

# ATOMIC INDUSTRIAL FORUM INC.

3 EAST 54TH STREET • NEW YORK 22, N. Y. • PLAZA 4-1075

April 6, 1961

Mr. Harold Price  
Acting Director of Regulation  
U.S. Atomic Energy Commission  
Washington 25, D.C.

Dear Mr. Price:

The Atomic Industrial Forum's Committee on Reactor Safety met at the Forum's headquarters in New York on March 17 to review and discuss the Commission's "Notice of Proposed Guides on Reactor Site Criteria", 10 CFR Part 100, as published in the Federal Register of February 11. Enclosed is a summary of comments and opinions produced by that meeting which we hope will be of assistance to the AEC in its further review of this important matter. Forum members attending the March 17 meeting were requested to forward directly to the AEC their own individual comments which we trust will also prove helpful to the AEC.

As may be noted from the enclosed summary, the March 17 meeting produced agreement on a number of points, the two most important of which might be described as: (1) the AEC and the industry share the opinion that some type of site criteria could be mutually beneficial to the continued development and construction of nuclear reactors for civilian power production and to the continued maintenance of the excellent safety record achieved in the civilian reactor program through government-industry cooperation; and (2) the industry is concerned with what it regards as ambiguities and unfortunate placements of emphasis in the proposed criteria as now drafted.

If we can assist the AEC in any other way in securing comments from the industry and the public on these important guides, please let us know.

Sincerely yours,

*W. Kenneth Davis*  
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W. Kenneth Davis,  
Chairman-Forum Committee  
on Reactor Safety

WKD:RW  
Enclosure: Summary

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# ATOMIC INDUSTRIAL FORUM

## Summary

### Forum Seminar on AEC-Prepared Notice of Proposed Guides

"Reactor Site Criteria" - 10 CFR 100  
New York, New York - March 17, 1961

#### Scope of Meeting

At the suggestion of its Chairman, the Forum's Committee on Reactor Safety met at the Forum's headquarters to discuss the AEC-prepared "Notice of Proposed Guides - Reactor Site Criteria", 10 CFR Part 100, as published in the February 11, 1961 issue of the Federal Register. The purpose of the seminar was twofold: (1) to provide those contemplating the submission to the AEC of written comments on the proposed guides an opportunity to discuss the proposed guides with other interested persons; and (2) to provide those having questions on the proposed guides an opportunity to pose such questions to the AEC representative participating in the seminar.

The seminar discussion opened with only industry representatives in attendance. By prior arrangement, Dr. Clifford Beck, Assistant Director for Nuclear Facilities Safety of AEC's Division of Licensing and Regulation and principal author of the proposed guides, subsequently joined the group to participate in a review of the comments produced by the morning discussion.

It was agreed at the outset of the seminar that no attempt would be made in the preparation of this summary to attribute specific comments and opinions to specific individuals. It was also agreed that neither the discussion nor this summary was intended to serve as a substitute for written comments to be submitted directly to the AEC by persons attending and participating in the seminar. Indeed, participants were urged to forward their individual comments to the AEC.

#### Attendees

A list of committee members and guests attending and participating in the seminar, in addition to Dr. Beck, is attached to this summary. Mr. W. Kenneth Davis, Chairman of the Forum's Committee on Reactor Safety and Vice President of Bechtel Corp., served as chairman of the seminar.

## General Comments

It appeared on the basis of the varied reaction to the "Proposed Guides" as expressed by the seminar participants that use of the term "guides" may lead to some ambiguity as to their intent and purpose. Some participants, for example, apparently regarded the "guides" as simply a benchmark setting forth certain technical considerations which should prove of assistance in completing an application for a power or testing reactor. Other seminar participants, noting that the proposed "guides" had been identified by the AEC as Part 100 of Chapter 10 of the Code of Federal Regulations, assumed that the "guides" were intended as a rule carrying the full weight and authority of other AEC rules and regulations. At a minimum, it would appear that a substantial burden of proof would be imposed on applicants to justify any deviation from the guides in completing an application.

There was an obvious difference of opinion among the seminar participants as to the intended purpose of "Appendix A". For example, Section 100.11 (b) states that "Appendix 'A' of these guides contains an example of a calculation for hypothetical reactors which can be used as an initial estimate of the exclusion area, the low population zone, and the population center distance", suggesting to some industry representatives that Appendix A is intended as no more or less than an example.

On the other hand, Section 100.11 (a) states that "As an aid in evaluating a proposed site, an applicant should assume a fission product release from the core as illustrated in Appendix 'A' ...", suggesting to other industry representatives that Appendix A is intended as an integral part of the "proposed guides" and specifies the assumptions to be made by all applicants for power and testing reactors irrespective of reactor design or site location.

There was also a difference of opinion among the seminar participants as to the intended interpretation of the word "reasonable" in the statement in Section 100.11 (b) that reads: "The numerical values stated for the variables listed in Appendix 'A' represent approximations that presently appear reasonable, but these numbers may need to be revised as further experience and technical information develops." The question raised by the group was how much deviation, if any, from the numerical assumptions characterized in the guides as "reasonable" would be permitted by the AEC.

Two other general comments were produced by the seminar discussion. One was concerned with the question of whether the guides give sufficient recognition to additional safety features which may be incorporated into the engineering design of a facility as a possible compensating factor for locating a power or testing reactor in a site which may otherwise meet some but not all of the specifications contained in the criteria.

The other was concerned with the question of whether the guides may, through inadvertent phraseology, have a possible adverse impact on public opinion even though their intent might be clearly understood by reactor licensees and others in the atomic industry.

Note should be made of the frequently repeated observation that in the formulation of such criteria, the industry shares with the Commission a common goal -- the expeditious development and achievement of competitive nuclear power commensurate with assurance of public health and safety. It was the consensus of the group that no inference to the contrary should be conveyed by the guides.

A number of seminar participants expressed the opinion that guides which make distance the dominant factor in site selection would tend to discourage reactor designers from incorporating additional safety features into their designs.

Questions were raised as to how the guides should be interpreted with respect to: (1) the location of multiple reactors within an approved site, and (2) the disposition of a site containing a reactor which may have experienced some type of incident that resulted in measurable radiation levels outside the exclusion area but below the levels indicated in the guides.

By way of summing up these general comments, considerable support was expressed for a guide which would be much simpler and more useful to reactor designers, builders and operators.

### Specific Comments

Itemized below with reference to specific sections of the proposed guides are some specific comments produced by the seminar discussion.

### Statement of Considerations

Considerable criticism was voiced by the seminar participants about the stated "basic objectives", particularly item (b) which now reads: "Even if a more serious accident (not normally considered credible) should occur, the number of people killed should not be catastrophic". It was pointed out that since "not normally considered credible" does not lend itself to definition, prerequisite safety precautions either with respect to site location or engineering design modifications are also undefinable and hence this objective serves no useful purpose. It was further pointed out that this same objective is not only subject to the same lack of

understanding by the public but is also likely to unnecessarily alarm the public through the unfortunate use of the phrase, "not normally considered credible" which implies credibility under abnormal circumstances. Use of the word "catastrophic" was also considered undefinable and unfortunate to the extent that it could provoke public alarm without cause or explanation.

Appreciating that factors other than technical considerations may be determining in this instance, it was the consensus of the group that under no circumstances should objective (b) be retained and that objectives (a) and/or (c) should be modified to fill any gap left by the omission of (b). One suggestion was to add the word "fatal" to objective (a) causing it to read: "Serious or fatal injury to individuals off-site should be avoided if ....."

With regard to objective (c), it was suggested that the last two sentences beginning: "The Commission intends ....." should be deleted. The sentences imply that irrespective of safety design improvements or of the interrelationships between population, design and distance, it will never be possible to locate power reactors in large cities. It was surmised that this implication was not intended by the AEC.

#### Scope - 100.2

It was suggested that the phrase "construction permits and operating" be deleted, making the first sentence read: "This part applies to applications filed under Part 50 of this chapter for licenses for power and testing reactors." Although the group recognized that the construction permit and operating license are intimately associated and also recognized the authority of the AEC to disapprove a site at any stage of reactor construction or operation, it could see nothing to be gained by gratuitously suggesting that the adequacy of the site must be demonstrated again after construction of a facility has been completed in conformance with an AEC-issued construction permit. The suggestion to delete the phrase assumes that the deletion in no way alters the scope of the guides or the intent of the AEC.

A more important suggestion was that this section, by an appropriate addition, should reflect the importance attached by the AEC to engineering design as a factor which must be jointly considered with distance and population if a competent and realistic evaluation is to be made of a proposed site. Failure to acknowledge the importance of such safety features as may be incorporated into or excluded from the design of a reactor facility implies by omission that the AEC does not regard design an important factor in selecting a site. Such an implication in the opinion of the seminar group could have a deleterious effect on public confidence in both the AEC and the atomic industry.

It was the consensus of the group that the second paragraph of this section, aside from the first sentence, should be deleted. One interpretation permitted by this section is that by definition it is impossible for a reactor of "novel design" to be as safe or safer than a reactor "of a general type and design on which experience has been developed". In the opinion of the seminar participants, such is not necessarily the case. This section further indicates that "conservatism" and "isolation" are analogous, which again in the opinion of the group is not necessarily the case. Some members of the group also felt that the last sentence of this section was gratuitous and served no real purpose.

### Definitions - 100.3

In the case of both definitions (b), "low population zone", and (c), "population center distance", a question was raised about their adequacy inasmuch as neither indicates how an applicant will document his contention that a proposed site meets the terms of the definitions.

Some concern was also expressed by the fact that the definitions do not address themselves to the problems that may arise from population changes which may take place during the 40-year span of a reactor operating license. By way of example, reference was cited to problems that have confronted some commercial airports from population influxes into adjoining areas.

### Factors To Be Considered When Evaluating Sites - 100.10

It was suggested in the interest of giving increased recognition to the importance of engineering design, that the order of the subsections within this section be reversed, that is, subsection (c) should be entered first and subsection (a) last.

With reference to subsection (b), several of the seminar participants indicated that they had been assured by staff or consultant specialists that distances of 1/10 to 1/4 mile rather than 1/4 to 1/2 mile from known active earthquake faults offer adequate assurance of stable seismological conditions.

### Determination of Exclusion Area, Low ..... - 100.11

Most of the discussion on this section related to the group consensus that all reference to Appendix A should be deleted. Although it was acknowledged that an example containing a sample calculation as set forth in Appendix A might prove helpful to certain applicants, it should under no circumstance, in the opinion of the group, be made a part of or specifically related to the guides.

Part of the argument for this position was tied to the group's inability to agree on the intended status of Appendix A as indicated under the general comments of this summary. Another part of the argument was based on the premise that the AEC intended to permit some variance from the assumptions made in the example contained in Appendix A. In this connection, it was agreed that experience with the AEC's Division of Licensing and Regulation has clearly demonstrated a tendency on the part of the AEC to take the most conservative of alternative interpretations permitted by any rule. Hence, unless there is an unequivocal intent on the part of the AEC not to permit variance from the assumptions used in Appendix A, it should not be included as an integral part of the guides. It was noted by the group that the assumptions used are more conservative than experience in some cases would dictate.

All seminar participants agreed that the first sentence of this section should be modified to read: "In evaluating a proposed site, an applicant should estimate the radioactivity release from the reactor facility." The group did not agree with the premise that fission product release from the core should be assumed nor did it agree with the assumption that this would prove "an aid" to the evaluating procedure.

It was also agreed that subsection (b) should be rewritten in such a way as to clarify the status of Appendix A as has been suggested earlier.

A question was raised as to how the criteria should be interpreted with respect to the relationship between radiation exposure to a population and to "an individual" and how this relationship bears on the definition of an "exclusion area" and a "low population zone".

In both subsections (a) (1) and (a) (2) reference is made to a radiation exposure limit of 300 rem to the thyroid. It was pointed out that such a limit is not significant in the case of a sodium-cooled reactor since most of the iodine would be expected to be absorbed by the coolant.

Some question, without comment or criticism, was raised about the basis for the "two hours" referred to in subsection (a) (1) and the "1-1/3 times" in subsection (a) (3). It was also suggested that subsection (a) (3) should give recognition to the importance of engineering design.

#### Appendix A

As pointed out above, the intended status of the example contained in Appendix A was not clear to the seminar group. As also pointed out above, the group expressed the strong opinion that Appendix A should not be made an integral part of the guides.

On the other hand, it was generally agreed that the AEC could render a service to the industry by publishing a series of examples similar to that now contained in Appendix A as a separate booklet or in the Journal of Reactor Safety.

With regard to attaching -- not incorporating -- Appendix A to the guides, the group expressed the following consensus. It would be most helpful to remove all numerical assumptions from the example, substituting instead terms such as "x", "y", and "z". The example treated in this manner would also be more useful if more fully developed. A less desirable alternative would be to supplement the present example with two or more examples. This would serve to show that they were intended as no more and no less than examples and would also demonstrate a range of distances possible with different engineering assumptions. All members of the groups were agreed that the present example, without further modification or amplification, would raise more questions than it would answer.



## REACTOR SAFETY COMMITTEE

Meeting of March 17, 1961

### List of Attendees

#### ATTENDEE

W. Kenneth Davis, CHAIRMAN

J. L. Allen  
Myron Beekman  
Gerald Charnoff  
Roger Coe  
Giovanni D' Arminio  
Harold Etherington  
J. F. Fairman  
Carl Gamertsfelder  
B. John Garrick  
John E. Gray  
W. E. Johnson  
Kenneth Kasschau  
R. W. Kupp  
Robert L. Menegus  
G. R. Milne  
Don Rees  
Charles Robbins  
D. Roy Shoults  
Chauncey Starr  
Harold Vann  
Edwin A. Wiggin  
Hood Worthington  
Paul C. Zmola

#### AFFILIATION

Bechtel Corporation

Philadelphia Electric Co.  
Detroit Edison Co.  
Atomic Industrial Forum  
Yankee Atomic Electric Co.  
Selni - Edisonvolta  
Allis-Chalmers Manufacturing Co.  
Consolidated Edison Co. of N. Y.  
General Electric Co.  
Holmes & Narver, Inc.  
Nuclear Utility Services  
Westinghouse Electric Corp.  
Alco Products, Inc.  
S. M. Stoller Associates, Inc.  
E. I. du Pont de Nemours & Co., Inc.  
Consolidated Edison Co. of N. Y.  
Saxton Nuclear Experimental Corp.  
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Combustion Engineering

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Respectfully Submitted, CHAIRMAN

Federal Corporation

ATTACHED

VERIFICATION

List of Attendees

Meeting of March 14, 1961

EXECUTOR ESTATE COMMITTEE

Mr. [illegible]  
 Mr. [illegible]  
 Mr. [illegible]

Mr. [illegible]  
 Mr. [illegible]  
 Mr. [illegible]

Mr. [illegible]  
 Mr. [illegible]  
 Mr. [illegible]