Safety Goal Project
(45 FR 71023)

Washington Public Power Supply System
A JOINT OPERATING AGENCY

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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:

Subject: COMMENTS ON NUREG-0764, "DEVELOPMENT OF A SAFETY GOAL -- PRELIMINARY POLICY DECISIONS," MARCH 1981

The Washington Public Power Supply System appreciates the opportunity to offer comments on NUREG-0764. As the owner of five nuclear electric generating stations under construction, we are directly affected by the establishment of a nuclear plant quantitative safety goal. The Supply System is fully committed to the construction and operation of facilities which are safe and reliable. We see the establishment of a quantitative safety goal as a positive way that we may measure and demonstrate the high level of safety which our plants will provide.

We believe that it is mandatory to proceed expeditiously to develop and to implement a logical quantitative safety goal. The technical bases for this goal exist today. What is required is for the NRC and the nuclear community to exercise the leadership to develop these technical bases into a workable safety goal.

We advocate the development of the safety goal in conjunction with a degraded core rulemaking. However, it is essential in our opinion that a quantitative safety goal be developed early to guide the degraded core rulemaking. This process will provide a test of the utility and effectiveness of the safety goal and will yield a more logical and rigorous degraded core rulemaking, thus better serving the public interest.

The Supply System is in favor of a safety goal which limits the individual risk and the population risk. In addition, we recommend a cost-benefit criterion to be used to judge incremental reductions in risk beyond those

required by the two goals stated above. We recommend a single quantitative value for each of these parameters. The Atomic Industrial Forum has presented recommendations on quantitative safety goals and we are in general agreement with their approach. Our staff is continuing to evaluate the recommendations of the AIF and others to be in a position to assist in the establishment of a quantitative safety goal.

We hope to participate and contribute to the discussions among NRC and interested parties which have begun through release of NUREG-0764.

We interpret the "Additional Questions" included with NUREG-0764 as a mechanism that NRC will use as part of the process to reach a consensus on the approach so that resources may then be applied toward the achievement of a workable safety goal. Therefore, we have responded to the questions in the attachment to this letter with the expectation that our comments will be helpful.

Very truly yours,

G. D. Bouchey
Nuclear Safety Director

Attachment

cc: WNP-2 Files

Attachment

ANSWERS TO NUREG-0764 QUESTIONS

1. (a) Among the criteria for selection of an approach to safety-goal formulation that are presented, which are particularly important? Unimportant? Illustrative criteria are that the goal be comprehensive, logical, verifiable, practical, and publicly acceptable.

   (b) Should additional or different criteria be considered? What criteria and with how much emphasis?

Response:

All of the criteria listed are important and it would be difficult to rank them in order of importance. We know of no additional or different criteria which should be considered. We offer the following comments about the specific ones listed above.

Comprehensive--The safety goals should lead to nuclear plant safety standards for health risks to individuals and the population.

Verifiable--Compliance with the safety goal should be verified by a two step process:

1) Review of the structure of the fault trees and event trees used in the PRA in accordance with the PRA guidelines being formulated now by the Technical Writing Group.

2) Review of the probabilities and uncertainties assigned to basic events in the fault trees and to event tree brancn points.

Both steps in the compliance process are open-ended in the sense that accumulating operating experience may call into question either tree structure or specific assignments of probabilities and uncertainties. New data may require re-evaluation of parts of the PRA.

Practical--The implementation of the safety standards should result in more effective use of resources to reduce significant risks. We agree with the NUREG-0764 statement that the safety goal should "... lead to the resolution of real problems by real people within the real resource constraints."

Acceptable to the Public--The technical community should recommend comprehensive, logical, verifiable, and practical safety goals and implement standards based on these goals. If this is done with effective communication with the public, then the result should be acceptable to the public. We cannot support the incorporation of non-technical factors based on current perceptions of a segment of the population in the name of "public acceptance." We feel the resulting distortion of the technical credibility of the goal and evaluation process would undermine long term acceptance.

2. Which of the following are particularly important to include in a safety goal:

   (a) Some general approach to risk acceptability?

   (b) Quantitative safety goals?

   (c) Qualitative--even subjective--standards?

   (d) Approach to safety-cost trade-offs?

   (e) Goals for future safety improvements?

   (f) Standards for determining when new requirements should be applied retroactively?

Response:

Items a), b), d), and f) are important. Our recommendations on these items appear in responses to other questions. We recommend that qualitative or subjective standards (c) not be included in the goals (though the evaluation process for goal implementation will necessarily include criteria for qualitative judgements) and that goals for future improvements (e) be postponed until a workable standard is implemented and subjected to a trial period of perhaps five years.

3. (a) Among the approaches to safety goal formulation that are discussed, what approach or combination of approaches is particularly appropriate? Inappropriate? Why?

   (b) Should any other approach be considered? What approach?

Response:

Of the approaches to safety goal formulation, the one we recommend is using a concensus among informed professionals committed to improving real safety through the goal and evaluation process. This approach is not infallible but we feel that past experience demonstrates it to be the best available. We do not

believe there exists an ideal approach which would ensure an ideal safety goal. Professionals from AIF and IEEE have formulated safety goals which should be reviewed and adopted by the NRC upon resolution of NRC concerns. This process can lead to a safety goal that ensures a significant improvement in risk management.

4. (a) Among the approaches to dealing with uncertainty that are discussed, what approach or combination of approaches is particularly appropriate? Inappropriate?

(b) Should any other approach be considered? What approach?

Response:

The PRA for a plant should be carried through using best-estimate point estimates for probabilities in order to establish dominant cut sets and dominant sequences in event trees.

Estimates of uncertainties, based on best available data, can then be propagated through fault trees and event trees using only the risk-outliers and the dominant sequences with appropriate methodology.

5. What should be some of the characteristics of safety requirements:

(a) What should be the role of safety-cost trade-offs?

Response:

Each plant should be required to meet the safety standard. Safety-cost trade-offs should be used as a decision-making tool to effectively allocate resources to further reduce the risk below the mandatory standard. The cost criterion should be reasonable and commensurate with exemplary criteria applied in other industries.

(b) To what extent should benefits of nuclear power, absolute and relative to alternatives, enter safety-requirements decisions?

Response:

The benefits of nuclear-generated electricity are the same as those of electricity generated by other sources. The favorable cost of nuclear generation and the desirability of independence from foreign oil may affect the overall societal decision process of nuclear versus its alternatives, but we don't feel that these considerations could contribute effectively to either the objectivity or the utility of a safety goal based process. The safety requirements on nuclear power as they affect the risk to the public can and should be consistent with those in other sectors of the economy.

(c) To what extent is it appropriate for requirements for new and previously approved plants to differ?

Response:

All plants, new and previously approved, should meet the mandatory safety standards, though not necessarily by utilizing the same design features. The cost/benefit criteria would be expected to give appropriate weight to retrofit complications and must account for size, age, operating experience, etc. of currently operating plants.

(d) Should a safety goal be applied directly to cases in order to attain a similar degree of safety from case to case (even though that may result in specific design and operation requirements differing according to circumstances)? Or should the goal be applied generically and have requirements, rather than estimated degree-of-safety results, be uniform?

Response:

Each and every plant should meet a national safety standard. The means by which the plant owner implements the safety standard should be left to the owner provided that he is able to show compliance. Generic cases should be admissible in demonstrating compliance to the NRC, generally at the owner discretion, recognizing that economies of scale will favor some collaboration. A plant which is essentially identical to another and has similar site characteristics then would not need a completely independent and duplicative risk assessment performed.

The overriding benefit expected from this approach is the owner's internalization of the process and the corresponding increase in safety accountability. The potential impact of plant specific solution on the NRC review role can be controlled by standardizing the process and focussing NRC review in that area.

(e) To what extent should the goal reflect protection of individuals regardless of numbers of persons affected, and to what extent should it reflect total, integrated population or societal effects?

Response:

Individuals and populations should be protected to a comparable extent. If it is possible to simplify the safety standard to one quantitative criterion which protects the public and can be shown to also protect ("umbrella") the individual to a comparable extent (or vice versa), then such a simplifying approach could be desirable.

(f) To what extent should equities of distribution and benefits and adverse impacts influence requirements?

Response:

The equities of distribution of benefits and adverse impacts are partly accommodated by having an individual goal as well as a population goal. Any other accommodation should be external to the Safety Goal, i.e., special rates for plant neighbors, utilities purchase of nearby real estate and resale to individuals who understand and accept the incremental risk.

(g) Should the safety goal reflect increased aversion to risk of high consequences even at low probability?

Response:

Definitely not, in our opinion. Risk aversion is a subjective and uncertain factor which would detract from the technical basis and overall objectivity of the goal process. Risk aversion has no application in any other regulated societal risk. Refer to our comments on public acceptance in #1.

(h) What is the proper balance between stability of requirements and flexibility for modification as knowledge develops and insights change.

Response:

The ability of American utilities to provide customers with economical electric power is influenced significantly by stability in the licensing process. Therefore, stability of the requirements is essential. The safety goal should remain stable. The goal based process we envision would include flexibility, principally stemming from improvements in the evaluation technology, assessment of operating experience lessons, and application of the cost/benefit criteria. The objectivity of the goal process and the consideration of cost/benefit should ensure that any required changes are appropriate and accepted.

6. (a) How should the stringency of nuclear-power-plant safety requirements compare with current practice?

Response:

The stringency of present nuclear power plant safety requirements is now largely directed at "process-oriented" goals, but should be focussed on "end-oriented" goals, specifically, quantitative safety goals. Methods and procedures for achieving and demonstrating compliance with a national safety standard would then receive proper attention.

Safety goals and the evaluation of plant designs with respect to the goals constitute a new technology relative to the basis for current practice. Accordingly, we would expect that some new design requirements would follow from application of the technology and that some current safety requirements would not be justifiable with respect to the goal. These perspectives should be given significant weight in developing future safety requirements. Overall, we would not expect the result to be particularly more or less stringent requirements; rather, we would expect the requirements to be more effective in ensuring plant safety.

(b) How should stringency of the safety goal compare with risks accepted from other (non-nuclear) electrical energy sources and with risks arising in various other contexts?

Response:

The response to question 5(b) applies here.