

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

April 26, 1983

INTEREST RESEARCH GROUP, AND PARENTS CONCERNED ABOUT INDIAN POINT

being duly sworn, state the following:

1. During March 1983, each of us separately appeared, gave testimony, and was cross-examined before the Atomic Safety and Licensing Board on behalf of Parents Concerned About Indian Point, the New York Public Interest Research Group, and the Union of Concerned Scientists, intervenors in the ASLB's special investigation of Indian Point.

2. Each of us has read portions of the Indian Point Radiological Emergency Response Plan (RERP), the public information booklet, "Indian Point Emergency Planning and You," and testimony and transcripts of cross-examination of some other witnesses in the ASLB proceeding (including the direct testimony and the cross-examination of Drs. Russell Dynes and Sidney Lecker, witnesses for the licensees).

3. Each of us is aware of proposed revisions to the Westchester RERP which would result in school children being subject to "early dismissal" instead of evacuation to reception centers outside the 10-mile Emergency Planning Zone (EPZ) in the event of an accident at Indian Point.

4. It is apparent to each of us that the development and evaluation of off-site emergency plans for Indian Point has rested largely on theories and assumptions about human response to emergencies which, though applicable in part, do not provide a sufficient basis for predicting how the people around Indian Point are likely to respond to a radiological accident at the plant--nor, therefore, for concluding that the plans will work as designed.

5. Indian Point emergency planners assume (1) that residents of the 10-mile EPZ will respond in prescribed and predictable ways to instructions issued prior to and during a nuclear emergency, (2) that local officials and emergency personnel will fulfill the roles assigned to them in the plans,

and (3) that people living or working outside the 10-mile EPZ will respond appropriately to ad hoc reassurances and instructions and will not complicate or impede emergency procedures for those closer to the plant.

6. Proponents of the "early dismissal" plan for school children assume (1) that sending children home during a radiological emergency is equivalent to releasing them during a snowstorm or when a school heating system breaks down, (2) that rapid notification of responsible adults (parents or pre-designated surrogates) for each and every child is possible, (3) that a sufficient number of school buses can be rounded up at a moment's notice during school hours, and (4) that, whether by bus or on foot, all school children will arrive home quickly, safely, and to a waiting adult.

7. Existing emergency plans have been based primarily on observation of human behavior in non-radiological emergencies, remote in time and place from Indian Point. It is the judgement of each of us that such data are relevant and applicable only in part, and cannot form a sufficient basis for predicting how residents, officials, and emergency personnel in the region surrounding Indian Point are likely to respond during a radiological emergency.

8. Though there are some similarities among different sorts of emergencies, each is in some respects different from others. Studies of the accident at Three Mile Island, for example, indicate that a large proportion of the affected population behaved in ways that could not have been predicted from a knowledge of the entire literature on non-nuclear disasters.

9. Each of us believes that there is ample reason to expect that the people at risk will respond to an accident at Indian Point in unique ways,

influenced by site-specific, regional characteristics such as the nature of the local terrain, the network of local roads, the population density, etc.

10. Though the existing body of non-nuclear disaster literature can provide theories and leads, only studies of the persons now living within the region at risk from Indian Point can supply the data needed to test the theories and predict the range of responses likely to occur to an accident at the plant. These studies can be designed in such a way as to elicit, among other things, information about how respondents have reacted to and behaved during other emergencies they may have experienced in the past.

11. No one research method is completely reliable for predicting future behavior. When forecasting human response, a prudent behavioral scientist will gather and make use of all relevant and available information: extrapolation of past trends and experience taken in conjunction with data collected by means of sophisticated survey and interview techniques.

12. The technology of survey research--including statistical sampling, interviewing, and computer analysis--has been highly developed over four decades of academic research and commercial application. The success and value of this technology is generally recognized and routinely utilized by government, academia, the press, and business--including the nuclear power industry. Con Edison and the Power Authority have themselves commissioned and made use of several sample surveys.

13. It is the professional judgment of each of us, therefore, that a series of survey and interview studies should be performed in the region potentially affected by an accident at Indian Point in order, first, to test the validity of emergency planning assumptions, and second, to provide

the site-specific information essential for realistic emergency planning. Indeed, it is the view of each of us that emergency planning for Indian Point should have begun with such studies, and that adequate and workable plans cannot be attained until a proper human response data base exists.

14. In the absence of the data such studies would provide, each of us submits that there does not now exist a proper or valid basis for concluding that the Indian Point emergency plans are "adequate to protect public health and safety."

15. Brief descriptions of the studies each of us believes to be necessary follow:

- I. A survey of the information, attitudes, and intentions of residents of the region, including but not limited to the 10-mile EPZ. This study should include the kinds of questions asked in the Suffolk County survey, the Westchester County survey conducted by Richard Altschuler, and parts of the survey done by Yankelovich, Skelly and White in June 1981. One major objective would be to predict the proportion of people, at various distances up to 50 or more miles from the plant, who would attempt to evacuate spontaneously under various circumstances.
- II. A survey of the information, attitudes, and intentions of the emergency workers, including bus and ambulance drivers, both those living within the 10-mile EPZ and those who live outside but who are expected to participate in an evacuation. This study should focus on the issue of whether they can and will fulfill the roles assigned to them in the plans, and possible obstacles to such participation. The principal obstacle to be assessed would be the belief of some that their primary and overriding obligation is to the safety of their own families. Other factors to be explored would be their awareness of the availability of necessary training, equipment, vehicles, monitoring devices, and the like.
- III. A three-part study relevant to planning for the evacuation of school children. The first, attitudinal part, would study parents, teachers, and school administrators to ascertain their information, attitudes and beliefs regarding school evacuation to help predict their behavior in and

preference for alternative plans: (a) to dismiss school children at the alert stage of an accident, (b) to evacuate children directly from schools to reception centers, (c) to be prepared to implement either of the preceding plans depending on the course of the accident, or (d) other possibilities which may emerge from suggestions made by the respondents out of their detailed knowledge of the concrete problems involved.

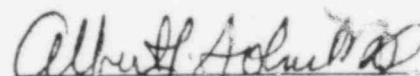
The second part of the school study would be a demographic study of households containing children focused on obtaining factual data of the following kinds: (a) the nature of the family situation during school hours (adult at home or at work; where parents may be contacted and how; availability of relative or neighbor willing and able to take charge; car at home or not; members of family outside EPZ, and vice versa), (b) how the children normally get home (walk, bus, other), and (c) how many children in each family attend which schools and knowledge of designated relocation centers.

The third part of the study should include (a) a review of the actual past experience of each school in early dismissal situations, and (b) a feasibility test in a representative sample of schools to determine how many parents (or their surrogates) can be contacted without advance warning during a school day, and how long it takes to do so.

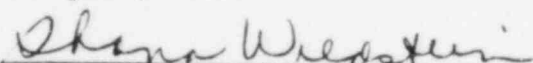
Experts in pediatrics, child development, and other relevant professions should be utilized at every step--in the design and implementation of the research, in the interpretation and reporting of the results, and in the ultimate application of the find^{ing}s to emergency plans for the schools.

16. It is the conclusion of each of us that until the above studies are conducted, the Atomic Safety and Licensing Board and the Nuclear Regulatory Commission lack a sufficient basis to determine either the workability of the Indian Point Radiological Emergency Response Plan or the adequacy at any given time of preparedness to protect the public in case of an accident at Indian Point.


Kai T. Erikson


Albert J. Solnit

Subscribed and Sworn to
before me this 19th day
of April, 1983.


Notary My Commission Expires March 31, 1984

AFFIDAVIT

STATE OF NEW YORK)
) SS:
COUNTY OF NEW YORK)

1. I, Robert R. Holt, first being duly sworn, depose and say: I am Professor of Psychology at New York University; my specialities are clinical and social psychology. Before obtaining my Ph.D in psychology at Harvard University, I worked as an interviewer for the Elmo Roper organization and briefly ran a small independent polling organization, the New England Public Opinion Research Association. My first post-Ph.D. job was as a Study Director in the Division of Program Surveys, B. A. E., in the U.S. Department of Agriculture (for my publications in this field, see Nos. 2, 6, and 25 in my bibliography, attached). After World War II, I learned clinical psychology at the Menninger Foundation in Topeka, Kansas, where I subsequently became Director of the Psychological Staff. Since 1953, I have been at New York University, where I founded the Research Center for Mental Health, and directed it for about fifteen years. A principal theme of my scientific work has been the prediction of human behavior, on which I have published several papers and a book, Methods in Clinical Psychology, Vol. II: Prediction and Research, New York: Plenum (1973). During recent years, I have renewed my interest in survey research. My 1980 paper (no. 118 in bibliography) reports results

of a national survey done in collaboration with Daniel Yankelovich, for whose firm I have been a consultant concerning several other surveys.

2. My recent work has also brought me to the study of stress (see no. 123 in my bibliography). I participated in the discussion of psychological stress in the vicinity of the Three Mile Island nuclear power plants, held by the MITRE Corporation in McLean, Virginia, and was asked to prepare a commentary on that discussion presenting my theory of the impact of radiological accidents on psychological health. This commentary was submitted to the Nuclear Regulatory Commission and appears in NUREG/CP-0026 (no. 122 in bibliography). I also made a thorough study of the relevant research on human response to the TMI accident, and most recently was invited to present a survey of that material at the International Forum on Nuclear Energy in Middletown, Pa., March 28-30, 1983.

3. I make this affidavit at the request of the Union of Concerned Scientists and the New York Public Interest Research Group Inc., to comment on the utility of sample surveys as means of predicting human behavior in general, and of predicting the responses of people to an accident at Indian Point in particular. I have been given to read the testimony presented in this proceeding on these subjects by Drs. Lecker and Dynes.

4. Surveys typically collect several types of data:

- a) factual information that can be directly reported (for example, "Have you received an information brochure about Indian Point?");

- b) knowledge possessed by the respondent, indicating his or her degree of acquaintance with relevant data (for example, "What are you supposed to do if you hear a siren warning of an accident at Indian Point?");
- c) beliefs (for example, "Have you received a dangerous dose of radiation?");
- d) attitudes (for example, "How much trust do you have in statements about nuclear power made by Con Edison?");
- e) values (for example, "Which is more important, a man's duty to his job, or to his family?");
- f) statements of intention (for example, "What do you plan to do to prepare your family for a possible evacuation of this area?"); and,
- g) statements of probable future behavior under hypothetical circumstances (for example, "What would you do if there were an accident at Indian Point and people within 5 miles were advised to stay indoors with windows shut?")

5. It should be evident that no sharp dividing lines can be drawn between these classes of questions, or the kinds of data they provide. Moreover, the above listing is not exhaustive or definitive. My point is to illustrate some of the many kinds of data that can be obtained from surveys, and to suggest some of the different ways in which they are useful in a scientific attempt to predict behavior.

6. Consider the issue of greatest interest, behavior at the time of a possible accident serious enough to require the evacuation of a given