



Department of Energy
Washington, D.C. 20545

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45FR 79820



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FEB 5 1981

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

Dear Mr. Chilk:

We have reviewed the Notice of Intent to Prepare an Environmental Impact Statement (EIS) for Revision of the Regulations Governing the Siting of Nuclear Power Plants, dated November 17, 1980. Our comments on this notice are contained in Enclosure 1.

The Department of Energy has also reviewed and submitted comments on the Advance Notice of Rulemaking on Revision of Reactor Siting Criteria published earlier last year, which are somewhat more detailed than those in Enclosure 1, and were transmitted to you by letter of January 8, 1981, from Ruth C. Clusen, Assistant Secretary for Environment. Enclosure 2 is a copy of this submittal. We urge that the scope of the proposed EIS be broad enough to address the somewhat more detailed comments contained in Enclosure 2. Many of these comments are related to the various possible alternatives presented in the Advance Notice of Rulemaking, or other alternatives.

Sincerely,



John W. Crawford, Jr.

John W. Crawford, Jr.
Acting Assistant Secretary
for Nuclear Energy

2 Enclosures

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COMMENTS ON THE SCOPE OF THE EIS FOR THE SITING CRITERIA RULEMAKING

General Comment

It is important, in the development of the Siting Criteria Rulemaking, to provide for integration of this rulemaking with other ongoing NRC rulemakings such as Degraded Core Rulemaking, the Safety Goal Rulemaking, the Emergency Planning Rulemaking, NUREG-0660 efforts, the Rulemaking on Minimum Set of Engineered Safety Features, the Rulemaking on Class 9 Accident Considerations, and other planned NRC policy directions. Siting criteria should be derived from LWR risk models and should take credit for design features which are required under other regulations.

Within the scope of the EIS, a determination should be made whether having a set of numerical criteria or providing some other appropriate site selection method is the best approach for demographic criteria, minimum stand-off distances, and interdiction of contamination groundwater. If numerical criteria are determined to be the best approach, an analysis should be further made whether these criteria should be fixed or whether variable numerical criteria which factor inplant specific and site demographic specific data might result in an improved environmental impact (including consideration of the availability of sites and the health and safety of the public). It may be that flexible criteria might avoid the need to have regionally dependent criteria.

Lastly, the EIS should evaluate the cost vs. benefit (reduced risk) of the various approaches to site selection. This analysis will aid in comparing various alternatives that might be used in determining site selection.

Comments on Appendix A - "Tentative Table of Contents for Siting EIS"

Item III.1.b.1.

The case for separating siting from plant design considerations has not been substantiated. The rulemaking will provide a disincentive to improve safety through design if the siting issue is isolated from design considerations. It is doubtful in our view that further analysis could demonstrate that such independence as a policy could actually achieve an improvement with regard to the health and safety of the public.

This rulemaking should be applicable only to large light water power reactors, not research, test, or advanced design reactors, since the criteria are derived from accident consequence modeling of a 1000 MWe LWR and may have little relevance to a plant of significantly different type or size.

Item III.2.a.

The rule should not assume that a particular fixed exclusion boundary will be required. Because of differences among sites in population distribution, terrain, and other site characteristics, no fixed exclusion boundary could be universally appropriate.

Comments on Appendix B - "Technical Approach to Detailed Analyses"

Item I. Radiological Consequences of Accidents

A fundamental problem in this area has been the unnecessarily conservative and arbitrary assumptions used in establishing a source term in the accident consequence assessment (such as the TID-14844 source term based on experimental data gathered in the 1950's). A realistic approach which addresses known uncertainties while incorporating more recent experimental data¹ is needed.

One way to develop such an approach would be to establish a committee of persons most knowledgeable in fission product behavior. Such a committee could develop a realistic source term based on known uncertainties and most recent data. This source term could be applied in the accident consequences assessment to derive, ultimately, population density criteria.

The reactor model should be studied for appropriateness. For example, if the reactor siting criteria are to be used for future siting only, then the reactor model should take credit for any design safety features that will be required (e.g., containment sprays, hydrogen igniters, "Lessons Learned" reactor improvements).

¹ Proceedings, "Realistic Estimates of the Consequences of Nuclear Accidents," Conference, Winter Meeting, International Conference on World Nuclear Energy -- Accomplishments and Perspectives, Washington, D.C., November 16-21, 1980, American Nuclear Society.

Item IX. Effect of Groundwater Interdiction Criteria on Site Availability

1. Revision of the siting criteria is being proposed on the premise that site isolation should be independent of plant safety features. The concept of groundwater interdiction appears to contradict this premise in that it would apparently introduce design safety features of some sort to prevent the escape of contaminated groundwater. It is understood that groundwater interdiction might provide long-term control of contamination to the environment. However, either the original premise must be revised to recognize the benefits of site specific conditions and plant specific engineered safeguards or the interdiction criteria should be removed from the rulemaking.
2. If this approach is not removed now, it should be defined more specifically relative to the existing technology and associated cost of interdictive measures. It is particularly important to provide a cost vs. benefit analysis under this item because of the current vagueness of the concept, and the potentially costly methods that might be entailed to provide groundwater interdiction.

Item X. Post-Licensing Land Use Control

1. There is general agreement that neither the Government nor the licensee can control land use and population growth over the lifetime of a plant.
2. Because of the licensee commitment to provide reliable electric service at a reasonable cost, no condition which is out of its control should be imposed on the licensee. Application of land use controls would be likely to preclude the nuclear option in many or all regions due to the possible economic consequences, uncertainties in being able to provide generating capacity, etc.

Item XII. Use of Federal Lands

Availability of Federal land for future siting of nuclear power stations might help to alleviate many of the concerns previously addressed and should probably be explored in more depth.

Item VI. Severity of External Hazards

The maximum stand-off distance methodology should be removed from the Advanced Notice of Rulemaking (ANR) and from the scope of the EIS. The basis for this position is that:

1. Existing regulations have proven to provide an adequate level of safety from external hazards. For example, major dam failures and earthquake events are already covered by Regulatory Guide 1.59 and Standard Review Plans 2.4.2 and 2.4.3. The safety-related structures, systems, and components must be designed to withstand and retain capability for cold shutdown and maintenance thereof for conditions resulting from the worst site-related flood probable at a nuclear powerplant (e.g., probable maximum flood, seismically induced flood, hurricane, seiche surge, heavy local precipitation), with attendant wind generated wave activity. Another example is Regulatory Guide 1.78 which requires consideration of movement of hazardous material within five miles of a nuclear facility (including movement by rail, road, and navigable waterways).
2. It is premature for the NRC to establish minimum stand-off criteria until the methodology used for establishing comparative risks from external hazards has undergone scientific review and comment.
3. There is no recognition of site specific factors, such as terrain, which can be even more important than distance in protecting a nuclear facility from external hazards.

Item VII. Engineering Alternatives to Stand-Off Distance

1. Existing practice in addressing external hazards should be continued.
2. In place of fixed stand-off distances, establish design criteria which limit the potentially damaging effects (i.e., temperature, overpressure, flood depth, etc.) from external hazards.

JAN 8 1981

Mr. Samuel J. Chilk
Secretary of the Commission
U. S. Nuclear Regulatory Commission
Washington, D. C. 20550

Attn: Docketing and Service Branch

Dear Mr. Chilk:

The proposed changes to 10 CFR Parts 50, 51, and 100 entitled, "Modifications of the Policy and Regulatory Practices Governing the Siting of Nuclear Power Reactors," published in the July 29, 1980, issue of the Federal Register has been reviewed by the Department of Energy.

As a result of this review, many comments were generated by a number of different groups. Most groups within the Department believe that siting can be a useful factor in achieving safety and that it has a place within the "defense in-depth" concept for nuclear power facilities. However, we disagree with the proposed action and feel that site selection criteria should contain elements of isolation and engineered safety features, as well as topography, demography, the transportation network, meteorology, jurisdictional boundaries, etc. We believe that radiation dose assessment to the general population should continue to be used as the dominant measure for site suitability. It is our judgment that few sites could be approved if credit could not be taken for dose reduction by the engineered safety features in hypothetical accident situations. Thus, the practice of permitting plant design features to compensate for unfavorable site characteristics should be continued.

It appears to us that a significant number of existing power reactor sites would not meet the proposed criteria. However, these sites have been studied extensively, a number of site-related analyses have been performed, and their locations have been previously approved. If the building of plants or additional units at sites such as these is no longer permitted, the Commission

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will be in effect eliminating the nuclear option from large regions of the country where it is needed most, regardless of the stated goal not to do so.

The enclosure presents the more detailed Departmental comments which have been consolidated as much as is practical. We regret the delay in providing our comments. If we can be of further assistance, please let us know.

Sincerely,

/s/

Ruth C. Clusen
Assistant Secretary for Environment

Enclosure

cc: T. Rehm, MRC
C. Beckwith, MRC

Department of Energy
Comments on Nuclear Regulatory Commission
Siting Policy

A. General Comments

1. The concept of balanced, cost effective risk reduction should be factored into the criteria more. Simply forcing power plants to isolated sites while at the same time retaining all the safety features seems rather arbitrary and inconsistent. The use of radiation dose assessment as the dominant measure for site suitability should be continued.
2. Any new siting criteria should be established within the framework of an overall risk criterion. We believe that site criteria can be established based on (1) the maximum acceptable dose to an individual outside the exclusion area, and (2) the maximum acceptable man-rem dose to the population at large. This approach affords protection to the individual and limits the population at risk regardless of the population density.
3. If the Commission feels that siting criteria changes must be made at once, we recommend that they be made only on an interim basis. The time gained by this action could be used for rulemaking on other important aspects of nuclear plant safety and for consideration of other approaches to the establishment of reactor siting criteria.
4. The statement that U. S. siting policy and U. S. reactor safety approaches do not affect other countries should be changed as there clearly is interaction between Western nations.
5. Any siting policy rule the Commission develops should exempt reactors other than large light water-cooled power reactors. Other types of reactors, such as Liquid Metal Fast Breeders, High Temperature Gas, Research, and Test Reactors, should all be sited with due consideration to the technical features of that reactor type and postulated accident doses associated therewith.
6. Any siting policy rule the Commission develops should be consistent with the level of public safety required by the numerical safety goals being developed by NRC. Compatibility should be ensured through the methods of probabilistic risk assessment.
7. Any siting policy rule the Commission develops should exempt reactors for applications other than those where the principal product of the facility will be electrical energy. Arbitrary minimum standoff distances may effectively foreclose the nuclear option for potentially important future applications such as process heat or production of chemicals, such as methane, syn-fuels, or hydrogen.

B. Specific Comments

1. Item A

- a. We agree with the Advisory Committee on Reactor Safeguards that establishment of demographic-related site criteria should be made within the framework of an overall Commission siting policy, and that any changes to past siting policy be interim in nature.
- b. The Committee suggests that the Commission should explore the development of a program to identify a bank of sites on a regionally distributed basis. This program should be emphasized and expedited while, at the same time, the Commission considers any siting criteria which may be unique to the nuclear energy center siting concept. If "remoteness" in siting is a major aim of the Commission, then the "bank" sites should be able to accommodate a number of reactors.
- c. We believe it is essential that considerations of acceptable risk to the public and risks from other energy sources, as well as from other natural and man-made events, be included in reactor siting decisions. As brought out in WASH-1400, nuclear reactor operations present a much smaller risk than many other of society's activities.
- d. Site selection criteria should contain elements of isolation and engineered safety features as well as topography, demography, the transportation network, meteorology, jurisdictional boundaries, etc.
- e. Few sites could be approved if hypothetical accidents were assumed with no credit for mitigation of their consequences by engineered safety features. Thus, we believe it is not feasible to divorce plant design from siting criteria. Dose assessment should be used as the dominant measure for plant and site suitability.

2. Item B

- a. We are concerned about the proposed population density limits surrounding a facility. It is not clear that areas of low population density would be near other desirable siting characteristics, such as low seismic activity and sufficient cooling water. Hence, in spite of the goal not to do so, the proposed ruling may effectively eliminate the nuclear option from large regions of the country. Also, the adoption of different criteria for different areas of the country is undesirable as it would probably result in using the most isolated nationwide -- again, eliminating large regions.
- b. It will be essentially impossible to maintain limits on population density during the lifetime of power generating facilities and there should be no attempt to do so. One can draw an analogy with airports in the U. S. where they were built in relatively isolated areas only to have those areas build up after completion.

- c. It is our judgment that Task Force Recommendation 1 is arbitrary and without scientific basis. For those reasons, we disagree with it and recommend other approaches as provided herein.
- d. The Department of Energy believes that Alternative B to Item B is the preferred approach to the implementation of Task Force Recommendation 1, if the Commission decides to go forward with Recommendation 1.
- e. We recommend against trying to establish limits based on average population. This would be very difficult in areas such as a major thoroughfare having heavy seasonal travel through a low resident population or such as a thinly populated resort area having heavy influx of tourists for short periods of time.

3. Item C

- a. Any minimum standoff distances should be calculated on a hazard-to-man safety evaluation and should be based on facilities in existence at the time of plant construction. We agree with the Advisory Committee on Reactor Safeguards that the proposed approach lacks adequate rationale for the numbers suggested.
- b. The use of minimum standoff distances has many problems associated with it. How big is a major dam? Faults in the eastern U. S. tend to be deep below entire provinces and have no exact placement. Is a distance downstream in river-miles or straight-line miles? Are toxic substances being shipped on a navigable waterway really a threat to plant safety systems? How big is a large natural gas pipeline? Have all potential hazards been included -- what about rail ways that transport "hazardous materials"? What about volcanoes; e.g., Mt. St. Helens? If this approach is adopted, these types of problems would have to be addressed.

4. Item D

We agree with the Advisory Committee on Reactor Safeguards that the wording relative to groundwater contamination resulting from Class 9 accidents needs to be more explicit. Also, it is not clear how this could be accomplished if the Commission will not allow credit for engineered safety features. Is it the intent to prohibit siting over or near any groundwater?

5. Item F

As indicated above, we believe post-licensing changes in offsite activities should not generally limit operations. Any restriction of such offsite activities should be limited to those which clearly pose a significant risk to the nuclear facility.

6. Item G

The Department of Energy favors Alternative B over Alternative A as selecting sites with no unfavorable characteristics is not considered practical. However, we question the appropriateness of including safety aspects within the NEPA analysis.

7. Item H

Final site approval should be decided as early as possible based on accepted site criteria. Site suitability should be reopened during the licensing process only upon presentation of hard evidence that the site may no longer meet the accepted site criteria.

8. Item I

The Nuclear Regulatory Commission should retain maximum flexibility to address site disapprovals by State agencies instead of being limited by a rigidly worded regulation. All State disapprovals should come through the Governor's office and be coordinated at that level with appropriate action of the State legislature. The basis for such disapprovals should be carefully bounded.

9. Item J

A method to compare all external events, both radiological and non-radiological, would be very helpful.