntary nature of the effort. And there has been difficulty in identifying recurring problem areas as well as their common parameters in the early stage of the technology.



The regulatory staff has undertaken development of criteria for siting and for technical specifications. This work, too, has been handicapped by the heavy load of other responsibilities carried by those involved. It appears highly important and timely for the Commission to allocate an increasing proportion of its effort and attention to this area, including the leadership that will enhance the purposefulness of professional society and industrial effort.

In the past it has been the Commission's policy to appoint members of the staff who are authorized to participate in the consideration of standards that are being prepared by private groups, but with no authority to join in the final vote. Apparently this reluctance to grant voting authority arises from a fear of possible conflict between the endorsement of standards, on the one hand, and the later enforcement of standards on the other. The Panel believes that this fear is groundless and that it could be made clear that a vote by a member of the AEC staff on a particular proposed standard is an exercise of his individual professional judgment, and does not represent an official position or adoption of the standard by his agency.

The large amount of effort required before nuclear safety criteria and standards can be written should not be allowed to discourage the effort. Even with the large amount of consistency in the specifications of various reactors relating to safety, considerable thought,

rewriting, and consultation are needed with all the affected groups to establish and express the essentials in a clear and concise manner. Thus, it should not be surprising that few standards can be generated in less than a year or more. Yet, this is all the more reason why an adequate program should be initiated at the earliest possible date.

#### K. Compliance

The Panel recognizes few instances of difficulty with Compliance procedures that have come to light in the experience to date. Accordingly, the Panel's review of this function has considered preparations for future requirements and opportunities, and its recommendations thus differ in character from those for the construction permit and operating license stages. It is acknowledged, however, that time did not permit an investigation in depth of the Commission's Compliance activities.

#### RECOMMENDATION

The Commission's preparations to meet future requirements of the Compliance function should be coordinated with the evolving practices of Reactor Licensing, and should explore means for applicants and suppliers to provide evidence of their own compliance.

#### DISCUSSION

The nature of the Technical Specifications that may emerge from the regulatory studies, and the latitude with respect to operating

parameters that will be incorporated, are not yet clear. It can be anticipated, however, that these specifications, the maturing and repetitive form of engineered safeguards, and the increasing dependence on engineered safeguards in reactor siting will place new requirements, perhaps in procedures and certainly in techniques, upon the Compliance Division in auditing the availability and effectiveness of both plant components and operating practices. The necessary changes in personnel or procedures and techniques should be developed in time to meet the needs of the industry.

At present the inspection requirements have entailed about 22, two-man, two-day visits per year in connection with projects under construction, and 7 to 9 two-man, two-day visits to reactors in operation. While the manpower burden does not appear excessive at this time, the possibility of reducing the effort per reactor as larger numbers are initiated and come into operation does not appear promising. Accordingly, an expanding budget requirement appears likely for the Compliance function unless some new procedures are introduced.

One possible procedure to reduce Compliance manpower allocation to each reactor is to put some burden on applicants and suppliers to provide proof, perhaps with attestation, of their own compliance. This practice has been utilized with airframe manufacturers in the compliance efforts of the FAA. The FAA, in effect, delegates

responsibility to designated individuals in the manufacturer's organization for certifying compliance with technical standards. These individuals act for the Agency and are authorized to do so in a professional capacity. It would appear that a similar approach could be employed by the Compliance Division, starting first with components on which regulatory codes and standards are already available and extending to more special nuclear features as experience is gained that gives the Division assurance as to the effectiveness of quality control procedures of the particular supplier or applicant and as standards emerge for such features. The Review Panel urges that the Division of Compliance explore the feasibility of this approach, including enabling legislation and associated procedures.

The Panel did not have time to review the form, frequency, and digestibility or value of routine reports now called for in connection with Compliance. It is the Panel's view that efforts should continue in the Compliance Division to limit reports to essentials, and to employ a standardized format that is geared to such data processing as is needed to serve the statistical needs and specific surveillance requirements of the Division.

APPENDIX

Summary of the Meetings and Briefings of the  
Regulatory Review Panel

The meetings of the Regulatory Review Panel were scheduled and held at two-week intervals during the period February-June, 1965. The following is a chronological listing of these meetings based on the separately prepared detailed minutes of each meeting. In addition, the members of the Panel individually devoted considerable effort to the study of more than 100 documents and papers pertinent to the over-all study objective of the Panel.

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Initial Meeting, February 1, 1965

The members of the Panel met at the H Street offices of the Commission to discuss the objectives and conduct of the study. A meeting with the Commissioners was held in this respect, and, separately, briefings were received from the Director of Regulation, H. L. Price, and others of his staff on the organization of the AEC regulatory function, the use of consultants by the regulatory staff, coordination with the ACRS, and the hearing procedures.

2nd Meeting, February 12, 1965

The Panel met at the Bethesda office of the Commission. Discussions and briefings centered on the earlier JCAE study

entitled "Improving the AEC Regulatory Process," reactor licensing workloads and procedures, technical information required by the regulatory staff at the construction permit stage, and reduction of elapsed time in the processing of applications. The Director of Regulation and members of his staff participated in these briefings as well as Dr. R. L. Doan, Director of the Division of Reactor Licensing.

3rd Meeting, February 26, 1965

The meeting was held in Bethesda. Briefings were received from Mr. L. Kornblith, Assistant Director for Reactors, Division of Compliance, and others on the organization and activities of the Division of Compliance, and from Dr. M. M. Mann, Assistant Director of Regulation for Nuclear Safety, on the work objectives and progress of the Task Force on Technical Specifications. Extensive discussion of both subjects was generated.

4th Meeting, March 12, 1965

During the morning session the Panel met with the ACRS at the H Street offices of the Commission. The role of the ACRS was reviewed in detail. During the afternoon session the Panel met with representatives of the Federal Aviation Agency at the FAA building to discuss the FAA approach to the development of technical standards and its approach to protecting the health and safety of the public via its licensing and regulatory

programs. The Panel particularly wishes to thank the following FAA personnel for their cooperation and assistance:

Mr. Alan L. Dean  
Associate Administrator for  
Administration

Mr. George S. Moore  
Director, Flight Standards  
Services

Mr. William C. Jennings  
Executive Director  
Regulatory Council

Mr. James B. Minor  
Associate General Counsel  
Regulations and Codification  
Division

Mr. William P. Crandell  
Chief, Airworthiness Branch  
Office of the General Counsel

Mr. Edward C. Hodson  
Chief, Regulations Division  
Flight Standards Service

Mr. Henry H. Weeks  
Chief, Engineering and  
Manufacturing Division  
Flight Standards Service

5th Meeting, April 1, 1965

The Panel met in Los Angeles, California. It attended a portion of the Malibu power reactor hearing, and it met in executive session to discuss the roles of the ACRS and the atomic safety and licensing boards.

6th Meeting, April 16, 1965

The Panel met in Bethesda with Messrs. Trosten, Graham, and English of the staff of the Joint Committee on Atomic Energy. The Panel briefed these members of the JCAE staff on the objectives and progress of the Panel's study. Separate meetings were also held with Mr. S. Kingsley, Assistant General Counsel (Solicitor), and with the Director of Regulation. The role of the Solicitor, the ex parte rule, the scope of review by the



hearing boards, and a summary of events in the Board's reactor case were the topics discussed.

7th Meeting, April 29-30, 1965

The Panel met in executive session at the National Lawyers Club, Washington, D. C., on the evening of April 29. The purpose and form of public hearings in contested and uncontested cases were reviewed. On April 30, the Panel met at the Commission's H Street offices with Messrs. Kirschbaum, Quarles, Winters, and Nyer of the hearing board panel to discuss problems with the current hearing and pre-hearing conference procedures. Additionally, separate meetings were held with Commissioners Palfrey and Ramey, Hearing Examiners Jensch and Bond, and the Director of Regulation. Detailed discussions were held on the role of the hearing boards, the use of the pre-hearing conference, the need for reactor standards, the certiorari rule, the ex parte rule, and termination of the jurisdiction of the hearing boards.

8th Meeting, May 14, 1965

This meeting was held at the National Lawyers Club in Washington, D. C. The morning session was devoted to a far ranging discussion with the Atomic Industrial Forum Ad Hoc Committee on Reactor Regulations. During the afternoon the Panel met with the General Counsel, Mr. J. Hennessey, the Associate General Counsel, Mr. B. Schur, and the Assistant General Counsel for Licensing

and Compliance, Mr. H. Shapar. Again, discussions were held on the hearing procedures, the ex parte rule, procedures for Commission review of hearing board decisions, the use of the pre-hearing conference, and the public relations aspect of hearings.

9th Meeting, May 27, 1965

The meeting was held at the H Street offices of the Commission. Dr. N. Woodruff, Director of the Division of Operational Safety, Mr. W. J. McCool of that Division, and Dr. A. Vander Weyden, Deputy Assistant General Manager for Reactors, briefed the Panel on the "parallel procedures" for reactors subject to Part 115 of the Regulations, and the procedures for other Commission-owned reactors set forth in AECM 8401. In executive session Dr. Benedict reported on the General Advisory Reactor Subcommittee's review of the over-all safety research effort.

10th Meeting, June 7-10, 1965

The Panel members assembled at Williamsburg, Virginia, for a four-day working session in order to draft the report to the Commission.

11th Meeting, June 23-24, 1965

The Panel met at the National Lawyers Club on the evening of June 23rd, and at the Commission's H Street offices on June 24th. The Panel's report to the Commission was prepared in semi-final draft at these meetings.

12th Meeting, July 1, 1965

The Panel met with the Commission at its H Street offices for the purpose of discussing the draft report. Subsequently, the Panel met in executive session to prepare the report in final form for formal submission to the Commission.

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In addition to the persons mentioned above and the members of the Advisory Committee on Reactor Safeguards, the Regulatory Review Panel is also indebted to the following members of the Atomic Energy Commission staff for their assistance: Dr. C. K. Beck, Mr. R. Lowenstein, Mr. C. L. Henderson, Dr. J. A. McBride, Mr. L. E. Johnson, Mr. V. Schmidt, Mr. E. Case, Mr. L. Cobb, Mr. G. W. Reinmuth, and Mrs. Dean Uffelman, Miss Lucy Mattia, and Miss Ruby Jo Rachal.