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SECY-77-461

UNITED STATES
NUCLEAR REGULATORY COMMISSION

POLICY SESSION ITEM

For: The Commissioners

From: Robert B. Minogue, Director, Office of Standards Development

Thru: Executive Director for Operations *[Signature]*

Subject: CURRENT POLICY ON EMERGENCY PLANNING IN SITING AND LICENSING OF NUCLEAR POWER PLANTS

Purpose:

1. To present for Commission review and discussion a proposed statement of current policy to clarify the role of emergency planning in siting and licensing of nuclear power plants.
2. To provide a proposed limited rule change to 10 CFR Part 50, Appendix E, in response to the Appeal Board decision in Seabrook.

Category: This paper involves a major policy issue.

Issues:

1. Should the Commission initiate a rule change to the regulations governing the requirements on emergency planning in the siting and licensing of nuclear power plants.
2. Should the Commission adopt and promulgate a statement of policy on emergency planning in the siting and licensing of nuclear power plants.

Alternatives:

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).
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.
3. To initiate a limited rule change to 10 CFR Part 50 relating to emergency requirements outside the low population zone as

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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 Secretary's memorandum of June 30, 1977 as the means for public exposure.

Discussion:

Background

The Office of Standards Development (SD) staff briefed the Commission on the results of an NRC staff review on reactor site evaluation policy (SECY-76-286) and the developing plan for revising NRC nuclear facility siting policy and practices (SECY-76-286A).

- Following the briefing on January 13, 1977, a memorandum from the Secretary of the Commission, dated January 27, 1977, directed the EDO to prepare four different policy statements on major reactor siting issues, one of which was to address emergency planning for promulgation by the Commission.
- In a Memorandum and Order dated June 17, 1977 and from the Secretary's June 17, 1977 memorandum, the staff was redirected and instructed to expedite completion of the paper on emergency planning.
- Preparation of a response to a letter from Chairman Morris Udall, Committee on Interior and Insular Affairs, of May 24, 1977, concerning emergency planning requirements was completed on July 27, 1977. This inquiry related to the Appeal Board decision in Seabrook.
- Based on the June 17, 1977 briefing on the general policy statement on nuclear reactor site evaluations (SECY-77-288), SD was directed by the Secretary's memorandum of June 30, 1977 to address only current siting policy and practice.

Based on these instructions, the proposed policy statement has been prepared by SD in a joint effort with NRR, SP and ELD to reflect current policy on emergency planning in the siting and licensing of nuclear power plants.

In the Seabrook Memorandum and Order, dated June 17, 1977, the Commission noted its intention not to review the Appeal Board decisions in ALAB-390 on Seabrook; and that the questions raised there, as the Appeal Board recognized, were more appropriately addressed through rulemaking, given their complexity, their broad application, and the consistent past interpretation of our present rules. The Commission also noted that the staff has under way studies intended to produce proposals for rulemaking dealing with these questions. The Commission directed that this study be carried forward as a priority matter, intending to initiate rulemaking at an early date. The proposed rule change would amend Appendix E of Part 50 in response to the Memorandum and Order.

Current Siting Policy Considerations In Emergency Planning

The applicable portions of the Commission's regulations which are concerned with siting of nuclear power plants are contained in 10 CFR Part 100. Section 100.3(a) of Part 100 defines the exclusion area in terms of that

"...area surrounding the reactor, in which the reactor licensee has the authority to determine all activities including exclusion or removal of personnel and property from the area."

Section 100.3(b) of Part 100 defines the low population zone in terms of that

"..area immediately surrounding the exclusion area which contains residents, the total number and density of which are such that there is a reasonable probability that appropriate protective measures could be taken in their behalf in the event of a serious accident."

Section 100.3(c) of Part 100 defines the population center distance in terms of

"...the distance from the reactor to the nearest boundary of a densely populated center containing more than about 25,000 residents."

The concept of evacuation or taking shelter was an integral part of nuclear reactor siting considerations in the development of 10 CFR Part 100. In fact, at one time in the Part 100 drafting process the low population zone was termed the evacuation area but it was changed, since evacuation is only one of many available protective measures, and in at least some

situations might not be advisable. Emergency planning involves consideration of many protective measures that could be taken in the event of an accident. As was noted in an ACRS letter on siting criteria in 1960, "...it should be supportable (emphasis added) that these people (referring to individuals in the immediate vicinity of the exclusion area) can take appropriate action, such as evacuation or entering suitable shelters so that almost everyone would have a reasonable chance of escaping serious injury."

The staff, in conjunction with determining the actual distances for the exclusion area, low population zone (LPZ), and population center, performs an independent dose analysis using the actual plant design and selected site characteristics to evaluate the radiation doses to individuals from postulated reactor accidents. The guideline dose levels used in the applicant's determination are stated as criteria for site areas in Section 100.11 of Part 100 as:

- "(1) an exclusion area of such size that an individual located at any point on its boundary for two hours immediately following onset of the postulated fission product release would not receive a total radiation dose to the whole body in excess of 25 rem or a total radiation dose in excess of 300 rem to the thyroid from iodine exposure.
- (2) a low population zone of such size that an individual located at any point on its outer boundary who is exposed to the radioactive cloud resulting from the postulated fission product release (during the entire period of its passage) would not receive a total radiation dose to the whole body in excess of 25 rem or a total radiation dose in excess of 300 rem to the thyroid from iodine exposure.
- (3) a population center distance of at least one and one-third times the distance from the reactor to the outer boundary of the low population zone."

If the calculated radiation dose levels are greater than the guideline dose levels stated in Section 100.11 of Part 100, the proposed site/plant combination does not meet the reactor site criteria. The site need not be deemed unsuitable for the location of the proposed nuclear power plant if Section 100.10(d) of Part 100 requirements are met and appropriate engineered safety features can be added to the design to reduce the calculated radiation dose levels to less than the guideline dose levels. The requirements of Section 100.10(d) of Part 100 state:

"Where unfavorable physical characteristics of the site exist, the proposed site may nevertheless be found to be acceptable if the design of the facility includes appropriate and adequate compensating engineering safeguards." (Should be read as safety features rather than safeguards.)

Section 100.10(b) of Part 100 states that the Commission will take

"Population density and use characteristics of the site environs, including the exclusion area, the low population zone and population center distance"

into consideration in determining the acceptability of a site for a power or test reactor.

The site characteristics must meet the requirements stated in Section 100.3 of Part 100 and the distance to the defined areas surrounding the site must, at a minimum, meet the values derived from the evaluation performed to meet the criteria stated in Section 100.11 of Part 100. During the site selection process, the applicant may perform many site evaluations as stated in Section 100.11 of Part 100 before the actual site is selected on which the proposed nuclear power plant could be built. These iterations could involve site changes and/or plant design changes before the preferred site/plant combination is submitted to NRC for licensing review.

The staff recognizes the principle embodied in Footnote 2 to Section 100.11 of 10 CFR 100 that acceptable limits for emergency doses to the public under actual conditions of a nuclear accident cannot be predetermined. The determination of emergency actions must be based on the actual conditions that exist, as judged by the officials involved, principally State and local officials, with support from the licensee and appropriate Federal agencies including NRC. The staff recognizes that emergency measures may be contemplated to reduce doses to low levels beyond the LPZ and generally encourages State and local officials to include potential reactor accidents as another situation to be considered in their general emergency plans. Such actions would, in all likelihood, be considered if the actual predicted dose commitment appeared to be at or above the proposed protective action guide dose levels (i.e., projected dose levels at the time of an accident which might warrant the initiation of some protective action); and should be taken if the action could effectively avoid a substantial portion of the projected dose.

In individual cases, consideration is given by the staff to potential protective measures outside the LPZ. These considerations are a matter of reasonable and prudent risk management, given the fact (or proposed fact) of the operation of a nuclear power plant at a particular site, rather than as a question of site suitability. The staff views the siting issue as one of determining the feasibility and practicability of taking protective measures for the public within the LPZ to assure such plans are at least capable of limiting exposure to not more than those set forth in 10 CFR Part 100. The staff position is that emergency plans should be designed not only to limit exposures within an LPZ but also to provide for reductions in exposures wherever such reductions can be judged to have a sufficient health benefit for the public.

The reactor siting dose criteria were established as aids to be used in conjunction with very conservative assumptions in the assessment of the consequences of a hypothetical release from a proposed reactor. As such, the siting dose criteria were to be used only as aids in evaluating the suitability of a proposed reactor site and expressly such dose levels were not to be used as levels for the initiation of protective measures. Protective Action Guides (PAG) are dose criteria for the initiation of protective actions for the public. The forthcoming promulgation of PAGs for airborne exposure pathways by EPA has resulted in an unjustifiable comparison of these action dose criteria with the siting dose criteria. The PAGs were derived for protective action initiation in actual situations while the reactor siting dose criteria were derived for evaluation of site suitability for locating nuclear reactors as stated in 10 CFR Part 100.

Current Licensing Policy Considerations In Emergency Planning

The applicable portions of the Commission's regulations which are concerned with emergency planning in the licensing of nuclear power plants are contained in 10 CFR Part 50. Section 50.34 of Part 50 states that the Final Safety Analysis Report shall include plans for coping with emergencies which shall include the items specified in Appendix E. Appendix E to Part 50 establishes minimum requirements for emergency plans and states:

"The Final Safety Analysis Report shall contain plans for coping with emergencies. The details of these plans and the details of their implementation need not be included, but the plans submitted must include a description of the elements set out in Section IV to an extent sufficient to demonstrate that the plans provide reasonable assurance that appropriate measures can and will be taken in the event of an emergency to protect public health and safety and prevent damage to property."

In most cases, emergency planning beyond that provided for the LPZ is not necessary for the airborne exposure pathway. However, in some instances, a careful evaluation is needed to determine whether planning beyond the LPZ should be required. Section 6.4.3.2 of the NRC Regulatory Guide 1.101 states that emergency plans should contain descriptions of protective actions planned for the LPZ "with provision for extending such actions farther away from the site boundary, if necessary." It should be noted that long term emergency actions such as decontamination of property, food crop diversion, or milk diversion are not considered part of the site review process to determine the LPZ area, but are to be included in any licensing review of the emergency plan pursuant to Appendix E of Part 50. These measures may involve activities well beyond the LPZ.

In recent years the staff has placed increased emphasis on the utilization of Protective Action Guides (PAG) in emergency planning. The PAG's satisfy the requirement specified in Section IV.C. to Appendix E of Part 50 that emergency plans shall contain

"Means for determining the magnitude of the release of radioactive materials, including criteria for determining the need for notification and participation of local and State agencies and the Nuclear Regulatory Commission and other Federal agencies, and criteria for determining when protective measures should be considered within and outside the site boundary to protect health and safety and prevent damage to property."

The staff uses the PAG dose levels to assess the time period available to take protective action within and outside the

site boundary for the hypothetical release and accident conditions used to evaluate site suitability under 10 CFR Part 100.

Supporting Information

An analysis of the three alternatives designated as possible solutions to the two issues addressed in this paper is provided in Enclosure "C".

A discussion of emergency planning in the siting and licensing of nuclear power reactors has been compiled by the NRC staff and is attached as Enclosure "D".

A preliminary value-impact assessment for the proposed statement of current policy has been made by the SD staff and is included as Enclosure "E".

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. This report is intended to provide further guidance on the subject of planning outside the LPZ.

Conclusions

Having considered the history and current practice of the siting and licensing review, the Offices of NRR, SP, ELD and SD have concluded that the policy statement should clearly set forth only the current policy regarding the role of emergency planning. A statement of current policy in emergency planning is attached as Enclosure "A".

Likewise the staff has developed a limited rule change to Appendix E of Part 50 to address emergency planning outside the low population zone to resolve the concern of the Appeal Board in the Seabrook case. The proposed rule change is attached as Enclosure "B".

The staff considers that the statement of current policy on emergency planning in siting and licensing should provide information to State and local governments as to the extent that their emergency preparedness is relied upon in the licensing process. The policy statement is a logical extension of the Memorandum of Understanding between NRR and SP for nuclear reactor facilities pursuant to the Commission direction for consultation in regard to State and local government emergency response capabilities. The memorandum also provides for assurance that an applicant for a nuclear facility license has provided for State and local government participation in emergency response preparedness and their active participation in emergency test exercises. The internal NRC agreement provides for NRR, in carrying out their licensing functions, to formally consult with SP regarding pertinent State and local emergency response capabilities.

A logical connection between the emergency planning requirements provided in Section 50.34 and Appendix E of 10 CFR Part 50 and site characteristics evaluated as stated in Sections 100.3(b) and 100.10 of 10 CFR Part 100 is part of the clarifying change to 10 CFR Part 50. This proposed rulemaking should fulfill the needs discussed in the Memorandum and Order, dated June 17, 1977, regarding the decision in ALAB-390.

Recommendation:

That the Commission:

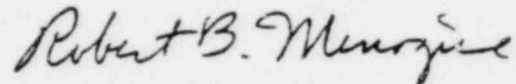
Approve the approach proposed in Alternative 1 as the appropriate program for addressing the emergency planning issue by requesting that a statement of consideration for current policy on emergency planning as given in Enclosure "A" be published with the issuance of the rule change to Appendix E of 10 CFR Part 50 as given in Enclosure "B".

Coordination:

The Directors of the Offices of Nuclear Reactor Regulation and Nuclear Material Safety and Safeguards concur in the recommended policy statement and rule change. SP concurs, but with the comments attached at Enclosure F. The

Director of the Office of the Executive Legal Director has no legal objections to the recommendations of this paper.

Scheduling: For an early open Policy Session.



Robert B. Minogue, Director
Office of Standards Development

Enclosures: *vm B?*

- "A" - Emergency Planning in Siting and Licensing of Nuclear Power Plants - Statement of Current Policy
- "B" - Rule change to 10 CFR Part 50, Appendix E
- "C" - Analysis of Alternatives
- "D" - Discussion of Emergency Planning In Siting and Licensing
- "E" - Preliminary Value Impact Assessment
- "F" - Comments from Office of State Programs

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