TABLE III

Likelihood per Year of Impact in Ocean of Meteorite of Given Weight Within Given Distance from Reactor

Meteorite Weight (tons)	Likelihood/yr Within Radius (miles)			
	100	500	1000	2000
10^{12}	4.7×10^{-12}	1.2×10^{-10}	4.7×10^{-10}	1.9×10^{-9}
10^{11}	2.2×10^{-11}	5.5×10^{-10}	2.2×10^{-9}	8.0×10^{-9}
10^{10}	1.0×10^{-10}	2.8×10^{-9}	1.1×10^{-8}	4.4×10^{-8}
10^{9}	5.5×10^{-10}	1.4×10^{-8}	5.5×10^{-8}	2.2×10^{-7}
10^{8}	2.3×10^{-9}	6.0×10^{-8}	2.4×10^{-7}	9.5×10^{-7}
10^{7}	2.3×10^{-8}	3.2×10^{-7}	1.3×10^{-6}	5.0×10^{-6}
10^{6}	6.5×10^{-8}	1.6×10^{-6}	6.5×10^{-6}	2.5×10^{-5}

ocean surface explosions. There may, however, be some increase in wave height as land is approached. However, since this phenomenon will be uniquely site-related, we have not taken it into account explicitly. (We do not expect the Crescent City data to be applicable at a carefully chosen reactor site.)

From Ref. 7, for example, one can write a formula similar to Van Dorn's, i.e.,

$$H = 2.45 \times 10^4 \sqrt{W}/R \qquad (1)$$

as the relation between wave height, H, in feet above sea level, kiloton explosive equivalent, $\sqrt{W}$, of the meteorite and distance from ground zero, R, in feet. Note that

$$1\,kT \text{ (equiv)} = 4.18 \times 10^{19} \text{ erg} \quad .$$

Table II provides wave-height data for the various meteorite weights.

Table III combines the data on meteorite strike probability with the likelihood of being at or less than some distance from point of impact as a function of meteorite weight.

In summary, the original estimate appears to be reasonable, assuming a 50-ft wave requirement and 1% efficiency of conversion of kinetic energy to wave formation. Probabilities larger by 2 or 3 orders of magnitude can be calculated assuming up to 100% efficiency and only a 20-ft wave requirement at the reactor site. Hence, Fliegel and Hulman raise an interesting point.

Kenneth Alvin Solomon

NUS Corporation
14011 Ventura Boulevard
Sherman Oaks, California 91423

Robert C. Erdmann

Science Applications, Inc.
2680 Hanover Street
Palo Alto, California 94303

Gerald S. Lellouche

Electric Power Research Institute
3412 Hillview Avenue
Palo Alto, California 94304

David Okrent

University of California
Department of Energy and Kinetics
Los Angeles, California 90024

June 9, 1975

REFERENCES

1. K. A. SOLOMON, R. C. ERDMANN, and D. OKRENT, "Estimate of Hazards to a Nuclear Reactor from the Random Impact of Meteorites," *Nucl. Technol.*, **25**, 68 (1975).

2. K. A. SOLOMON, R. C. ERDMANN, T. E. HICKS, and D. OKRENT, "Estimate of the Hazards to a Nuclear Reactor from the Random Impact of Meteorites," UCLA-ENG-7426, University of California at Los Angeles (Mar. 1974).

3. M. H. FLIEGEL and L. G. HULMAN, "Comments on 'Estimates of Hazards to a Nuclear Reactor from the Impact of Meteorites,'" *Nucl. Technol.*, **27**, 527 (1975).

4. W. G. VAN DORN, "Handbook of Explosion Generated Water Waves," Vol. 1, Report #447-464, Tetra-Tech, Inc. (1970).

5. V. E. BLAKE, "A Prediction of Hazards from the Random Impact of Meteorites in the Earth's Surface," *Aerospace Nuclear Safety*, SC-RR-68-838 (Dec. 1968).

6. LI SAN HWANG, Tetra-Tech, Inc., Pasadena, California, Personal Communication.

7. S. GLASSTONE, *The Effect of Nuclear Weapons*, U.S. Department of Defense and the U.S. Atomic Energy Commission (1969).

COMMENTS ON REVIEW OF *PUBLIC ISSUES OF NUCLEAR POWER*

I appreciate this opportunity to provide my comments to the review[1] by James Smathers which, in my opinion, is insensitive to the structure, contents, and purposes of the publication. In writing these comments, I am aware that my involvements with the planning and development of the proceedings became a labor of love and dedication

toward providing a thorough public exposure of the concerns and issues pertaining to nuclear power. *Public Issues of Nuclear Power* is, in my opinion, a fascinating record of what experts, critics, and proponents think about nuclear power, and provides for an unusual insight and documentation on the depths of the supporting bases. The cooperative efforts of the many participants made all this possible.

Who were the speakers? Nationally recognized critics, proponents, and experts, and local participants. I am sure that our local participants are typical of the many spokesmen, pro and con, to be found in other communities. Speakers were selected from the political arena, environmental groups, federal agencies, universities, research institutes, law offices, and industry. The 24 different speakers[a] cover a broad range of interest and affiliations, and thus contribute their own special attributes. The introduction for each speaker seeks to identify that speaker's involvements with the nuclear issues and some measure of his characteristics. This special series of discussions was held at the University of Minnesota in the fall, 1974, with each session devoted to the presentation of one side. A question-and-answer period was provided for nearly all sessions, and this material, too, became part of the publication. An atmosphere free of confrontation was sought so that maximum opportunities were given to promote improved and discerning appreciation of the judgments and views being presented, and the bases thereof.

How well did we succeed? The publication does not contain an overall view and conclusion. The purpose of the publication was to introduce the class participants, or the reader, to the general issues of nuclear power, and ask that he judge for himself the effectiveness of the presentations. With each issue identified, how substantive were the discussions presented? Each speaker was asked to give his reasoning and supportive bases for his views and recommendations. *Public Issues of Nuclear Power* thus represents a very valuable record and a must reading for all who are participating in the discussions of nuclear power, those concerned with effecting new legislation pertaining to nuclear power, and all who want to make a more informed decision on nuclear power.

Contrary to the impression given by the reviewer, there is an abundance of new material in the publication. In addition, there is an extensive listing of the current literature. I do agree with the reviewer that there is a lack of editing, and in our efforts to produce the works promptly, compromises were made in typing, reproduction of figures, and binding. No index is provided. In the Preface, attention has been noted to these matters, and comments, corrections, and criticisms are sought for the preparation of a more useful publication.

Herbert S. Isbin

The University of Minnesota
Department of Chemical Engineering
and Materials Science
151 Chemical Engineering Building
Minneapolis, Minnesota 55455

July 7, 1975

[a]Prof. Dean Abrahamson, School of Public Affairs, University of Minnesota; Myron Chery, Esq.; Dr. J. Dietrich, Combustion Engineering; Byron Lee, Jr., Vice-president, Commonwealth Edison Company; S. Levine, Project Staff Director of the U.S. Atomic Energy Commission (AEC) Reactor Safety Study; G. Charnoff, Esq.; Dr. F. Pittman, Director of the AEC Division of Waste Management and Transportation; Dr. Thomas Cochran, Natural Resources Defense Council; W. K. Davis, Vice-president, Bechtel Power Corporation; L. M. Muntzing, Director of Regulations, AEC; Dr. John McBride, Vice-president, E. R. Johnsons Associates, Inc.; C. Bollman, Assistant Vice-president, Marsh and McLennon, Inc.; E. J. Bauser, Executive Director, Joint Committee on Atomic Energy; M. Whitman, Assistant Director for Program Analysis, AEC; Dr. W. J. Bair, Director of the Life Sciences Program, Battelle Pacific Northwest Laboratories; G. Merritt, Executive Director, Minnesota State Pollution Control Agency; Dr. W. Lawson, Commissioner of Health, State of Minnesota; Mayor Lawrence D. Cohen, Saint Paul; Dr. Phyllis L. Kahn, Minnesota State Representative; Tim McKeown, Minnesota Public Interest Research Group; John Herman, Esq., Sierra Club; R. Hatling, Minnesota Environmental Control Citizen's Association; Prof. Rodney Loper, Clear Air, Clear Water—Unlimited; and Prof. Herbert S. Isbin. Organizational affiliations noted were as of Dec. 1974.

REFERENCE

1. JAMES B. SMATHERS, "Review of *Public Issues of Nuclear Power*," *Nucl. Technol.*, **27**, 526 (1975).

RESPONSE TO "COMMENTS ON REVIEW OF *PUBLIC ISSUES OF NUCLEAR POWER*"

After reading Dr. Isbin's letter,[1] I have revaluated my review of *Public Issues of Nuclear Power* and find nothing in the review which I would care to change.

Except for the obvious disagreement we have as to whether the speakers presented new technical information or not, our differences in opinion concerning the book would seem to be in degree of enthusiasm for it rather than opposing views.

Since the members of the American Nuclear Society for whom the review was intended are active and knowledgeable in the nuclear power arena, I do not believe the main benefit of the book is to be derived by this group. Had it been reviewed for the readership of *Science* magazine or some other very broadly based publication, my recommendations would have been more enthusiastic.

James B. Smathers

Texas A&M University
Department of Nuclear Engineering
College Station, Texas 77843

July 24, 1975

REFERENCE

1. HERBERT S. ISBIN, "Comments on Review of *Public Issues of Nuclear Power*," *Nucl. Technol.*, **27**, 530 (1975).