



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

July 14, 1981

MEMORANDUM FOR: File

FROM: Paul Goldberg, Office of Policy Evaluation *Paul Goldberg*

SUBJECT: HIGHLIGHTS OF COMMENTS ON DEVELOPMENT OF A SAFETY GOAL

The attached draft contains highlights of the 23 public comments on development of a safety goal. It is an abridged version of a 61-page analysis which outlines the comments at some length.

Attachment:
As Stated

I. INTRODUCTION AND SUMMARY

This paper presents highlights of public comments received on NUREG-0764, "Toward a Safety Goal: Discussion of Preliminary Policy Considerations", in response to the Commission's solicitation (46 FR 18827, March 26, 1981).

Twenty-three comments on the Safety Goal Project have been received as of July 9. The list of commenters and brief remarks characterizing their comments are presented in Table 1. In the table, as well as in the text sections that follow, comments are addressed in the order in which they were received. Table 2 lists the topics covered by commenters. Some of these comments are found only in the longer version of this analysis.

TABLE 1
COMMENTS RECEIVED: LIST AND SUMMARY

1. Marvin Lewis believes that NRC is attempting to use a safety goal to provide a number of lives which may be traded for profit.
2. Norman Buske believes that the safety goal diverts attention from a needed safety standard and that states should set their own standards.
3. The Atomic Industrial Forum (AIF) responds to the questions listed in NUREG-0764 and the Federal Register Notice and proffers its own proposed approach to safety goals.
4. Robert Alexander believes that one more Class 9 accident will eliminate public acceptance of a nuclear program and that absence of strict verifiability dooms all quantitative goals.
5. Washington Public Power Supply System (WPPSS) is in general agreement with the AIF approach and believes that the technical bases for a goal by which it could measure and demonstrate the high level of safety of its plants exist today.
6. Kerr-McGee believes that two separate goals are needed for low probability, high risk events on the one hand and accidents or minor events in normal operations on the other.
7. Albert Bates considers the release of radiation to the environment by any Federal agent or licensee a violation of the natural rights of citizens.
8. Duke Power Company supports AIF's comments and proposal and believes that application of probabilistic risk techniques through use of quantitative safety criteria can assure an acceptable level of safety.
9. Cynthia Sharpe considers the safety goal a debate on the value of life versus the value of nuclear industry and technology.
10. Tennessee Valley Authority (TVA) believes that the ACRS proposal is a good starting point for discussion but that a goal should be simpler than the ACRS proposal.
11. Stone & Webster (S&W) endorses the AIF proposal and believes that NRC must establish a set of rules with a single quantitative, absolute goal and should use the principles in WASH-1400 to analyze plant safety-related design features.
12. The American Mining Company endorses the concept of a safety goal but believes that NRC should consider the distinctions among the various elements of the fuel cycle in developing the goal.

13. General Electric (GE) endorses the AIF proposal and advocates establishment of an interim safety goal representing an industry consensus.
14. Northeast Utilities endorses the AIF proposal and believes that a goal is necessary to prioritize and assess the plethora of proposed changes to plants and regulations.
15. Bechtel endorses the AIF proposal.
16. Dr. Henry Hurwitz states that the safety goal should avoid the hypocrisy of establishing radiological standards for nuclear reactors that are not being applied to energy efficient dwelling.
17. The Union of Concerned Scientists (UCS) feels that a quantitative safety goal cannot be a substitute for conservative deterministic criteria for licensing.
18. The New York Public Interest Research Group (NYPIRG) expresses concern about the credibility of the NRC and other authorities and about NRC's treatment of public fears.
19. Catherine Quigg believes that the ALARA (as low as reasonably achievable) approach to radiation exposure is unacceptable and that ALRAA (as low as achievable) would be a more socially responsible goal.
20. Eckhard Festig believes that there should be a moratorium on reactor construction until and unless a research program establishes that reactors with desirable characteristics can be built.
21. Combustion Engineering endorses the AIF comments and proposal.
22. Lynn Rudmin Chong suggests that the ALARA policy be discontinued and that the Union of Concerned Scientists and Physicians for Social Responsibility be included in NRC decisions to allay public fear and distrust.
23. Westinghouse endorses the AIF proposal.

TABLE 2
TOPICS COVERED BY COMMENTERS

Commenter	AIF Proposal	Schedule	Critique of NRC Report (NUREG-0764)	Questions							Other Comments	
				1	2	3	4	5	6	7		
Marvin Lewis		X	X									X
Norman Baske												X
AIF	X*	X	X	X	X	X	X	X	X	X		
Robert Alexander			X									
S&W	X	X		X	X	X	X	X	X			
WPPSS	X	X		X	X	X	X	X	X			
Kerr-McGee												X
Albert Bates, PLENTY			X									
Duke	X	X										
Cynthia Sharpe			X									
TVA	X	X		X	X	X	X	X	X	X		
PSE&G												
AMC		X										
GE	X	X				X						
NU	X	X		X	X	X	X	X	X			
Bechtel	X	X										
Dr. Henry Hurwitz												X
UCS	X		X									
NY PIRG			X	X	X	X	X	X	X			
Catherine Quigg			X									
Eckhard Festag			X									
Combustion Engineering	X	X										
Lynn Rudmin Chong			X									
Westinghouse	X	X										X

*The AIF proposal is the only detailed proposal received in response to the Commission's solicitation. X's in this column opposite other commenters indicate references to the AIF proposal.

II. AIF PROPOSED APPROACH

The most extensive comments are those of the Atomic Industrial Forum (AIF), which commented on NUREG-0764 and also offered "A Proposed Approach to the Establishment and Use of Quantitative Safety Goals in the Nuclear Regulatory Process." Because this is a detailed proposal which has been endorsed by eight of the other commenters -- Stone and Webster (S&W), Duke Power (Duke), Washington Public Power Supply System (WPPSS), General Electric (GE), Northeast Utilities (NU), Bechtel Power Corporation (Bechtel), Combustion Engineering (CE), and Westinghouse Electric Corporation -- AIF's approach is outlined here.

AIF suggests three governing principles to provide a rational and logical framework upon which specific quantitative safety goals can be founded:

1. The goals should provide a level of protection for members of the public such that no individual bears an inordinate risk.
2. The quantitative safety goals for nuclear power plants should be consistent with those applied to other technologies. The goals should endeavor to ensure that incremental societal risks are commensurate with the societal benefits derived from the technology.
3. The goals should promote the rational allocation of societal resources for the purposes of reducing public risk in order to achieve the optimum benefit attainable for the cost.

In accord with these principles, AIF proposes two primary criteria and two secondary criteria each of which has an associated quantitative goal which satisfies the criterion in AIF's view. The primary criteria establish goals for limiting radiological health risks to individuals and to society at large. The secondary criteria relate to allocation of resources in achieving marginal reductions in residual risk and in providing goals for the prevention of accidents which could pose risk.

The primary criteria and associated goals are:

INDIVIDUAL RISK CRITERION

The maximum incremental risk of radiologically induced adverse health effects to a hypothetical biologically average individual in the vicinity of a nuclear plant site should not result in a significant increase in the individual's annual mortality risk.

Suggested Safety Goal:

Less than 10^{-5} per year mortality risk to maximum exposed average individual.

POPULATION RISK CRITERION

The incremental cumulative risk of adverse radiologically induced health effects to the exposed population per 1000 MW(e) of nuclear power capacity, considering the annual frequency and consequences

of events integrated over the spectrum of potential accidents, should be no more than a small fraction of the average background incidence of health effects.

Suggested Safety Goal:

Less than 1 Statistically estimated fatality/yr per 1000 MW(e)

The secondary criteria and associated goals are:

COST-BENEFIT CRITERION

Measures proposed to achieve incremental reductions in residual risk beyond those provided to meet the primary criteria should be evaluated on a cost-benefit basis. The benefit, in terms of population risk reduction, afforded by a change in plant design or operating procedure should be comparable to that which is generally achievable through alternative investment of the cost of the change in other areas of public risk reduction.

Suggested Goal:

\$100/man-rem (equivalent to \$1 million per statistically estimated life saved).

III. SCHEDULE OF SAFETY GOAL DEVELOPMENT AND SEQUENCE OF OTHER NRC ACTIVITIES

Most of the commenters had some view on the NRC schedule for development of a safety goal and the need for a goal to be available in time to influence other NRC activities. Marvin Lewis considers the period for comment on NUREG-0734 inadequate.

Ten industry commenters state that a safety goal should be developed promptly; eight of the ten also believe that it should precede and guide other NRC rulemakings, especially the degraded core rulemaking.

IV. CRITIQUE OF NRC REPORT (NUREG-0764)

Nine commenters take the view that NUREG-0764 leaves out considerations important to developing a safety goal or that an acceptable safety goal cannot be developed.

One of them, Robert Alexander, believes that "one more Class 9 accident" will eliminate public acceptance of a nuclear program and that absence of strict verifiability dooms all quantitative goals.

Cynthia Sharpe finds the notion that it is possible to develop a "safety goal" frightening because "numerous studies have shown that there is no safe exposure to radiation" and she considers the development of a safety goal a debate on the value of life versus the value of nuclear industry and technology.

According to Marvin Lewis, the proper objective of a safety goal is to save lives and justify turning off all nuclear power plants; the improper use is to provide a number of lives which may be traded for profit. He feels that this latter use is what NRC is attempting to do.

UCS believes that in order for a safety goal to be a useful tool for regulating nuclear power, it must meet the following conditions:

1. Compliance with the goal must be technically verifiable within reasonably small uncertainty limits. Stating the uncertainty, however clearly, is not a substitute for reducing it to acceptable levels when regulatory decisions are to be based upon quantitative assessment.
2. Establishment and implementation of the goal must fairly account for the unique risks of catastrophic nuclear accidents, including economic costs.
3. Establishment and implementation of the goal must not require NRC to resolve questions which are political in nature.
4. The scientific and technical community outside the nuclear industry and NRC must be involved in establishing the goal and reviewing risk assessments. UCS is, unhappily, confident that risk assessment is destined to be an adversary tool for the nuclear industry to resist safety improvements rather than as a means to build consensus around a safety goal.
5. Both the safety goal and the quantitative risk assessments must be understood and accepted by the public as being unbiased and technically justified.
6. Because of the inherent uncertainties of quantitative risk assessment a quantitative safety goal cannot be a substitute for conservative deterministic criteria in the licensing of nuclear plants.

NYPIRG suggests that gamma radiation may be more carcinogenic than had been assumed and that health effects calculations may be subject to revision. NYPIRG also expresses concern about the credibility of NRC and other authorities and about NRC's treatment of public fears of radiation.

Catherine Quigg recommends that the ALARA (as low as reasonably achievable) policy for radiation exposure be replaced by an ALAA (as low as achievable) goal.

Eckhard Festag believes that there should be a moratorium on reactor construction unless and until a research program establishes that reactors with more desirable characteristics can be built.

Lynn Chong suggests that the ALARA policy be discontinued and that the Union of Concerned Scientists and Physicians for Social Responsibility be included in NRC decisions.

Albert Bates considers the release of radiation to the environment a violation of the natural rights of citizens, to which it is beyond our capability to assign a cost.