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envirosphere company

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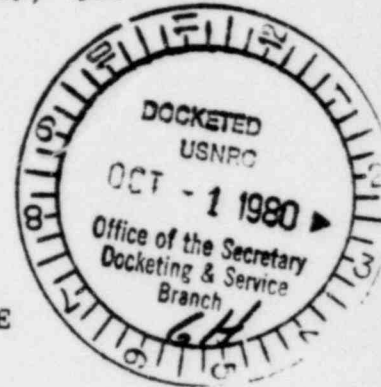
September 29, 1980

Secretary of the Commission
US Nuclear Regulatory Commission
Washington DC 20555

Attention: Docketing and Service Branch

Subject: MODIFICATION OF THE POLICY AND REGULATORY PRACTICE
GOVERNING THE SITING OF NUCLEAR POWER REACTORS

Advance Notice of Rulemaking - Revision of
Reactor Siting Criteria, August 5, 1980



Gentlemen:

Envirosphere, a division of Ebasco Services Incorporated, has reviewed the advance notice of rulemaking on the revision of reactor siting criteria and offers the following general and specific comments. These comments are as follows:

General Comments

1. Until the NRC has developed specific safety goals that define acceptable levels of risk it is premature to make wide scale permanent changes to existing reactor siting criteria. It is our belief that the public health and safety, the environment and the US economy would benefit more at this time from: 1) the definition of acceptable levels of risk for all types of energy sources or shortages; and 2) the development of the methodology for quantifying these risks in a uniform way and subsequently translating the acceptable levels of risk into appropriate safety goals and criteria.

The implementation of the lessons learned as a result of Three Mile Island should make a significant, although admittedly not at this time quantifiable, contribution to the further lowering of the already low levels of risk to the general public from the operation of commercial nuclear power plants. It is not readily apparent that significant further risk reductions will in fact accrue from the proposed siting criteria revisions. For example, reduced population alone will not necessarily reduce the risk from a full spectrum of potential

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accidents if the area is undeveloped to the extent that emergency protective actions would be more difficult than at an available, somewhat more populated site, or if substantially longer transmission corridors increase the probability of a complete loss of off-site power.

It is our recommendation that any reactor siting criteria revisions made at this time should be classified as "interim" until specific NRC safety goals have been developed and it has been established that the interim criteria are consistent with those goals. Any interim changes to the criteria would have to be made on the basis of deterministic considerations because the basis for probabilistic risk reduction decisions and the acceptable level of risk have not been established, as noted above.

2. The stated intent of the Commission to reemphasize the desirability of site isolation may raise environmental concerns that could in effect preclude the nuclear option for those areas of the country that benefit most from its use.

The Commission must keep in mind the existing complexity of the public hearing process and the full effect of its proposed policies on the ability to license facilities at new sites. This is especially relevant in light of the relative ease with which intervening special interest groups can delay the licensing process by focusing upon perceived NEPA issues. This will be of special concern for remote sites because of the potential for utilization of previously "unspoiled" or ecologically sensitive lands for both the power plant and its associated longer transmission corridor. NEPA issues have the potential to make the remote siting policy the vehicle by which effectively no new sites can be developed.

Additionally, the site having the smallest surrounding population may not be the "lowest risk" site. Minimizing site related risk requires the optimization of all site specific characteristics which contribute to either the probability of occurrence or consequences of the event(s) under consideration. For example, a somewhat more populated site with excellent soils and a highly reliable ultimate heat sink may in fact be a "lower risk" site than an available remote site. Remote siting could also jeopardize the availability and stability of the high caliber of operating personnel required for optimizing plant performance and safety.

3. Without defined NRC safety goals and quantified acceptable levels of risk, the NRC has no rational way, other than the application of purely deterministic criteria, of establishing a minimum required set of ESFs for new plants. The incorporation of specific additional ESF systems may or may not provide the most cost-beneficial means of achieving significant incremental risk reductions. We believe



that until a value-impact methodology for balancing the additional margin or increment of safety afforded by the addition of any new system against its costs is established, a rulemaking that would require a specific minimum prescribed set of ESFs is premature.

Specific Comments

Item A - Conceptual Goal 1

The inability of an applicant to compensate for some site features by design may preclude some utilities from building nuclear plants because of a lack of available sites. The probable effect would be to limit these utilities to coal fired plants for future generating capacity. This potential outcome would seem to classify the rulemaking as a major federal action requiring an environmental impact statement.

It is not apparent that a shift in emphasis from design features to isolation is required. Population density limits already specified in Regulatory Guide 4.7 are sufficiently restrictive to preclude siting near a large city, even if the exclusion boundary and low population zones were very close to the plant. Further restrictions in population density criteria should be correlated with a specified and quantified increment of reduction in the level of risk to be achieved.

Item A - Conceptual Goal 2

The specific acceptable residual risk level to individuals and society for all accidents that must be considered at a site must be defined by the NRC to rationally specify any required ESF package. The probability of occurrence is only one factor in risk. The consequences at any given site for identical plants undergoing identical events will be different depending upon such factors as topography, X/Q values, food chain exposure, rainout population at risk, emergency response team effectiveness, etc. Thus the residual risk (a term which the NRC should clearly define) will be different. Once NRC safety goals have been established, the attendant acceptable levels of risks from all classes of accidents have been defined, and the supporting risk assessment methodology has been developed rational decisions can be made by the utility and designers on the optimum ESF package required for any plant. Because of the costliness of these systems, flexibility in design/site characteristic feature tradeoffs should be permitted for each plant so long as compliance with the accepted residual risk value is demonstrated for the spectrum of events to be considered.

Class 9 accidents are the subject of another NRC rulemaking. The rationale for incorporating changes to reactor siting criteria which will include class 9 accidents as part of this rulemaking should be defined.



Item A - Conceptual Goal 3

The rulemaking should provide a comparison of the risks from all major energy generation sources in proposed regions, since it would be impossible to select regional risk criteria for nuclear power unless those risks to individuals and society attributable to alternative energy sources available to each region were known. Such a comparison to be meaningful must include the hazards associated with fuel and waste transportation; a nontrivial risk when one is addressing coal fired generating facilities.

The NRC should also define what is meant by "regions" and "large regions" since the size of these areas will determine whether utilities are forced to turn to coal fired plants or other sources in more highly populated regions. The risks to the general population from such an action may very well be greater than the risk associated with nuclear power. This potential outcome would appear to be in direct conflict with the protection of the public health and safety.

As stated earlier under General Comments, the conceptual goals identified by the NRC in Item A will be difficult if not impossible to achieve without established safety goals and quantitative risk assessment techniques. Since NRC policy on these items has not been established at this time, these three goals can only be attempted via the use of a subjective, deterministic siting policy. It should be clear that any changes to existing reactor site criteria in the near future will not be correlated with demonstrable reductions in risk levels to either individuals or the general population. The NRC should therefore refrain from making any assertions about resultant residual risk levels in the proposed rulemaking.

Additional Questions Relative to Item A

Question 1

It is our recommendation that in order to choose the site that truly minimizes the risks from all events, plant specific design features to compensate for reasonable unfavorable site characteristics should still be permitted. It is important to come up with a site that provides an optimized set of site safety features and is responsive to environmental and economic concerns.

Question 2

Consideration of acceptable risks to both individuals and the general population should be compared for nuclear and other energy sources, as stated in our comments on conceptual goal 3, above. It makes little sense to increase the overall risk of ill health or death by sacrificing nuclear energy to other sources of energy or energy shortages with even higher attendant adverse public health risks.



Question 3

Any revised site suitability criteria should be regionally variable so as not to preclude the nuclear option where it is most needed.

Item B - Alternative A

Task Force Recommendation 1

1. The statement "specify a fixed minimum exclusion distance based on limiting the individual risk from a DBA" is difficult to support. The risk to any individual will be dependent upon the probability of an event occurring. This probability will not be uniform for all reactors and will be a function of specific unique plant/site characteristics. It therefore is not clear how a minimum risk exclusion zone can be generically fixed. If the NRC is seeking to deterministically fix exclusion zone boundaries for all plants, then no reference to risk assessment should be made.

Additionally, any minimum exclusion zone should be based on the individual's risk from all accidents. Ideally, this distance should not be fixed generically, but derived from PRA methods developed to implement specified NRC safety goals which are yet to be developed. The current methodology for determining acceptable exclusion zone distances by performing dose calculations to assure that the maximum exposure at the exclusion zone falls within preestablished criteria is well developed and highly conservative. When coupled with the requirements for emergency offsite notifications within 15 minutes, we believe that there is reasonable assurance that the most exposed individual would be adequately protected.

2. An emergency planning distance of 10 miles has already been incorporated into 10CFR50 as Appendix E; the issue should therefore be removed from this rulemaking.
3. As stated in the comments on item A, conceptual goal 3 and additional question 2, any population density/distribution limits should be based on the comparative risks of all alternative energy sources.

Item B - Alternative B

The use of the three tier approach appears feasible subject to several comments. A definition of risk for high and low thresholds would be required for each parameter under consideration. The risk of a nuclear plant with minimal ESFs and the probability of beyond design basis accidents must be defined or the methodology for its determination defined as a part



of this rulemaking. The lower threshold should be based upon the risk of relevant worst case energy sources. Sites falling in the middle risk range could then be evaluated and approved on the comparative risk of alternative energy sources.

It should be noted that for the demographic site acceptance parameters a very low population density does not necessarily minimize risk unless one does not plan to evacuate following a severe accident. If evacuation is planned, there is evidence that evacuation times get shorter as population density increases (see EPA 520/6-74/002). Of course, this statement does not apply to extremely high density areas.

Additional Questions Relative to Item B

Question 1

See comment 1 on Item B Alternative A.

Question 2

See comments on additional question 3 to Item A.

Question 3

Population density/distribution limits should be based upon the comparative risks of available energy sources. Evaluation of projected or actual changes in population should be evaluated in terms of the incremental increases in risk, again considering any modification to that incremental increase in risks from available alternatives.

Item C - Alternative A

The concept of a minimum standoff distance is good in theory. The distance, however, should be defined by mathematical models which recognize the importance of intervening structures or topographic characteristics that may partially or totally mitigate the potential effects of an offsite hazard. It is apparent therefore that prescribed fixed standoff distances have little bearing on the actual potential impact at a site (other than determining whether or not a particular hazard need be addressed at all). While the types of hazards to be evaluated and the mathematical models to be used should be specified, the specific standoff distances to be employed should vary to meet the unique features of each site and its surrounding area.



Additional Questions Relative to Item C

Question 1

The appropriate basis for determining standoff distances should be specified for each category during the rulemaking. For example, RG 1.91 for explosions, SRP 3.5 for airports, or other specific methods.

Item D

Task Force Recommendation 3

The recommendation is too vague. As noted by the ACRS, a mechanism for defining how direct groundwater contamination results should be specified. Additionally, the question of reasonable assurance for a spectrum of potential sites should be addressed by the rulemaking. Additionally, the rulemaking should address the extent of the preparations (i.e., site preparation, detailed plans, reserve money for action), necessary to assure that measures "are possible." The latter two comments are directed towards avoidance of litigation.

Item F

Items 1 and 2

These items appear to be acceptable since they warn appropriate officials of specific considerations to be considered in the community development process. Periodic warnings ought to be considered, however, since elected officials do change.

Item 3

This item should be clarified in the context of Item C. That is, up to what distances must be monitored for what type of hazards?

Item 4

What is considered a significant risk? Is it the minimum threshold of risk in Item C? Alternative B proposes to quantify the contribution of potential hazards to residual risk. Is it sufficient risk to warrant consideration of hazard as a design basis event?

Additional Questions Relative to Item F

Question No. 2

The NRC should reevaluate the risks from various energy sources and perform a cost-benefit analysis of potential actions.



Question No. 3

An alternate question is posed. This action and other actions in this document seek public comment on an NRC policy to issue licenses to operate contingent upon a failure of certain activities to occur outside the site boundary. The NRC should contact the major sources of financing to determine if such actions will eliminate the money available for plant construction. If it would, the rulemaking should address this point in light of the federal government's position that nuclear power plants are a necessity.

Item G

As discussed in our General Comments and in our comments on Item A, it is our belief that the acceptability of a given plant/site combination should be based upon its individual compliance with the acceptable level of risk developed from a specified NRC safety goal.

Item H

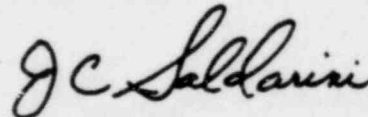
Site approval should be established at the earliest possible point in the review process. Once a site suitability finding and decision has been made, reopening of pertinent issues should be permitted only for the timely raising of issues which clearly demonstrate that a different determination would have been made if the new information had been available prior to the issuance of the decision.

Item I

The NRC should remain flexible to handle state agency disapprovals on a case-by-case basis. We believe that this particular issue is not significant enough to be included in the rulemaking.

Envirosphere hopes our comments will be carefully considered and would welcome the opportunity to participate in any hearings on this subject.

Very truly yours,



J.C. Saldarini
Manager - Nuclear Licensing

JCS/KEL/dr

