



Department of Energy  
Washington, D.C. 20585

DOCKET NUMBER **PR-50** **(203)**  
PROPOSED RULE **(45 FR 75167)**  
JUL 9 1980

Mr. Samuel J. Chilk  
Secretary of the Commission  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Attention: Docketing and Service Branch



Dear Mr. Chilk:

The Department of Energy forwarded initial comments on the proposed addition to 10 CFR 50 rules to add new emergency planning regulations by letter dated March 4, 1980, from A. J. Pressesky, Director, Division of Nuclear Power Development.

The Department recognizes that its facilities and activities are exempt from the Commission licensing process, except as defined in Section 202 of the Energy Reorganization Act of 1974 (P.L. 93-438). The Department's policy has been and continues to be that the Department will use and apply Nuclear Regulatory Commission rules and regulations to all departmental nuclear activities to the maximum extent practicable. The proposed planning zones intersect many of the Department's facilities, and the associated operations could be impacted directly or indirectly by the emergency planning requirements imposed on the State and local jurisdictions. Accordingly, the Department instituted a detailed review of the proposed rule, and general and specific supplemental comments are enclosed for consideration. During the course of the review, the following significant concerns were noted. These concerns are discussed in detail in the enclosed comments and are provided for the record and appropriate Commission consideration.

1. Emergency Planning Zones (EPZ)

The Department is concerned that sound technical bases may not exist to support the planning zones noted in the proposed rule. As now worded, the proposed rulemaking tends to negate the precepts of 10 CFR 100 and substitutes two critical radii as criteria for addressing the consequences of major accidents. Planning distances for emergency response actions should be based upon realistic analyses and rational considerations.

2. Notification Requirements

The Department is concerned that the 15 minute notification requirement is not realistic and is of the opinion this requirement cannot be justified on a sound technical basis.

3. Definitions and Responsibilities of Emergency Agencies

The functions, roles, and responsibilities of various Federal agencies, State, and local authorities for the review, approval, and implementation of emergency plans need to be agreed upon and firmly defined. Of concern is the specific role that the Federal Emergency Management Agency intends to define for its responsibilities and actions for nuclear related emergencies such as discussed in the proposed rulemaking, and the interaction of that role with this Department, the Nuclear Regulatory Commission, other Federal agencies, and State and local emergency agencies.

4. Negative Declaration of Environmental Impact

The implications and impact of the proposed rule appear to be very far reaching and could be significantly detrimental to the entire nuclear industry and this Department's activities, as well as to the State and local jurisdictions. We believe the Department's comments should enable a more complete evaluation of the impacts of this rulemaking.

5. Effect of Non-Compliance

The cross-tie between the requirements for having an approved emergency plan and reactor operation or design should be deleted from the rulemaking. The rule should require the State and local emergency plans to permit substitution of alternatives, such as a Federally developed plan in cases where the State or local plans are not in compliance.

6. Issuance of the Proposed Rule

The Department believes that the proposed rule has both positive and negative aspects, and that the rule should not be adopted until further evaluations and consideration of comments are conducted by the Commission staff. We are particularly concerned that the proposed rulemaking may become law without subjecting the criteria for compliance to the full rulemaking process. The Department recommends that the Commission consider revising and reissuing the rule with associated criteria for additional review and comments, prior to finalization and implementation.

The Department is aware of comments supplied by the Advisory Committee on Reactor Safeguards in their letter to Honorable John F. Ahearne dated May 6, 1980. The Department strongly endorses those comments.

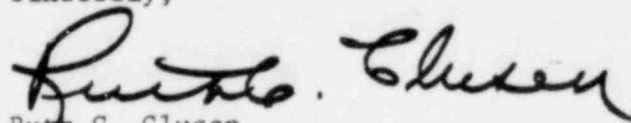
Mr. Samuel J. Chilk

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In summary, while the Department supports the purpose of the proposed rule, the Department urges deferral of the proposed rulemaking. There remain a number of problems which must be resolved, and I offer our assistance to help both our agencies resolve those problems.

I appreciate your response to the Department's concerns and comments.

Sincerely,



Ruth C. Clusen  
Assistant Secretary for Environment

Enclosure

cc: Chairman Ahearne, NRC  
Commissioner Hendrie, NRC  
R. Minogue, NRC/SD  
W. Dircks, NRC

Department of Energy Comments

Nuclear Regulatory Commission Proposed New Rule  
10 CFR 50

General

1. Emergency Planning Zones - Specific distances (such as the ones in 50.33g, 50.47b, and 50.54s) should be deleted. Many factors enter into the determination of these distances and the regulation would be susceptible to misinterpretation for a wide spectrum of reactor types, sizes, and locations if they are retained. The excessive conservatism of the values given cannot be justified on technical grounds. See specific comment 1.
2. State and Local Emergency Plans - The requirement that makes the licensee responsible for submitting State and local emergency plans (50.54s) should be qualified. Reactor facilities which can demonstrate that 10 CFR 100 dose guidelines will not be exceeded during the hypothetical accident should be exempted from this requirement. The regulation should clearly state that an accident analysis performed to provide the bases for emergency planning should be based on realistic assumptions and not on the excessively conservative (Class 9) assumptions which are used for judging safety margins.
3. Alternative Plans - In cases where State and/or local officials decline to cooperate with the reactor owner in developing acceptable emergency plans, an alternative other than those proposed is recommended. For example, the Federal Emergency Management Agency (FEMA) could be empowered to substitute a Federally developed and implemented plan to protect the public. Unless State and local officials could be compelled to act, or such an alternative is added, the proposed rule would be unfair to those reactor facilities which are unable to exert the necessary influence to obtain required State or local jurisdiction actions.
4. Reactor Shutdown - Requiring that a reactor be shut down if off-site emergency plans are, or become, deficient is overly conservative under most, if not all, of the circumstances that can be postulated. This requirement should be deleted from 50.54s and t. Instead, these sections, or Appendix E, should require that the State and local emergency plans must contain alternatives other than reactor shutdown for these contingencies, including involving federally developed plans as noted in the preceding comment. Emergency off-site measures should be treated as backup defensive measures and should not be a substitute for plant safety requirements and actions.
5. Comprehensive Emergency Plans - This regulation should clearly state that generalized State and local emergency plans are acceptable with appropriate modification for the unique equipment requirements of a nuclear emergency.

6. Applicability - Under Supplementary Information (page 75170, Column 2, second paragraph) it states that "the proposed changes to 10 CFR 50.33, 50.47, and 50.54 apply to nuclear power reactors only." Since 10 CFR 50.2 does not define "nuclear power reactor" it must be assumed that these rules are intended to apply to all "utilization facilities" (50.2b), which covers all non-power production nuclear reactors. If this is not intended, a definition of "nuclear power reactor" should be added.
7. Criteria - Reference to NRC guidance documents in the footnotes should be deleted. Specific acceptance criteria should be included in the regulation after the criteria have been developed and approved in the usual manner, in order to provide for public review and comment. Much of the information contained in the guidance documents is usually subject to negotiation between the applicant and the NRC staff. Reference even in a footnote elevates the guidance documents to an inappropriate status.

#### Specific Comments

1. Emergency Planning Zones (EPZ) - The Department of Energy finds no basis for the EPZ of ten miles and recommends that the ten mile limit be re-evaluated and justified. These zones appear to be based upon the conclusions and recommendations in NUREG-0396 which in turn are based upon the concept of Protective Action Guides (PAG) introduced for radiological emergency response planning by EPA (Manual of Protective Action Guides and Protection Actions for Nuclear Incidents, EPA-520/1-75-001, September 1975). The PAG is defined as the "projected absorbed dose to individuals in the general populations which warrants protective action following a contaminating event." The basis for the PAG values (5 to 25 rem (thyroid) and 1 to 5 rem (whole body) could not be found in the EPA document.

Using the PAG values, the NRC established an emergency planning zone (EPZ) defined to be about ten miles for the plume exposure pathway and about 50 miles for the ingestion pathway.

The determination of these specified distances apparently involved the use of conservative DBA-LOCA licensing calculations, i.e., 100% of noble gases and 25% radioiodines in the core inventory released to the containment building and unfavorable meteorology. Licensing calculations from 70 safety analysis reports involving 129 separate nuclear units formed the data base from which the EPZ distance was developed. Although many cases were considered, it is believed that the study significantly overestimated the size of the EPZ because the licensing assumptions, used in all 70 cases are extremely conservative.

We have evaluated the proposed EPZ distance of ten miles for the plume exposure pathway by assuming a situation where the two hour whole body and thyroid doses at the exclusion area boundary (EAB) equal the guideline values set forth in 10 CFR 100, then calculating the expected



corresponding dose vs. distance out from the EAB, and determining the distances from the EAB at which the expected doses become less than the PAG values. This distance was then compared with the recommended distance of ten miles, and the expected doses at the EAB resulting from the accident sequences in WASH-1400.

The results indicate that for a site with an exclusion radius of 0.5 mile (the approximate median radius for currently licensed plants) and for average dispersion, the PAG values would not be exceeded at distances of 1.5 miles and 2.5 miles from the reactor containment building for the whole body and thyroid doses, respectively. These distances are significantly less than the recommended ten miles. In addition, most accidents analyzed in the licensing process show that calculated doses at the EAB are a small fraction of the 10 CFR 100 guidelines. Also, the DBA-LOCA calculations show that the EAB doses are less than the 10 CFR 100 guidelines.

The WASH-1400 study appears to be more realistic than the conservative licensing calculations. Work done at Oak Ridge, subsequent to the WASH-1400 study, shows that the WASH-1400 releases from the core are conservative by at least two orders of magnitude (A. P. Malinauskas, Sixth Water Reactor Safety Research Meeting, November 1978). Without consideration of the possible conservatism in the WASH-1400 results, many of the core melt accident sequence consequences in that study do not exceed the guideline values set forth in 10 CFR 100. As a separate issue, the Department does not believe that an overall requirement for planning emergency response on the basis of the 10 and the 50 mile EPZ's would assure the health and safety of the public. Rather, it could create a greater risk associated with the potential notification and evacuation of such large areas than that associated with the nuclear incident. A procedure is needed whereby the risk to the public can be identified in small sectors to larger sectors around the periphery of the reactor and whereby an assessment can be made as to what action should be taken relative to the public in each of these small sectors based upon potential radioactivity releases and graduated PAG values. This concept would take advantage of the incident, time response, make notification simpler, and may prevent mass confusion. The sectors could be as small as one mile long and 30° wide. The position of the sector around the reactor site would be identified by wind movements during the time of the incident. The area of a 10-mile zone is in the order of 300 square miles as compared to about 0.3 square miles for a one mile, 30° sector. Response operations would be greatly simplified. This concept is recommended for serious consideration.

2. Part IV, Paragraph D. Notification Procedures - The specified time of 15 minutes for notification and communication to the public is not realistic and is not capable of accomplishment if factual and detailed information is to form the basis of such action. The Department believes that there should be no constraints or requirements on notification times, and that notifications should be based upon operator knowledge of plant conditions, common sense, and judgment.

The Department believes that if a specific time must be documented, that time should be in the order of one to one and one-half hours which would permit an assessment of plant status and meteorological conditions associated with the incident. Additionally, the Department believes that the citations which lead to the 15 minute notification requirement have been misinterpreted and require additional review and study.

NUREG-0396, Appendix I, is quoted in the new proposed rule as providing the technical basis for the 15 minute criteria. No such technical basis is clearly demonstrated from NUREG-0396; however, that document states that some of the probabilities of core melt accidents and release times are based on data in WASH-1400. The Department notes that no technical basis exists for an across-the-board 15 minute notification scheme for all plants based upon the data in WASH-1400.

Table 5-1 of WASH-1400, "Summary of Accidents Involving Core," clearly demonstrates this point. The pertinent data is summarized below:

<u>Radioactivity Release Category</u>	<u>Probability Per Reactor Yr.</u>	<u>Time of Release (ATM) (HR.)</u>	<u>Containment Energy Releases (10<sup>6</sup> BTU/Hr)</u>
PWR 1	9x10 <sup>-7</sup>	2.5	520
7	8x10 <sup>-6</sup>	2.5	170
3	4x10 <sup>-6</sup>	5.0	6
4	5x10 <sup>-7</sup>	2.0	1
5	7x10 <sup>-7</sup>	2.0	.3
6	6x10 <sup>-6</sup>	12.0	N/A
7	4x10 <sup>-5</sup>	10.0	N/A
8	4x10 <sup>-5</sup>	.5	N/A
9	4x10 <sup>-4</sup>	.5	N/A
BWR 1	1x10 <sup>-6</sup>	2.0	130
2	6x10 <sup>-6</sup>	30.0	30
3	2x10 <sup>-5</sup>	30.0	20
4	2x10 <sup>-6</sup>	5.0	N/A
5	1x10 <sup>-4</sup>	3.5	N/A

As noted in the above tabulations, no postulated BWR core melt accident results in radioactivity releases to the atmosphere until at least 2.0 hours after initiation of the accident. Thus, clearly no 15 minute notification is reasonably justified for any BWR. The table notes two accident classes (PWR 8 and PWR 9) which would have one-half hour releases.

The PWR 9 accidents includes such scenarios as both large and small break LOCA's where the ECCS works properly, no core melt occurs, and no containment rupture occurs. The release levels are sufficiently low that exposures outside the fence would be well below the Protective Action Guides cited in NUREG-0396. Thus, accident class PWR 9 does not warrant sufficient concern to adopt a 15 minute notification based upon the fact that no action is required and only a small amount of energy is released relative to more serious accident classes.

The PWR 8 accident release category also has a release time of 0.5 hour given, but sequences that would give a PWR 8 release are estimated to be less likely than  $10^{-6}$ /year. The cited probability of  $4 \times 10^{-5}$ /year for this category comes from the practice in WASH-1400 of relegating 10% of a category into the neighboring categories. Thus, 10% of the frequency of PWR 9 ( $4 \times 10^{-4}$ ) is  $4 \times 10^{-5}$ , the assigned frequency of PWR 8. Inspection of the transients yielding PWR 8 releases yields no support for the 0.5 hour release time.

From these observations, the Department believes that a 90 minute notification is more realistic based on the fact that releases of radioactivity to the environment for all but two of the accident classes are on the order of at least several hours and that these two, PWR 8 and PWR 9, contribute relatively small releases when compared to more serious accidents.

3. Draft Negative Declaration-Finding of No Significant Impact
  - a. The effects of multiple plant shutdowns should be considered, particularly on a statewide basis. The likelihood of such an event does not appear to be unreasonable given the regional nature of utility companies and the need for their coordination and consultation with State governments before NRC concurrence is obtained. Impacts to be evaluated should include financial implications, impact on alternative power sources (including fuel availability) and large scale public health consequences.
  - b. The economic impact of providing replacement power should be rechecked. A sample calculation for replacement power was made for the MAIN network. The replacement cost, based on a 12 month actual operating average ending September 1979 for replacing nuclear with fossil within MAIN, was found to be 40 percent higher than the replacement cost shown in the draft assessment. Should the projected replacement costs be revised, the changes also should be reflected in the above analysis for multiple shutdowns.
  - c. Economic impacts attributable to the need for additional staff requirements by the utilities and Federal, State and local governments should be addressed.
4. The proposed rule places requirements of an administrative and financial nature on State and local governments via licensees and applicants and makes licensees responsible for matters over which they have no direct control. This is considered an inappropriate method to implement or enforce emergency planning requirements.



5. The proposed rule should include definition of "local governmental entities." There is a wide diversity in form, size, and number of governmental bodies that might consider themselves to be "local governmental entities" and, therefore, a required participant in formulating and implementing plans for emergency preparedness. Clarification is required to minimize this potentially confusing ambiguity.
6. Even if the applicant could meet the specific requirements of 10 CFR Part 50 as proposed, there is a fundamental problem of coordinating the concurrence of several non-related agencies without providing a structure by which such concurrences can be carried out with a minimum of duplication and conflict among the parties involved. The rule should include some guidance to address this possibility.
7. The scope of the emergency planning drills and exercises which states "reasonably achievable without involving full public participation" should be changed to "and involving representative public participation."