

ENCLOSURE A

EMERGENCY PLANNING IN SITING AND
LICENSING OF NUCLEAR POWER PLANTS

Statement of Current Policy

This statement is intended to clarify the role of emergency planning in the siting and licensing of nuclear power plants. A major objective of the Commission is to assure that emergency plans exist which provide reasonable assurance that appropriate measures can and will be taken in the event of an accidental release of radioactive material from a nuclear power plant.

The intent of the Commission is to assure that the decision-making process for licensing nuclear power plants will include an analysis by the applicant and a review by the Commission of each nuclear power plant site to determine the feasibility of taking suitable protective actions on a timely basis under postulated accident conditions within and outside the proposed site. Suitable protection actions would include measures which could mitigate radiation exposure to the public from the facility or from radioactive material released to the environs. Immediate emergency protective measures could include evacuation of the public from the area or the public taking protective shelter until the danger had passed.

The principal considerations used in evaluating the emergency planning issue in the siting and licensing of nuclear power plants are summarized below.

1. Site Characteristics - The Commission considers that the following site characteristics are relevant to the evaluation of protective actions which may be taken in the event of an accidental release of radioactive material: the numbers and proximity to the site boundary of resident and transient persons and the relative speed with which warnings can be communicated to them, the availability and character of evacuation routes and means of transportation, the availability and locations of structures suitable for sheltering, and the presence of institutions (such as hospitals, nursing homes, and schools) which may require special emergency planning arrangements. Measures to compensate for site characteristics that may be adverse to the effective implementation of emergency actions should be identified and proposed by an applicant and reviewed by the NRC staff. These may consist of special emergency action plans, practicable alterations in the site environs, and/or design changes to the facility itself through additional engineered safety features to mitigate radiation levels from postulated accidents. Particular attention is to be given to the foregoing as they affect the need for and the practicability of taking protective actions within a proposed low population zone pursuant to the Commission's siting criteria of 10 CFR Part 100. This should not preclude, however, the consideration of utilizing emergency plans to provide additional protective

benefit to persons beyond a low population zone as a matter of reasonable and prudent risk management.

2. Protective Measures - An essential element for limiting individual and population exposures from accidental releases of radioactive material is effective and timely protective measures. Emergency protective measures, such as evacuation or sheltering, may be necessary for all persons within an established low population zone in the event of a serious accident at a nuclear power plant. The establishment of soundly based emergency plans which include appropriate protective measures prior to the initial operation of a nuclear power plant is a basic Commission requirement in its licensing process.
3. Emergency Plans - Protection of the public from the effects of severe natural phenomena, such as hurricanes or tornadoes, and severe man-made events, such as dam failures or toxic gas releases from transportation accidents, are typically provided for in general emergency plans. Such general emergency plans are developed and maintained by agencies of the State and local governments. Emergency plans for protecting the public health and safety from accidental releases of radioactive material involve many of the same types of actions and thus are designed to be compatible with these broader general emergency plans. Emergency plans for nuclear power plants are designed to permit protection to the public by reducing individual and population exposures resulting from postulated nuclear accidents. The benefits

from the emergency plan must be commensurate with the risks to the health and safety of the public associated with the implementation of the protective action.

4. Procedures - The general authorities and capabilities of Federal, State and local officials for carrying out emergency plans are recognized. A goal of the Commission's review is to determine whether the applicant has developed adequate arrangements with local and State officials to assure that effective initiation of protective actions within and beyond the low population zone can be implemented, should the need arise. An important factor in emergency planning is the availability to the decision-making official (local, State or Federal) of all information necessary to determine the magnitude of the emergency and to decide whether protective actions should or should not be taken in light of the total risk (nuclear and non-nuclear) to the public health and safety from the action. Each licensee does establish procedures to assure that such officials are provided with adequate information throughout the course of any emergency.

ENCLOSURE B

PROPOSED RULE CHANGE TO 10 CFR PART 50,

APPENDIX E

Section I. Introduction

(Add new paragraph)

Provisions for emergency protective measures to limit exposures from the accidental release of radioactive material shall be considered, at a minimum, within the low population zone (LPZ) as defined in Section 100.3 of 10 CFR Part 100. The extent to which emergency planning could extend to areas beyond the LPZ should be based on the specific circumstances of land use and population distribution in these areas and the procedures for the general emergency plan of the local and State governments.

ENCLOSURE C

ANALYSIS OF ALTERNATIVES

Alternative 1: To initiate a rule change to only 10 CFR Part 50 relating to emergency planning outside the low population zone (Issue 1) and develop a statement of considerations as a preamble to the rule change which clarifies and amplifies only the current policy on emergency planning in the siting and licensing of nuclear power plants (Issue 2).

- Pro: 1. The policy statement would clarify and amplify the Commission's current policy on emergency planning.
2. The policy statement would provide necessary guidance to local and State governments as to the extent that their emergency protective action capabilities will be evaluated in the licensing process.
3. The rule change would remove ambiguities and uncertainties concerning the Commission's policy on emergency planning requirements beyond the LPZ outer boundary.

4. The combined action of policy statement and rule change would clarify the interaction between siting and licensing concerns with emergency planning.

Con: 1. Emergency planning as a siting and licensing issue is in a state of flux with several government agencies developing guidelines for emergency countermeasures and with wide differences on planning needs. The policy statement may require continual modifications.

2. Additional review of the sites for license applications and re-review of operating license facility sites may be required to assure a uniform application of the stated current policy and rule change.

Alternative 2: To initiate consideration of rule changes to 10 CFR Parts 50, 51 and 100 relating to emergency planning in the siting and licensing of nuclear power plants (Issue 1) and promulgate a policy statement on the role of emergency planning in the siting and licensing of nuclear power plants (Issue 2) after further review of current policy and practice and the regulations.

- Pro: 1. After review of current policy and regulations, the rule change would consolidate and clarify the role of emergency planning in the siting and licensing of nuclear power plants.
2. The existing ambiguities in the regulations could be removed and a logical connection developed between the requirements for emergency planning necessary for licensing and the importance of emergency planning in the determination of site suitability and acceptability for siting of nuclear power plants.
3. The revised policy statement would clarify the need for rule changes to the regulations and provide guidance to all interested parties on the issue of emergency planning in the decision-making process used by the Commission.
- Con: 1. Additional review of sites for license applications and operating facilities would be required to determine backfit needs.
2. If initiated without Alternative 1, the rule change and policy statement would result in additional confusion, delays in licensing and possible litigations during the extended time period needed to complete the program.
3. Unless the program is carried out within the overall nuclear reactor siting policy and practice revision, the objective of a

coherent, cohesive and consistent siting policy might not be realized.

Alternative 3: To initiate a limited rule change to 10 CFR Part 50 relating to emergency requirements outside the low population zone as stated in the Seabrook Memorandum and Order, dated June 17, 1977 (Issue 2), without developing or promulgating a policy statement on emergency planning as a separate matter (Issue 1) but use the general policy statement on nuclear reactor site evaluations to be prepared as stated in the Secretary's memorandum of June 30, 1977 as the means for public exposure.

Pro: 1. The rule change would meet the immediate needs expressed by the Appeal Board in ALAB-390 and could be accomplished in a minimum time period with minimum staff effort.

2. The rule change would remove ambiguities and uncertainties concerning the Commission's policy on emergency planning requirements beyond the LPZ outer boundary.

Con: 1. Additional review of the sites for license applications and re-review of operating license facility sites may be required to assure a uniform application of the stated rule change.

2. With only the rule change action, the Commission would not have the current policy statement on emergency planning requested by the Secretary's memoranda of January 27, 1977 and June 30, 1977.
3. The Commission's policy regarding emergency planning in the siting and licensing of nuclear power plants would not be available to provide clarification, amplification and guidance for all interested parties.
4. Emergency planning is a major siting and licensing issue in the public domain and would not have adequate public exposure as only a part of the general policy statement on nuclear reactor site evaluations.

ENCLOSURE D
DISCUSSION OF EMERGENCY PLANNING IN
SITING AND LICENSING

Introduction

There are two principal aspects of the staff review of emergency planning for persons beyond the exclusion area. Emergency planning for the protection of persons within the exclusion area and the onsite emergency response organizations is another important aspect of staff review but has not been addressed in this paper.

The first aspect of the staff's review is to determine compliance with the siting requirements of 10 CFR Part 100. Reactor site criteria are established by Part 100 which in turn, in conjunction with postulated accident calculations performed by the applicant, establish boundaries for the exclusion area and the low population zone (LPZ). In this connection, the staff has, from the earliest days of licensing reactors, required the use of conservative assumptions and calculational methods in assessing consequences of a hypothetical release from the nuclear facility. The staff review conducted in conformance with 10 CFR Part 100 requirements establishes, for an acceptable site, that the site characteristics of the LPZ are such that appropriate protective measures can be taken on behalf of people within the LPZ.

The second aspect of the staff's review is to determine compliance with the licensing requirements of 10 CFR Part 50 and Appendix E thereto for emergency plans. A principal aspect of the staff review is to determine whether the applicant has or will make appropriate arrangements with appropriate State and local officials to assure that in the event of an actual emergency, necessary evacuation or other protective actions will be taken to protect offsite members of the public. These arrangements include the protection measures needed to satisfy the LPZ requirements of 10 CFR Part 100 but are not limited to the airborne pathway (cloud passage) covered by Sections 100.3 and 100.11 of Part 100. Consideration of other exposure pathways are included in the emergency planning review such as the water pathway resulting from accidental spills or rain out of airborne releases, and the ingestion pathway due to deposition of radioactive materials onto agriculture crops or onto areas used as forage for milk cows. The Appeal Board decision in the Seabrook case does not affect emergency planning work in connection with these pathways. For these pathways, since there is generally time to monitor the actual situation in the event of an accident and to take appropriate action based on existing conditions, the staff review has generally not constructed accident scenarios (as it does for Part 100 evaluations) but rather has looked principally to assure that there are adequate arrangements for prompt notice to appropriate officials.

Past and Current Practice

From time to time the actual preparedness or ability of States to carry out the functions specified in the emergency plan has been challenged

in hearings. Since Appendix E of 10 CFR Part 50 is written in general terms without specific criteria, these challenges have focussed on the capability of State and local officials to actually carry out evacuation or other protective measures for persons in the LPZ, thus converting the licensing issue (10 CFR 50) into one of site suitability (10 CFR 100). In these instances, the assertion is that the real LPZ, the one for which protection measures can actually be assured, is much smaller than the proposed LPZ, and that the site does not satisfy the requirements of 10 CFR Part 100.¹ In these instances, establishing the capability of the State to respond adequately in the event of accidents at the plant site has often been a difficult point. The development in recent years of various guidance to the States may help in the future, but this is a matter which is still under development. The NRC/EPA Task Force on Emergency Planning is developing guidance oriented toward providing State and local government emergency preparedness organizations with an improved basis for planning protective measures in the environs of light water nuclear power plants. The guidance will be supplemental to emergency planning guidance published by the NRC and EPA.

The staff review of the information submitted under Appendix E of Part 50 or its precursors concerning emergency planning arrangements for persons offsite has not intentionally been limited to the persons on the

¹The Appeal Board has used a similar but less drastic approach in the San Onofre and Seabrook cases in reducing the size of the LPZ by requiring new calculations to demonstrate conformance with Part 100 at the new LPZ boundary or the addition of enhanced accident consequence reduction features.

boundaries of the LPZ. For purposes of emergency planning under Appendix E of Part 50, the distinction between persons within the LPZ and those persons in the vicinity but beyond the LPZ is not made. For example, the State or local organizations for coping with emergencies are generally the same within or outside the LPZ.

Nevertheless a principal emphasis in the past was determination of adequacy of such emergency plans to accomplish the satisfactory protection of persons in the LPZ, considering the detailed hypothetical accident scenarios worked out for Part 100 purposes. For persons beyond the LPZ, detailed accident scenarios have generally not been developed, even though the footnote to Part 100 made it clear that the guideline dose values set forth in Part 100 were not to be considered acceptable emergency doses. The very conservative staff approach to postulated accidents for Part 100 purposes has assured that the doses to persons beyond the LPZ in the event of any serious but real accident would be only a fraction of the calculated doses. The staff has not developed specific accident scenarios for dose limitation or dose avoidance for areas beyond the LPZ.

Subsequently, as more nuclear reactors were constructed and proposed for construction, a number of developments occurred having some bearing on emergency planning considerations. There developed active State interest in the area of emergency planning for nuclear reactor accidents; the Federal Radiation Council (FRC) developed protective action guides (PAG) for food pathways at levels substantially lower than the airborne pathway (cloud passage) guideline dose values set forth in Part 100; and

in the Newbold Island case with a limited LPZ (one mile) and high population densities beyond, the Advisory Committee on Reactor Safeguards (ACRS) specifically recommend that emergency planning consider areas beyond the LPZ. In addition, intervention became more active and challenged the adequacy of the design basis accidents to represent worst possible accident situations. The ACRS also asserted that emergency plans were required to provide for the evaluation of major population centers at substantial distances (30-50 miles) from a proposed nuclear facility to protect against alleged worst possible accidents. Decisions denying intervenor contentions, as challenges to the Commission rules, were sometimes framed in terms that indicated that the Commission's rules require emergency planning only for persons within the LPZ.

The staff reviews of individual cases using realistic accident assumptions confirms the older assumption that the very conservative staff approach to postulated accidents for Part 100 purposes results in an LPZ encompassing the area in which emergency preplanning is needed. When considered somewhat more realistically, very seldom were there instances in which doses beyond the LPZ would exceed the draft EPA PAG levels for the airborne exposure pathway.

However, in some instances such as Seabrook, the staff did identify circumstances under which a planned protective action for persons beyond the LPZ was feasible and could result in a beneficial dose avoidance for such persons. In the Seabrook case the staff urged that coordination

with State officials be arranged, satisfactory to the staff, to provide the capability for such action in the event it should ever be needed.¹

A recent effort by the staff has been to consider somewhat more realistically the consequences of accidents and to determine whether there are feasible protective actions which could result in significant beneficial dose savings -- in the range of the draft PAG's -- for persons beyond the LPZ. The effort has been used to assure that these additional measures, if any, are considered in emergency plans made by the applicant with State and local officials. From the standpoint of enhancing protection provided by emergency plans in those instances and even more significantly in providing assurance to the public, the NRC specifically should consider the appropriate protective actions for all of the potentially affected members of the public. The Appeal Board decision in Seabrook has adversely affected this effort.

However, in the main the staff review has confirmed the past reliance on the conservative approach toward Part 100 as providing an LPZ which for most, or all, practical purposes, encompasses the area in which emergency preplanning for evacuation and shelter is needed. Therefore, the staff sees no need to backfit this newer approach to older plants. The staff plans, however, to use similar techniques in making recommendations during the course of the periodic review of updated emergency plans provided from time to time by operating facilities.

¹There was essentially no dispute that the action could be taken and would be beneficial from the standpoint of dose reduction if necessary. The argument centered principally around whether such arrangements were required as a matter of Commission regulations or were a matter between the applicant and local officials.

The Appeal Board has apparently been uneasy with imprecise standards for acceptability of emergency protection such as "beneficial dose reduction in cases where it can be achieved without competing risks". Licensing Boards have been uneasy with the assertion that protective action can be taken on behalf of various people without clear evidence as to exactly how this can and would be accomplished under various postulated events. These concerns have led to great emphasis on the rigid application of Part 100 requirements. These have in turn been held to imply a Commission determination that the guideline dose levels set forth therein authoritatively establish a safety threshold for emergency exposures, such that nothing need be done to protect persons at the population center distance (1-1/3 times the LPZ). This approach has been taken despite the clear indication by the Commission to the contrary in the footnote to 10 CFR Part 100.

This interpretation led to the result in the Seabrook case, where the Appeal Board declined to interpret Part 50, in the manner proposed by the staff, as providing for emergency planning for protection of the large summer crowds nearby. But then in order to provide some degree of protection for these crowds, the Appeal Board deemed them a population center; modified the LPZ distances; and thus concluded the crowds were then adequately protected by distance.

This approach results in unnecessary difficulty. For one, it implies a Commission standard of safety at levels far above the developing EPA protection guides. Attempts to avoid head on conflict will require modification of Commission siting requirements, which may have many other

ramifications, or will require an effort to draw distinctions between siting policy requirements and emergency planning licensing policy requirements -- an effort that has encountered some difficulty and has not proven successful in actual cases before Licensing Boards.

Another area of developing concern relating to emergency planning for which there is yet no staff consensus, is the area of emergency protection, emergency planning, and emergency response capability for the consequences of Class 9 accidents. One aspect is the development of adequate rationale for addressing the consequences of Class 9 events in emergency planning activities carried out by State and local governments while still not requiring facility design features which eliminate or mitigate such events. This concern, however, is in the process of development and should be addressed as part of an overall assessment of the development of a siting policy which considers more thoroughly the complex interrelationship of a number of site and facility design related policy issues.

Summary

Based upon the past and current practices in the siting and licensing review of emergency planning, the staff considers the development of a consolidated policy and practice in emergency planning to be a necessary element of the overall siting policy and practice revision. The listed and implied concerns with the current policy and practice provide a strong base for a staff investigation of the siting and licensing review

required for emergency planning. The successful completion of this review will require several years of staff effort and additional effort will be needed to determine the regulations and regulatory guidance necessary to implement the staff recommendations.

ENCLOSURE E

PRELIMINARY VALUE-IMPACT ASSESSMENT
ON CURRENT EMERGENCY PLANNING POLICY STATEMENT

I. The Proposed Action

A. Description

As part of a general review of NRC reactor siting policy and practice the Commission has directed that certain major reactor-siting issues be isolated and separately considered. One of these issues, emergency planning, has been addressed in terms of its use in the current siting and licensing of nuclear power plants and a policy paper has been prepared for Commission review. The policy statement (statement of consideration) clarifies the role of emergency planning in the current siting and licensing of nuclear power plants and provides a preamble to the proposed rule change. The objectives and principal considerations of current emergency planning policy are discussed.

B. Need in the Proposed Action

The need for the proposed action has developed from an increasing recognition of the fact that the relationship of emergency planning in siting and licensing is not clear and that a more

explicit NRC policy in this respect is needed. The policy would also serve as a basis for a limited but clarifying change to Appendix E of 10 CFR Part 50.

The existing NRC emergency planning policy consists of many issues which are scattered among many sources. These issues need to be combined, coordinated and made more explicit and understandable. The policy statement attempts to consolidate current policy and practice and make the procedures used for emergency planning more understandable to all interested parties.

C. Value/Impact of the Proposed Action

1. NRC

The proposed policy statement represents current policy and practice in the review of emergency plans and in the use of emergency planning in siting and licensing of nuclear power plants. The policy statement will provide general guidance to the staff as to the objectives and considerations of emergency planning in the siting and licensing of nuclear power plants. Promulgation of these alternatives may result in additional review of both license applications and currently licensed nuclear facilities.

2. Other Government Agencies

Applicant agencies (e.g., TVA, ERDA) would be affected as presented below under Industry.

The policy statement will provide guidance to other institutional reviewers as stated for NRC staff reviewers under C.1 above. States will obtain clear definitions of the current policy and practice followed by NRC in its review of emergency planning and the relationship between the States and NRC. No measurable impact is anticipated to other government agencies by this action.

3. Industry

The value/impact on applicants will be the same as for the NRC staff. The applicant will have the issues clearly defined and the relationship of emergency planning concerns to the siting and licensing of nuclear power plants.

However, the policy statement, alone, does not provide the level of detail necessary to address and readily resolve specific questions of implementation and practice. Therefore, additional guidance will be required through a revision of the regulations.

4. Public

The value to the public should be significant in the improved public understanding of the use of emergency planning in the current siting and licensing of nuclear power plants and how this issue is used by the NRC to protect the health and safety of the public and the environment. No measurable impact to the public is anticipated by this action.

D. Decision on the Proposed Action

A cohesive and explicit policy concerning the use of emergency planning in current siting and licensing evaluations of nuclear power plants should be clearly stated by the NRC.

II. Technical Approach

Although technical alternatives will be available for the implementation of policy and practice, alternatives to the current policy statement are available only in the procedural approach, not the technical approach. Further analysis of the value/impact associated with the complete review and subsequent revision to emergency planning policy and practice will be required at that time.

III. Procedural Approach

A. Procedural Alternatives

Potential NRC procedures that may be used to promulgate the proposed action of a policy statement include the following:

- . Policy Statement
- . Amendment to Regulation

B. Value/Impact of Procedural Alternatives

All of the stated alternatives are viable options for the proposed action of a current policy statement. The promulgation of the policy statement requires the combining of the alternatives in the listed order. In order to obtain maximum public exposure of the policy statement prior to an official NRC statement of policy, the proposed policy statement should be published in the Federal Register as a statement of consideration for the proposed limited rule change. Following the receipt of public comments from all interested parties (public and industry as well as other government agencies), a revised policy statement, if appropriate, should be prepared and published. The rule change to the regulations should follow a parallel path so that the current policy statement would be used as a preamble to the amendment.

C. Decision on Procedural Approach

All procedural alternatives should be pursued in stated sequence.

IV. Statutory Consideration

A. NRC Authority

The policy statement is used as a tool to implement the Act or NEPA requirements. The policy statement will be used to supplement the requirements of both the Act and NEPA.

B. Need for NEPA Assessment

Since the proposed policy statement does not represent a major action, as defined by 10 CFR 51.5(a)(10), the implementation of the current policy statement and an amendment to the regulation should not require a NEPA assessment.

V. Relationship to Other Existing or Proposed Regulation or Policy

The general policy statement of nuclear reactor site evaluations will require revision of 10 CFR Parts 50 and 100 and its full implementation may impact ultimately on provisions within other licensing regulations such as 10 CFR Part 51. Major issues within this general policy, other than emergency planning, include seismic and geologic requirements, alternative site requirements and accident evaluation requirements. All of these policies with possible amendments to the regulations may interface with the emergency planning issue.

VI. Summary and Conclusions

The use of emergency planning in the siting and licensing of nuclear power plants should be expressed in a statement of current policy and related amendments to the regulation promulgated.

Fredric D. Anderson
August 24, 1977



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

ENCLOSURE F

AUG 26 1977

MEMORANDUM FOR: Robert B. Minogue, Director
Office of Standards Development

FROM: Robert G. Ryan, Director
Office of State Programs

SUBJECT: CURRENT POLICY ON EMERGENCY PLANNING IN SITING AND
LICENSING OF NUCLEAR POWER PLANTS - DRAFT COMMISSION
PAPER OF 8/24/77

This office concurs with the August 24, 1977 version of the paper as concurred in by ELD, NMSS and NRR, but we do so with the following comments.

We believe that the following language which explains ongoing events of interest to States is important to the Supporting Information portion of the Commission paper and should be included:

An NRC/EPA Task Force on Emergency Planning is developing improved planning basis guidance with respect to providing a clearer definition of the types of accident consequences for which States and local governments should develop emergency plans and for which they should maintain an emergency response capability. The Task Force is nearing the completion of its report and the consensus of Task Force members is that a new concept of generic offsite "Protective Action Zones" (PAZs) for the plume exposure pathway and for the ingestion pathway should be adopted. The objective of the envisioned PAZs would be to plan for dose savings in the environs as opposed to the concept of "Low Population Zones" which are established for site and reactor suitability using predetermined exposure guidelines. Planning in these offsite zones would be performed primarily by the States and local governments with assistance from licensees.

Because the function of the PAZ would be solely to facilitate emergency planning in the vicinity of nuclear facilities, the concept should not influence

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the suitability of a particular site for a nuclear power plant. If relatively large population concentrations exist within the PAZs outside the LPZs, the features of emergency plans designed to minimize exposures in the event of an accidental release may be somewhat different from the plans for a completely rural area. However, the exposures which may be calculated outside the LPZ should not affect the acceptability of the site, assuming other NRC population constraints are met. There would be neither minimum nor maximum acceptable exposures within the PAZ (or at any other location) in relation to emergency planning or the implementation of such plans.

In addition, the language of the proposed rule change to 10 CFR Part 50 covering the extent of emergency plans which relate to the general and emergency plans of local and State governments is strengthened and clarified by addition of the following sentence:

An assessment of the potential for beneficial reduction in individual and population radiation exposures should be performed on any emergency protective measures proposed in areas within and beyond the LPZ.



for Robert G. Ryan, Director
Office of State Programs

cc: L. Gossick
E. Case
H. Shapar
C. Smith