

UNITED STATES NUCLEAR REGULATORY COMMISSION

ORIGINAL

In the Matter of:

PUBLIC SERVICE COMPANY OF)	Docket Nos.
NEW HAMPSHIRE, et al.)	50-443-0L
)	50-444-0L
(SEABROOK STATION, UNITS 1 AND 2))	OFF-SITE EMERGENCY
)	PLANNING
EVIDENTIARY HEARING)	
(BY TELECONFERENCE))	

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1 UNITED STATES NUCLEAR REGULATORY COMMISSION
2 ATOMIC SAFETY AND LICENSING BOARD

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6 NEW HAMPSHIRE, et al.,) 50-443-OL
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9) PLANNING
10 EVIDENTIARY HEARING)
11 (BY TELECONFERENCE))

Monday,
May 9, 1988

Room 428
West Tower
4350 East West Highway
Bethesda, Maryland

14 The above-entitled matter came on for hearing,
15 pursuant to notice, at 2:17 p.m.

16 BEFORE: JUDGE IVAN W. SMITH, CHAIRMAN
17 Atomic Safety and Licensing Board
18 U.S. Nuclear Regulatory Commission
19 Washington, D.C. 20555
20 JUDGE GUSTAVE A. LINENBERGER, JR., MEMBER
21 Atomic Safety and Licensing Board
22 U.S. Nuclear Regulatory Commission
23 Washington, D.C. 20555
24 JUDGE JERRY HARBOUR, MEMBER
25 Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

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APPEARANCES:

For the Applicant:

GEORGE LEWALD, ESQ.
Ropes & Gray
225 Franklin Street
Boston, Massachusetts 02110

For the NRC Staff:

SHERWIN E. TURK, ESQ.
Office of General Counsel
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

For the Federal Emergency Management Agency:

GEORGE WATSON, ESQ.
Federal Emergency Management Agency
500 C Street, S.W.
Washington, D.C. 20472

For the State of New Hampshire:

GEOFFREY M. HUNTINGTON, ESQ.
State of New Hampshire
25 Capitol Street
Concord, New Hampshire 03301

For the Commonwealth of Massachusetts:

CAROL SNEIDER, ASST. ATTY. GEN.
STEPHEN OLESKEY, ESQ.
Commonwealth of Massachusetts
One Ashburton Place, 19th Floor
Boston, Massachusetts 02108

For the New England Coalition against Nuclear
Pollution:

ELLYN R. WEISS, ESQ.
Harmon & Weiss
2001 S Street, N.W.
Washington, D.C. 20009

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APPEARANCES: (Continued)

For the Seacoast Anti-Pollution League:

(No Appearance)

For the Town of Hampton:

MATTHEW T. BROCK, ESQ.
Shaines & McEachern
25 Maplewood Avenue
P.O. Box 360
Portsmouth, New Hampshire 03801

For the Town of Kensington:

SANDRA FOWLER MITCHELL, EMERGENCY PLANNING DIR.
Town Hall
Kensington, New Hampshire

For the Towns of Hampton Falls and North
Hampton and South Hampton:

(No Appearance)

For the Town of Amesbury:

(No Appearances)

I N D E X

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WITNESSES

DIRECT CROSS REDIRECT RECROSS EXAM

ORTWIN RENN
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By Ms. Sneider		11112
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JUDGE SMITH: This is for the purpose of continuing the cross examination of Dr. Renn, Ortwin Renn.

Whereupon,

ORTWIN RENN

was recalled as a witness herein, and having been previously duly sworn, was examined, and testified further, as follows:

JUDGE SMITH: And I understand that, Dr. Renn, that you are on the conference call?

THE WITNESS: Yes, I am.

JUDGE SMITH: And where are you?

THE WITNESS: I am in the office of the Attorney General of Massachusetts.

JUDGE SMITH: Do you understand, Dr. Renn, that you are continuing your testimony under oath?

THE WITNESS: Yes, I do.

JUDGE SMITH: Exactly as it was when you were testifying in person up in Concord.

THE WITNESS: Yes.

JUDGE SMITH: All right. Is there anything preliminary until we continue the cross examination.

MR. HUNTINGTON: Yes, sir. Geoff Huntington of New Hampshire Attorney General's Office. Both Dana Bisbee and I have a scheduling conflict which will arise in about an hour, and I may have to excuse myself. If we don't want to interrupt

1 the proceedings, that's fine if it continues and give us a
2 transcript when it arrives.

3 But I am going to have to go in about an hour unless
4 I get somebody else to fill in.

5 JUDGE SMITH: Your transmission's breaking up, too,
6 and I guess that you're using a speaker phone, aren't you?

7 MR. HUNTINGTON: No. I'm using a receiver right now.
8 I can understand all of you fine. And I'm not asking any
9 questions. I was going to listen in. So it won't be a problem
10 so long as I can hear you.

11 JUDGE SMITH: All right.

12 Anything further before we proceed?

13 MS. SNEIDER: Just that Ms. Sneider, and Dr. Goble is
14 also in attendance at the Massachusetts's Attorney General's
15 Office.

16 JUDGE SMITH: That was Ms. Sneider speaking?

17 MS. SNEIDER: Yes, it is.

18 JUDGE SMITH: All right. We'll have to be very
19 careful to identify ourselves when we speak up and make
20 objections.

21 Are you prepared to proceed, Mr. Turk?

22 MR. TURK: Your Honor, I thought I would go back to
23 the usual order of things and let Mr. Lewald resume his cross.

24 MR. LEWALD: I'm indifferent. I'm ready to go ahead
25 where I left off on Friday.

1 JUDGE SMITH: All right. All right, go ahead, Mr.
2 Lewald.

3 MR. LEWALD: All right, fine.

4 MS. SNEIDER: Your Honor, this is Carol Sneider. It
5 seems like it would be more appropriate for Mr. Turk to at
6 least finish with his cross since that's where we left off on
7 Friday.

8 JUDGE SMITH: Let it up to the principals involved.
9 I see no prejudice to anybody, so let's go with the
10 requirements of the cross examiner. And Mr. Lewald will
11 proceed.

12 MR. LEWALD: Thank you, Your Honor.

13 CROSS EXAMINATION

14 BY MR. LEWALD:

15 Q. Dr. Renn, I would like take up where I'd left off on
16 Friday. And I was examining you on your testimony as it
17 appeared on page 69 of the Panel's testimony.

18 And I'd like to address my first question to your
19 question on page 79 to construct a hypothetical situation, not
20 rely on the actual situation.

21 Now, am I to understand that you conducted your
22 study, that is, your time estimate study, with the premise that
23 ten percent of the beach population could not be sheltered.

24 A. This was really difficult to understand. Could you
25 please repeat the question. We had some breakup here. So I

1 couldn't understand particularly the last part of the question.

2 Q. Well, the question was, did your study begin with the
3 premise that ten percent of the beach population could not be
4 sheltered.

5 A. The study shows or the study implies that 90 percent
6 of the persons at the beach that are exposed to message would
7 go to find shelter in the hypothetical situations that are
8 outlined. I did not make any specifications about the
9 remaining ten percent.

10 Q. And yet your study just dealt with 90 percent of the
11 beach population, is that what I am to understand?

12 A. Well, the thing is that it is kind of difficult for
13 anyone to forecast what a hundred percent of a population will
14 do, and particularly if the population at large is the one that
15 you're talking about. And therefore I felt more comfortable to
16 preclude ten percent because among those ten percent might be
17 people that may do nothing, for example, and then of course, it
18 will never be completed. This then I felt more safe to go with
19 the 90 percentile.

20 Q. What affect would adding the ten percent and making
21 it 100 percent have on your time estimate?

22 A. That is very difficult to say. As I said, there
23 might be a person that just disregards the danger et al and
24 wouldn't do anything.

25 Q. Would be the same timing?

1 A. Of course the time would be infinite and that of
2 course wouldn't have made much. To answer this question would
3 rely that I make some kind of an assumption about the last
4 person on the beach, and I would feel very reluctant to do so,
5 because apparently we'd be talking about at large population
6 that maybe a very few people that wouldn't do anything. So in
7 this respect, it will never be 100 percent complete.

8 Q. Now, you go on to say that you condition your 90
9 percent on the fact that the owners of the shelters will
10 provide access to their buildings for the beach population.
11 And then you ask the question, is it a real possibility that
12 the owners of shelters refuse to let people in their buildings.

13 And your answer is that it's difficult to predict
14 what the owners of potential shelters will actually do, and
15 then go on to say that the general notion is that people may
16 voice a negative opinion in an opinion poll but still not
17 refuse to give shelter to other individuals if a real disaster
18 occurred.

19 Do you follow that?

20 A. Yes. I have it right here on page 18.

21 Q. And this is the general rule, isn't it?

22 A. Yes. I mean, what I said here, and I think that is
23 very much in accordance with also what Dennis Milette has said.
24 In many disastrous situation, people may have another verbal
25 opinion of what they would do, of what they actually will do in

1 the emergency situation. But later on I qualified that the
2 general rule that is still applicable may be not applicable for
3 this specific situation, or only partly applicable. What I am
4 claiming is that there are a lot of reasons that may overrule
5 this general tendency which does mean that everyone will behave
6 against this rule, but that I could foresee a substantial
7 proportion of owners of potential shelters that would refuse
8 entrance to the beach population.

9 Q. So do I correctly understand that you are not
10 suggesting anything more than that Seabrook problems which
11 possibly could result in a departure from the general rule.

12 MS. WEISS: Pardon me, Mr. Lewald, I couldn't hear
13 that question at all.

14 JUDGE SMITH: All right. Mr. Lewald, your voice does
15 have a slight tendency to break up. I think that the problem
16 may be that these speaker phones have a voice activated
17 preemption type of mechanism in it. If you can avoid using the
18 speaker phone, please do that.

19 The Board doesn't have much choice. The three of us
20 are in this office and we all have to be here, and the
21 Reporter. Mr. Lewald? Are you there, Mr. Lewald?

22 Did we lose Mr. Lewald? Did we lose everybody. Is
23 anybody there?

24 MS. WEISS: Yes. I'm here.

25 MR. BROCK: Yes, I'm here. I can hear, Your Honor.

1 MS. SNEIDER: Attorney General's Office is here.

2 JUDGE SMITH: Mr. Lewald?

3 Okay. Hang on.

4 (Pause)

5 MR. LEWALD: Should I go ahead?

6 JUDGE SMITH: Yes, please.

7 BY MR. LEWALD:

8 Q. Dr. Renn, do I correctly understand that you are not
9 suggesting any more than that the Seabrook problem that could
10 result in a departure from the rule?

11 A. What I said in my testimony, and that is what I'm
12 saying today, is that the specific situation in Seabrook and
13 the specific circumstances that I've outlined in my testimony
14 are enough reason to believe that there may be an exception
15 from the rule, yes.

16 Q. Okay. Now, the reasons that you set forth follow
17 beginning on page 80, do they not?

18 A. Yes.

19 Q. And the first one, you talk about the data from
20 Quarantelli, correct?

21 A. Yes.

22 Q. This is what we discussed on Friday, right?

23 A. Partly, yes.

24 Q. And secondly, you say that the surveys of the shelter
25 owners revealed an unexpectedly high degree of verbal refusal

1 to grant access to their buildings.

2 A. Yes.

3 Q. Is that correct?

4 A. Yes.

5 Q. Now, you go on to say that more than fifty percent of
6 those surveyed were not willing to host people from the beach
7 in case of an emergency.

8 Is that right?

9 A. Yes, that's the second sentence there.

10 Q. This doesn't surprise you, does it?

11 A. Oh, I think it's a surprising high number of people
12 that refused to give people shelter in case of an emergency. I
13 think it's a surprisingly high number.

14 Q. Isn't the surprise really the other way? Doesn't
15 this survey response really call for a hundred percent since it
16 self selects the anti-Seabrooks and excludes the pro-Seabrooks?

17 A. I don't think so. I think there will have to be two
18 things to take into consideration. One thing is that people do
19 not always act non-altruistically in verbal behavior. I think
20 that if you reiterate that sentence that they are more
21 altruistic in real behavior than in speech, it does not mean
22 that they're all the way non-altruistic in speech. That many
23 people do care even in verbal behavior for their fellow
24 countrymen.

25 And secondly, I think that you have to be aware of

1 the fact that many of those people surveyed were not quite sure
2 what their obligation is and they wanted to be cautious. So I
3 think that if you get fifty percent refusal, I think it is a
4 very high number of refusal, but I concede that if it would be
5 more than it would be more surprising. But I definitely
6 believe that fifty percent is a high number.

7 Q. Was the nature of the survey, if you were an anti-
8 Seabrook person, you have the choice of filling it out, and if
9 you're not, why would you make a return?

10 A. Well, I think there are lots of different motives to
11 fill in the returns. First thing, I think, I'm not sure and I
12 don't think that it's true that the people felt that the survey
13 was undertaken by a group that allegedly is antinuclear. I
14 think that the people felt that this was a neutral survey.

15 Secondly, I think that you know even if people are
16 antinuclear, the people that have actually filled out the
17 questionnaire they may feel that they're antinuclear but still
18 would give other people shelter. I think the two things are
19 not totally independent from each other, but for many, they
20 are.

21 Q. Doctor, do you have Attachment 12 to the Panel's
22 testimony at your disposal?

23 A. Just a second, please.

24 MS. SNEIDER: It'll take a couple of minutes to get
25 Attachment 12. If you want to wait, I will go get it.

1 (Audio beeping sound)

2 JUDGE SMITH: That was the sound of Ms. Sneider
3 departing to get Attachment 12.

4 MR. LEWALD: I think so. That was the elevator, I
5 guess, going down three floors.

6 (Pause)

7 JUDGE SMITH: Ms. Sneider, have you returned?

8 (No response)

9 BY MR. LEWALD:

10 Q. Dr. Renn, do you have now before you Attachment 12,
11 which was associated with your testimony?

12 A. Yes.

13 Q. And could I ask you if you would turn to the first or
14 the third page of the Exhibit which contains the first survey
15 document.

16 A. Yes.

17 Q. And on the right hand corner, just so I'm sure that
18 you have what I have, a name, Robert Hurley?

19 A. Yes.

20 Q. Can you hear me, Dr. Renn?

21 A. Yes, I can hear you.

22 Q. Does that show on your copy as well as mine?

23 A. Yes, it says, Robert Hurley, on the right hand
24 corner.

25 Q. Thank you.

1 JUDGE SMITH: May I interrupt just a moment? Is Mr.
2 Brock on?

3 We'll proceed without him. I'll get him on as fast
4 as possible.

5 BY MR. LEWALD:

6 Q. Dr. Renn, directing your attention to the survey
7 questionnaire and to the introductory paragraphs, which are the
8 first two, the first paragraph asserts that New Hampshire
9 Yankee identified its owner or manager's building as a shelter.

10 Now, the second paragraph identifies the survey as
11 being taken by the Massachusetts, or being taken for the
12 Massachusetts Attorney General. Now, you would agree, would
13 you not, that both groups, New Hampshire Yankee, and the
14 Massachusetts Attorney General have value positions towards
15 Seabrook which are well known?

16 A. I know that, yes.

17 Q. Now, identifying a survey with --

18 JUDGE SMITH: Whoa, whoa. May I interrupt?

19 What is it that you know, Dr. Renn?

20 THE WITNESS: Pardon me?

21 JUDGE SMITH: Your last answer was, I know that, yes.
22 What is it that you know?

23 THE WITNESS: I know that the Attorney General's
24 Office has a specific --

25 OPERATOR: Mr. Brock, go ahead, please.

1 THE WITNESS: I'm sorry?

2 JUDGE SMITH: Mr. Brock, are you back?

3 JUDGE SMITH: Yes, Judge Smith, I am.

4 JUDGE SMITH: Dr. Renn, would you answer my question,
5 please, now?

6 THE WITNESS: Yes. I know that the General
7 Attorney's office has a specific view towards Seabrook, and I
8 believe that the New Hampshire Yankee has a specific view on
9 Seabrook.

10 I'm also aware that probably a lot of the hotel
11 owners and a lot of the people that have been surveyed may be
12 not so well informed as I am about those affiliations of the
13 two institutions mentioned in the letter.

14 JUDGE SMITH: Go ahead, Mr. Lewald.

15 BY MR. LEWALD:

16 Q. Well, doctor, identifying a survey with a value
17 position group such as in this case, the Massachusetts Attorney
18 General, implies correct answers to the respondent's, in this
19 case, anti-Seabrook and biased results, doesn't it?

20 A. Not necessarily. I agree with you in the sense that
21 it's the sponsor of the specific survey is being mentioned that
22 according to the literature about methodology that we have that
23 this kind of nominating a sponsor may actually affect the
24 responses of the people that are being addressed. But it
25 presupposes that everybody who answers this written

1 questionnaire is aware of the fact that the Attorney General's
2 Office in Massachusetts is actually opposing and an intervenor
3 in this process.

4 I'm not quite sure. I mean, I don't, I haven't
5 conducted the survey and I'm not so well informed about the
6 knowledge of each of the respondents about who is the
7 intervenor and who is the proposer. I think they know about
8 the proposer but I'm not quite sure if everybody that has been
9 interviewed was knowledgeable that the Attorney General's
10 Office in Massachusetts is opposing the nuclear power plant in
11 Seabrook.

12 Q. Well, let's go on, doctor, then. On Question 2,
13 defined shelter, and therefore I suggest to you, biases people
14 who own buildings that do not meet this definition of shelter
15 in Question 2. And so that they consider their buildings
16 unacceptable as shelter space and therefore they're biased
17 toward a no answer.

18 Would you agree with that?

19 A. Not necessarily, again. I think there is some good
20 points in your assertion. But on the other hand, what we know
21 about attitudes towards nuclear power, and I've expressed that
22 already in my testimony, that many people look at those
23 questionnaires as an expression or to express their own
24 feelings towards Seabrook in this case.

25 Now, if one of those hotel owners is an advocate of

1 Seabrook, he would probably try to make that expression clear,
2 and particularly because this person might think that his
3 answer may be relevant for the issue. So even if let's say a
4 person that knows that the Attorney General's Office is an
5 opponent to the licensing of the nuclear power plant at
6 Seabrook, he may as well say, well, I'll give them a lesson and
7 tell them that I will let people in it, that I think my shelter
8 is good because I think that Seabrook Nuclear Power Plant is a
9 good plant.

10 Now, I think it goes in both directions. What we can
11 say in general is that the more people are affiliated to a
12 position, the more they are likely to show that position in
13 surveys regardless whether the pro or the con side is
14 conducting the survey.

15 Q. Would you characterize the survey as value free,
16 doctor?

17 A. That's very difficult to determine a question what is
18 value free and what is not value free. I would definitely say
19 that telling the respondents the source is certainly one way to
20 give some kind of, or to elicit distorted answers. But I would
21 say that it can go in both directions. So I would be very
22 careful about a conclusion that the direction is only in favor
23 to the Attorney General.

24 I have to come back to my earlier view, the more
25 polarized the debate is, the more people are going to express

1 that view regardless who the source of the survey is.

2 Q. Well, let's take another one, Dr. Renn.

3 In Question 3, this question implies that shelter
4 with direct access from outdoors is acceptable and other type
5 of access is not. And therefore, biasing the people who own
6 buildings without direct access toward a, no, answer.

7 Would you agree with that?

8 A. I don't think that is true.

9 The question reads, if you have shelter space, does
10 it have access directly from outdoors? It does not include any
11 evaluation that it has to have an access from outdoors. It's
12 just asking the question if it has access from outdoors, and
13 there are only two categories to answer: yes and no.

14 I do not think that this inserts any bias on the
15 questionnaire. It is in my sense just an informational
16 question, and it may trigger thoughts about if that is a
17 necessity or not. But the question in itself does not include
18 any bias that outdoor access is absolutely mandatory for being
19 a shelter. That question does not include that notion.

20 Q. Doesn't the question imply that shelter without
21 access on the outside is less valuable than the other shelter?

22 A. It does not say that in any way. It just asks if you
23 have shelter space, does it have access from the outdoors. And
24 it does not imply that it must have it. It just asks the
25 question if it has or if it has not. And I don't see any bias

1 in the specific question.

2 Q. How would I find out from this question whether or
3 not a building owner had shelter but the shelter was not
4 accessible from the outdoors?

5 A. From this question, number three, you cannot make
6 that assertion. Question No. three just gives you the answer
7 if the shelter space has access from the outdoors or not. And
8 that is what the question is asking.

9 Q. Now, Question 4, which is a question on behavioral
10 intentions, I submit?

11 A. Yes.

12 Q. It does not simulate or it does not attempt to
13 simulate in any fashion the emergency context or emergency
14 information that would exist when people would be actually
15 engaged in letting people into their building.

16 Would you agree that it does not do that, would you
17 not?

18 JUDGE SMITH: Did you answer that?

19 THE WITNESS: I didn't get the content of the
20 question. Could you specify your question, Mr. Lewald?

21 BY MR. LEWALD:

22 Q. All right, let me do it over again.

23 The question on behavioral intentions, which is
24 Question 4, doesn't even attempt to simulate the emergency
25 context or emergency information that would exist when people

1 would actually be engaged in letting people into their
2 buildings or not letting them in. But this would reduce, would
3 it not, the validity of the behavioral intention survey by
4 definition as admitted in earlier testimony, I believe, by
5 other Massachusetts Attorney General witnesses.

6 A. Well, I think, you know, we had brought up the issue
7 of bias and I think one of the things that we have learned in
8 survey techniques is to be very careful about indications on a
9 specific situation. If we try to do things like role playing
10 and giving a specific background, like an environment, somebody
11 is knocking at your door and asking, can I get in, would you
12 let him in. Or would give other specifications, that might
13 insert another bias, either pro or con, depending on how the
14 specific situation is framed.

15 So I think it is a valid solution to say, be as
16 neutral as possible and just ask would you leave somebody in.
17 Now, we know, and I've put that in my testimony, that this
18 question on its own does not allow a specific conclusion about
19 what percentage of homeowners will actually do what they say in
20 this specific question.

21 But I think the question, how it is phrased, is the
22 most valid and unbiased way of doing so. Any other way of
23 simulating a situation usually introduces more biases in a
24 question than doing it in a very neutral fashion as has been
25 done here.

1 Q. But doesn't it present to the owner of a building an
2 opportunity to voice his opposition to the plant's licensing,
3 and to a situation quite apart from that as to whether or not
4 he'd actually let someone in his building seeking shelter?

5 A. Yes. I offered the same interpretation in part that
6 I said certainly given the opportunity to express one's own
7 behavioral intentions is part of way of saying of what my own
8 attitude is according to the basic literature on attitudes and
9 behavior.

10 In this respect, I definitely think that saying, no,
11 to Question 4 or saying, no, to some of the other questions,
12 specifically Question 4, is also an expression of attitude.
13 But I think for the issue that is at stake right here,
14 attitudes are also important. It is not so that attitudes and
15 actual behavior are correlated directly with each other.
16 According to the literature that we have, the extra correlation
17 is between point 3 to point 6 which means literally that if you
18 take a ball point figure, that around ten percent to 30 percent
19 of the people that actually have a strong opinion or strong
20 attitude act according to this attitude.

21 Now, if you just take the ten to 30 percent of the
22 people that we know from just general attitude on a study and
23 specifically the study by Wittacker that was also mentioned by
24 Milette, and then while we have a substantial percentage of
25 people in this area that might actually do what they say in an

1 attitudinal survey, so I think it is not so that we can say
2 that 60 or 70 percent of the people say they would not let
3 people in that it will be 60 or 70 percent, but it will
4 definitely not be zero.

5 Q. Well, doctor, isn't the attitude that is expressed
6 toward the facility where the behavior would be toward the
7 individual seeking shelter?

8 A. Well, there are two issues involved. And the one
9 issue that is very important is that one issue is that
10 opposition to the nuclear power plant and opposition to its
11 operation has also an impact on the behavior in an emergency.

12 The second thing is, and I think that is what your
13 question is based on, is that people might feel a moral
14 obligations if other fellow citizens are in danger, to help
15 them. And I think that is a very very strong motive. But in
16 the case of Seabrook, I've lined out four reasons that this
17 kind of moral obligation may be over-compensated. That people
18 have a lot of moral justification not to let people in without
19 feeling guilty. And I think that is my major part of my
20 argument that I'm saying, while if you have this attitude, you
21 have an inclination, for example, to leave immediately because
22 you're fearful.

23 Now, if you can compensate your guilt by letting
24 other people not come into your building, then you are in
25 accordance with your own attitude and that diminishes your

1 cognitive dissonance. And I think that is what my argument is
2 based on, that there are mechanisms to compensate for the moral
3 obligation to help other people.

4 Q. Are you implying that we could have a situation here
5 where someone would dislike the utility so much that he would
6 slam the door on somebody seeking shelter, even though he
7 planned to sue the utility the following week after allowing
8 shelter?

9 A. Well, what I'm saying is that a person that has a
10 very negative feeling towards nuclear power or even distrust to
11 the operator of this power plant, may be first inclined to do
12 this. In a second thought, then he runs into his moralizing
13 argument and what I'm claiming right here is that if that
14 second thought gives him enough of a justification to slam the
15 door, as you said it, then I think it is more likely for a
16 person that has a negative attitude towards nuclear power to do
17 this than a person who has a very positive attitude towards
18 nuclear power.

19 Q. Wouldn't you agree that anyone who would do this
20 would be decidedly in a minority, that is, allow his hatred of
21 the utility to justify his slamming the door from a poor soul
22 seeking shelter?

23 A. Well, I don't make any clear indication whether this
24 will be a minority or a majority. I think all the ways to
25 actually forecast the behavior in this specific incident is

1 based on qualitative reasoning and the argument, the arguments
2 that I lined out, that there are a lot of moral arguments to
3 just do this, what you have said, slam the door, and leaving.

4 Now it is difficult to say how many people will
5 actually use the compensational methods and arguments, but I
6 would definitely think that it is at least a substantive
7 minority that would jeopardize the realization of the
8 sheltering plan.

9 JUDGE SMITH: Mr. Lewald, may I interrupt a moment,
10 please?

11 MR. LEWALD: Yes, Judge Smith.

12 JUDGE SMITH: I'd like to take a specimen roll here.

13 Ms. Weiss, are you still on?

14 MS. WEISS: Yes, sir.

15 JUDGE SMITH: Mr. Brock?

16 MR. BROCK: Yes, Your Honor.

17 JUDGE SMITH: Mr. Huntington?

18 MS. WEISS: He said they had to leave, remember?

19 JUDGE SMITH: Yes. I didn't know that they'd
20 actually left.

21 Ms. Mitchell, are you still on?

22 MS. MITCHELL: Yes. I'm leaving in 20 minutes, Your
23 Honor.

24 JUDGE SMITH: All right.

25 Mr. Turk?

1 MR. TURK: Yes.

2 JUDGE SMITH: Okay. Go ahead.

3 BY MR. LEWALD:

4 Q. Moving on to page 81, or the bottom of 81 of your
5 testimony, you say that these surveys, these Salmon Falls
6 surveys indicated that around 30 percent of those interviewed
7 stated they would leave the area immediately if any kind of
8 emergency were to be declared.

9 Is this 30 percent a calculation that you did?

10 A. Could you just tell me what you're referring to?
11 It's page 81?

12 Q. The bottom of page 81 and the top of page 82 of the
13 Panel testimony.

14 A. I don't recall right now whether that was taken
15 directly from the survey, or if that was given to me by the
16 surveyors, themselves. I'm sorry, I don't recall exactly what
17 that number came from, but I'm sure that it's a correct number.

18 Q. You're sure.

19 You didn't do the calculation if indeed there were a
20 calculation, I take it?

21 A. I didn't do that specific calculation, no.

22 Q. And you think this is a reasonable response, you say,
23 considering the fact that the first ones to leave will be the
24 first ones out of the EPZ, correct?

25 A. Yes. And let me qualify this. I think it is a

1 reasonable response because most of the owners of these
2 facilities or the managers of these facilities are quite aware
3 that the sheltering factors that was discussed, for example, in
4 the newspaper, is just a ten percent protection.

5 Now, if I consider a ten percent protection in
6 something that it is not adequate to protection my own health,
7 then I would assume that it would not be an adequate protection
8 for anybody else. And this is one of the justifications, the
9 moral justifications to leave earlier. Because if I stay, I
10 wouldn't help people a lot by just giving them ten percent
11 protection. And even that may not be believed because I have
12 outlined earlier, most of the buildings do not match the
13 imagination or the images of people about shelters, so that
14 they even might not believe the ten percent.

15 Q. Doctor, would your answer be the same if I called to
16 your attention that the Salmon Falls survey was directed to
17 designations on the Stone and Webster March Study which was
18 identifying buildings with a protective shielding factor of
19 something in the vicinity of .4 to .6 percent and not .9
20 percent which you have just referred to.

21 A. That was the first survey, but not the follow-up, as
22 far as I remember.

23 Q. Yes. My question to you was that the Salmon Falls
24 Survey, though, was directed to the owners of the March Stone &
25 Webster, buildings listed in the March Stone & Webster study

1 and not the August - September 1987 study.

2 A. Well, I think, you know, I'm not a health physicist
3 and I don't want to get into the argument about shielding
4 factors. That is not my expertise. What I would like to
5 stress out and to point out here is that apparently this .9 has
6 been reported in the press and will probably be later on
7 reported even more than it is today. And this is the figure
8 that people are going to live with.

9 I doubt that people have a lot of knowledge about the
10 first or the second draft of the Stone & Webster report, and
11 we're talking here about perception, not about reality. And I
12 don't want to go into the question whether the shielding factor
13 is more or less. That is not part of my expertise.

14 What I'm referring to is how people perceive their
15 own homes as shelters. And apparently from the survey, just as
16 well as from the published opinions that they find in the
17 press, they feel that the protection is very low, probably
18 lower than the ones that Stone & Webster has indicated in their
19 first survey.

20 Q. You make no mention of anything published in the
21 press in your panel testimony, though, do you, doctor?

22 A. Well, not -- I've just recently read in the Boston
23 Globe, I can't give you the exact date -- which the .9
24 shielding factor was mentioned, and I believe that a lot of
25 people in this area read the Boston Globe.

1 Q. Doctor, would you go back to the Salmon Falls
2 Survey, which is Attachment 12?

3 A. Yes, I have it in front of me.

4 Q. And can you tell me what study is identified in that
5 survey?

6 A. In March of 1986, Stone & Webster Engineering
7 Corporation completed a study entitled, "Study to Identify
8 Potential Shelters in the Beach Area Near Seabrook Station."

9 JUDGE SMITH: All right, let's take another roll.
10 Ms. Weiss?

11 MS. WEISS: Yes.

12 JUDGE SMITH: Mr. Brock?

13 MR. BROCK: Yes.

14 JUDGE SMITH: Mr. Turk?

15 MR. TURK: Yes.

16 JUDGE SMITH: Ms. Sneider and Dr. Renn?

17 MS. SNEIDER: Yes.

18 THE WITNESS: Yes.

19 JUDGE SMITH: Mr. Lewald?

20 (No response.)

21 JUDGE SMITH: Mr. Lewald?

22 (No response)

23 JUDGE SMITH: Mr. Brock?

24 MR. BROCK: Yes, Your Honor?

25 JUDGE SMITH: Mr. Huntington?

1 (No response)

2 JUDGE SMITH: They're off, I know.

3 And Ms. Mitchell?

4 MS. MITCHELL: Here, but I'm leaving in fifteen
5 minutes.

6 JUDGE SMITH: Okay.

7 Mr. Lewald, are you on?

8 (No response)

9 JUDGE SMITH: I think he dropped his equipment.

10 BY MR. LEWALD:

11 Q. Dr. Renn?

12 A. Yes, I am here.

13 Q. Doctor, the question before last I was inquiring
14 about the 30 percent of the people interviewed, which it says
15 interviewed on the bottom of page 81 of your testimony.

16 A. Yes.

17 Q. And these were the people presumably interviewed
18 under the survey that was conducted at Salmon Falls on the
19 basis of Stone & Webster's March 1986 study, true?

20 A. I've just looked through -- used the break to look
21 through this Appendix 12 again, and I've seen that from
22 November 3rd where some additional surveys have been made,
23 there's a reference to the August 1987 Stone & Webster
24 Corporation.

25 Q. What was your reference on the bottom of page 81, the

1 top of page 82 in your 30 percent?

2 A. Pardon me? The connection's very bad. Could you
3 speak up a little bit. It's very difficult to listen.

4 Q. On the bottom of page 81 and the top of page 82 of
5 your testimony, you talk about 30 percent of those surveyed.

6 A. Yes.

7 Q. And am I to understand that you are talking about
8 those who were surveyed in September or August, September,
9 October and November?

10 A. I told you that this 30 percent was given to me by
11 Dr. Eckert who had conducted the survey. So I don't really
12 feel justified to give you that exact answer. As far as I can
13 recollect it, Dr. Eckert told me that he got this number from
14 the written responses that people had given him in the rubric
15 on written comments. But I'm not absolutely certain about
16 that.

17 But I have that number directly from the researcher.
18 So I did not calculate that number by myself, but also it seems
19 to be consistent with what we know about shadow evacuation.
20 But that is not where it comes from. I just made this
21 reference because I thought this might also be helpful, but
22 basically, this number is a number that was given to me by Dr.
23 Eckert as one of the results of the Salmon Falls survey.

24 Q. And it's got nothing to do with the November
25 inquiries, has it?

1 A. I have no idea because I said this number was given
2 to me by the Salmon Falls research associate, and I don't know
3 whether they just took that number from the August-September
4 survey or from the on-going survey. That is something that you
5 have to ask Dr. Eckert directly.

6 Q. Well, you know that the November survey doesn't ask
7 people whether or not they're going to cut and run, does it?

8 A. Pardon me?

9 Q. You don't understand the question?

10 A. I couldn't understand it. There was distorted noise
11 in the amplifier.

12 Q. What does the November survey pertain to?

13 A. Well, it's the same one as the other ones, too. It
14 has questions four. It says in the event of an accidental
15 r_diation release at the Seabrook station, would you let people
16 into your building. It had exactly the same four questions.

17 Q. Are we looking at the last page of Salmon Falls
18 research?

19 A. No, so we are not. I'm sorry. Maybe I have given
20 you, should have given you the reference. If you just take the
21 last third of the answer sheet, the reply sheet, you'll find
22 out that some of them have been labeled, November 3, 1987, and
23 it is basically the same letter, it just has been sent later.

24 Also, some in September 29, have already identified
25 in March of 1987, and in August 1987, so from what I can see

1 here, around 50 percent of all the questionnaires have that
2 additional information in it.

3 Q. The November survey questions, the introductory
4 matter is somewhat different, is it not, than the August --

5 A. Yes. I have seen that, yes.

6 Q. -- introductory matter?

7 JUDGE SMITH: Gentlemen, be careful not to over talk
8 on the speaker phones.

9 MR. LEWALD: That is too loud, Your Honor?

10 JUDGE SMITH: No. Cvertalking is much more damaging
11 to the transcript when you're using speaker phones. Don't
12 interrupt.

13 Go ahead, Mr. Lewald.

14 BY MR. LEWALD:

15 Q. My question, doctor, was the November survey contains
16 quite different introductory material than the August survey
17 questionnaire, does it not?

18 A. Yes. The wording of the introduction is different.

19 Q. And the November survey directs the business owner or
20 manager that his or her answers to the questions are crucial to
21 the evaluation of the evacuation plan proposed by New Hampshire
22 Yankee, does it not?

23 A. Well, it says, "your answers to the following
24 questions are crucial to evaluation of the evacuation plan
25 proposed by New Hampshire Yankee." That is the exact wording.

1 Q. And we're talking about shelter, are we not?

2 A. Yes.

3 Q. Now, going back to the top of page 82, you make the
4 response that the 30 percent interviewed said they would leave
5 the area immediately if any emergency were to be declared, and
6 you find this to be a reasonable response for the reasons
7 you've stated.

8 Now, when we are looking at shelter here at Seabrook.
9 we are looking at a fast breaking accident scenario. Am I
10 correct in that?

11 A. I think so, yes.

12 Q. Now, is it your view that it's reasonable and
13 realistic to think of a hotel owner and restaurateur as
14 rowing out the guests that might be business invitees that
15 might be in their establishments and locking the door and then
16 running out of town? Is that a reasonable reaction that you
17 feel that a hotel owner is going to follow in the event of
18 shelter being ordered at the beginning of a fast breaking
19 accident?

20 A. Well, what I would assume, and I'd again say that I
21 can't say this for all hotel owners, but if I think about
22 reasonable scenarios, I could imagine a very reasonable
23 scenario in which a hotel owner would give a message to all the
24 hotel guests who are still there saying, well, we know that the
25 protection is very inadequate in our hotel, that is what we

1 have heard from the press and that is what our preconceived
2 notion is, I think it is much better to get into the car and
3 get out as soon as possible, then our chance to be better
4 protected is better than staying in here, and so he would
5 probably warn the guests who are available at that moment, and
6 then would leave.

7 I think another incentive for him to leave, and that
8 again is in accordance with what Dennis Milette has said, is
9 there is no official role for him to stay, and I think that is
10 one of the common grounds of knowledge that we have about
11 behavior in an emergency situation, he might not feel obliged
12 to do this other than warning his own guests, but not letting
13 total strangers coming into his hotel rooms. Or if he happens
14 to see some coming up, saying, well, don't come into my house.
15 I don't think it's a good idea. Just leave the area. It is
16 much better leaving in a fast developing accident.

17 Q. Is it your suggestion that the hotel owners and
18 restaurateurs are emergency workers?

19 A. They assume a specific role if they hold shelters.
20 And I think as I do something to protect the public, this is a
21 kind of a public role that they are actually fulfilling.

22 Q. And you think it's a public role for a hotel keeper
23 to recommend evacuation when the authorities are recommending
24 shelter?

25 A. The hotel owner is a person that takes responsibility

1 for his or her guests. In many other instances, for example,
2 in fire, they certainly would do, give some advice to the
3 people inside the hotel. So I think that a hotel owner would
4 feel obliged in this situation, to give the best advice that
5 she or he can give and I could imagine from what we know right
6 now about the feeling of these hotel owners about what I have
7 read in the survey, what other circumstances are that have been
8 conveyed to those people in the press, that a reasonable
9 approach would be to say, I don't think that sheltering in my
10 house is a reasonable answer to this specific threat, and I
11 would recommend in contrast to what has been recommended in the
12 radio to evacuate spontaneously.

13 Q. Is it your view that this advice would be given not
14 with a view to trying to clear the hotel so the hotel owner
15 could run, but in a good faith effort to tell the hotel guests
16 what the hotel keeper thought was the best protective action
17 that he could take, that his guests could take?

18 A. I suppose again I would assume that most of hotel
19 owners would act altruistically in this situation or
20 altruistically in their own perception. That means that they
21 would go through their hotel and ask people that are there or
22 advise them or give them a recommendation to do the same thing
23 that they are intending to perform in a minute.

24 Q. Now, assuming, doctor, in a situation in which
25 shelter was ordered or recommended, the authorities would have

1 made a determination that the greatest dose reductions could be
2 had with shelter. Is that not so?

3 A. What was the question?

4 Q. We're assuming that when shelter was ordered or
5 recommended by the authorities as the better protective action
6 to be pursued, the authorities had already canvassed evacuation
7 as a protective action response and decided that shelter would
8 afford more protection. And what you're telling me is that
9 the hotel keepers are going to reverse that decision and
10 suggest that the guests in the hotel evacuate irrespective of
11 what the public authorities are suggesting?

12 A. We had a very similar situation at TMI. There are a
13 lot of people, actually thousands of people did do some kind of
14 protective action on their own in spite of what had been said
15 to them officially. Now, they were not said officially not to
16 evacuate but they were not told to evacuate with the exception
17 of pregnant women.

18 Nevertheless, we know that a lot of shadow evacuation
19 has taken place in this specific event. And there are other
20 instances in which this exactly has happened. And in natural
21 hazards, for example, the opposite is very often true, that
22 people are advised to do some protective action, but that
23 people just decide to stay there.

24 Now, I think another important factor there is that
25 in the past those people have been told that a severe accident,

1 specifically by the utility, is excluded. It's not a potential
2 or possible accident. Now, if that accident does happen and
3 with the attitude that they have towards the utility, for
4 example, they may feel that they can't have trust in this
5 specific authority, and they may feel that the information for
6 ordering the sheltering option was given by the utility and
7 just conveyed through the state agency.

8 So I could very well imagine a situation by which a
9 hotel owner says, well, I do not really trust those utilities
10 with the kind of information that they have given. I don't
11 think it is a very good idea to stay here. They admit that the
12 protection factor is very small. That's the perception that
13 the people have and therefore it seems more reasonable for us
14 to do something different. And I think there have been
15 incidences in the past that give credence to such a scenario.

16 Q. Doctor, does your shelter time study assume in any
17 respect that the owners of a building will be seeking better
18 shelter elsewhere?

19 A. Well, that is an interesting thought. I don't think
20 I have assumed that, but it certainly is an interesting thought
21 that the people that think that they are in very inadequate
22 shelters, in buildings that have a lot of glass windows or not
23 enough basement space would think of going somewhere where
24 they'd find a better space. I don't think is a very probable
25 behavior because I think that either people stay in the way

1 where they are, if they're already in a building, or that they
2 are leaving. But it is certainly conceivable also that some of
3 the people that definitely feel that their houses are not
4 suited for sheltering might look for another shelter.

5 Q. Doctor, moving over to page 84 of your testimony, you
6 make the statement that contrary to popular belief, natural and
7 technological disasters are not usually accompanied by panic or
8 total confusion.

9 Is this what we generally find to be the case?

10 A. Yes.

11 Q. Now, you talk about two exceptions to the rule and
12 you cite Tiryakian and Killian for these positions, do you not?

13 A. Yes.

14 Q. And also Bahne-Behnson, is it?

15 A. Oh, Bahne-Behnson.

16 Q. Bahne-Behnson.

17 A. Yes.

18 Q. And Form and Nosow?

19 A. Yes.

20 Q. Now, what was the article by Tiryakian about that you
21 cite?

22 A. Just let me get to the article again so that I can
23 refresh my recollection. Just a second.

24 JUDGE SMITH: All right, gentlemen, you're over
25 talking.

1 THE WITNESS: Oh, I'm sorry. The article is number
2 49 by Tiryakian, and it's called, "Aftermath of a Thermonuclear
3 Attack on the United States, Some Sociological Considerations,"
4 and that article was published in Social Problems in 1959.

5 BY MR. LEWALD:

6 Q. And I take it that what you're doing here is
7 comparing what Tiryakian hypothesized as following an imagined
8 thermonuclear attack on the United States with a shelter
9 situation, a scenario that we're conceptualizing at Seabrook?

10 A. Well, that's not quite true. What Tiryakian is
11 actually saying in that specific article is that he takes some
12 sociological insights from a lot of other studies and he
13 summarizes it, and then applies it to a hypothetical event
14 which is in this case a thermonuclear attack. That is not a
15 simulation of a thermonuclear attack and then applying the
16 specific settings that I have referenced to t... hypothetical
17 situation.

18 The article starts with a description of sociological
19 insights into emergency behavior. I do recall that Tiryakian
20 rests heavily on emergency behavior issues discovered directly
21 after the War, during the War. The war-type disaster behavior
22 is his predominant subject in this article. But he concludes,
23 as far as I can recollect, that those are general traits, and
24 then he applies those general properties to a thermonuclear
25 attack.

1 Q. Well, these are behaviorisms following a
2 thermonuclear attack, are they not?

3 A. Well, what he is saying is that he first tries to
4 distinguish what are sociologically derived facts about
5 people's behavior and then he assumes that this behavior will
6 also be prevalent after thermonuclear attack, and what that
7 would mean. So it is not that he says that it had to be the
8 thermonuclear attack as a trigger and this is what we expect.

9 The reasoning is just the other way around. He says,
10 this is what we know from the literature, and so when a
11 thermonuclear attack would occur, this would be probably the
12 consequences and if that are the consequences, what would be
13 the secondary and tertiary impact.

14 Q. All right. Is the Killian 1952 reference a wrong
15 reference to Killian? You mean 1954 instead of '52?

16 A. Which one are you referring to?

17 Q. I'm referring to the one you cite, and my inquiry is
18 whether or not it's reference is to the correct Killian
19 article.

20 A. Are you referring to Tiryakian or to Killian?

21 Q. I'm referring to Killian.

22 Q. Oh, to Killian. I'm sorry. It's very difficult to
23 understand the different names. Killian is significant of
24 multigroup membership in disaster. That is the reference that
25 you're referring to.

1 Q. You're making the reference. I'm asking you whether
2 or not the reference is correct, and you're not intending to
3 refer to a Killian article in 1954.

4 A. I'm not quite sure whether this is a typo or not. I
5 do have the reference at home. I don't have it right here with
6 me. I have a copy of it and I mean, '52 and '54 wouldn't make
7 a big difference in the argument. I do not recall whether that
8 is the right number or not. But I can prove it if you like me
9 to.

10 Q. Well, I don't know if '52 and '54 make much
11 difference, but it's an entirely different article, is it not?

12 A. It's in the American Journal of Sociology. I don't
13 think so.

14 Q. You're not intending to refer to, "Some
15 Accomplishments and Some Needs In Disaster Study," by Killian
16 in 1954, are you?

17 A. No. I'm referring to a "Significance of Multigroup
18 Membership in Disasters."

19 Q. Could you give me a cite in that, doctor?

20 A. Yes. It's American Journal of Sociology, 57 1952,
21 pages 309 to 314.

22 Q. Thank you.

23 Now, the Bahne-Behnson work, is that not a recount by
24 the author of being in a group which was herded in a house in
25 Copenhagen during the Nazi occupation of Denmark during World

1 War II where the author describes his recollection of observing
2 the Gestapo approach his hideout? Isn't that the theme of that
3 article?

4 A. The them of the article indeed is about behavior in
5 emergency situations during war time. I think it's more
6 general than you point out, but it's definitely based on war
7 time experience.

8 Q. And war time experience of somebody hiding from the
9 Nazis in Denmark, is it not?

10 A. I think that is the example that's being referred to
11 frequently, but I believe that the general conclusions go
12 beyond that specific example.

13 Q. Do you really believe that this source provides any
14 light on the behavior in a Seabrook emergency?

15 A. What I'm doing here in this specific answer, and I
16 think that's what I want to do as honestly as I can, to give a
17 small review about what we know about panic behavior and I do
18 not that in any way one sided way. As you cited before, I
19 tried to summarize it in a neutral non-partisan manner. And
20 what I could find in this literature, as well as in other
21 literature, and that's what I feel it proves is that there are
22 some exceptions to the question of when panic occurs.

23 And some recent occurrences, for example, is the
24 disaster in the Brussels Sports Stadium, show very clearly that
25 those two exceptions are true outside of the area that there

1 are claims to. And I think if you'll read very carefully
2 through some of the literature, even the ones of your own
3 business, that is, Milette, Quarantelli or Sorenson, that this
4 is very much in accordance with what they are saying. The
5 reason why I'm quoting these very earlier articles is I think
6 those were the first ones who mentioned this specific concept.
7 And I think that is the usual way in academia that you want to
8 give credit to the ones that first came out with it.

9 But if you look into those studies that take general
10 summaries and conclusions of the research field, I think you
11 will find absolutely the same kind of results. And I really
12 would like to stress out that it's not that I seek out
13 something that is absolutely unreasonable and want to put it in
14 the connection of Seabrook. I think the things that I've
15 written down on page 84 could be just as well written by
16 Milette or by anybody else. It is just a summary of the total
17 field. And the controversy may be if that is applicable to
18 Seabrook or not. And I think those two might be applicable. I
19 don't say they will definitely be applicable.

20 Q. I understand you're trying to give a compendium of
21 the literature on panic --

22 JUDGE SMITH: Mr. Lewald, you interrupted.

23 MR. LEWALD: Did I?

24 JUDGE SMITH: Yes.

25 JUDGE SMITH: Did you finish?

1 THE WITNESS: Yes. That the two exceptions that I've
2 mentioned for panic behavior or that would actually trigger
3 panic behavior are assumptions or are insights that would
4 probably be approved by all behavioral scientists in this
5 field.

6 BY MR. LEWALD:

7 Q. Doctor, I'm told I interrupted your answer earlier.
8 Let me ask you again. Is what you are trying to do is give us
9 a compendium of anything that appears anywhere on panic?

10 A. You want to have a reference for panic? Is that what
11 you like, a reference on panic behavior?

12 JUDGE SMITH: Repeat your question, Mr. Lewald.

13 BY MR. LEWALD:

14 Q. Doctor, do I understand what you have told us in this
15 long answer that you gave me that what you have tried to do in
16 your testimony is to give us, or the reader, a compendium of
17 panic situations where panic has been mentioned anywhere in the
18 literature?

19 A. Well, it is a very short compendium of two pages, but
20 that is indeed the intention, to give a compendium on pages 84
21 and 85 of what we know about panic behavior and my major claim
22 towards Seabrook then is that some of these factors may well
23 apply to the Seabrook situation, but they don't have to apply
24 to it. And I do agree with the mainstream of the literature
25 that panic is the less likely behavioral response.

1 Q. Now, doctor, you refer on page 83 to the way you
2 think people may act as a result of their fear of radiation.

3 A. Yes.

4 Q. And then you cite a magazine article of an event that
5 occurred in Goiana, Brazil.

6 A. Yes.

7 Q. That, as I read it, is an event that involves
8 contamination and people were dying in the stages of
9 contamination. Do you equate the fear of radiation with the
10 fear of contamination?

11 A. Well, I think in public perceptions that those are
12 very much interconnected. I think it takes a very
13 sophisticated argumentation from a health physics and a medical
14 point of view to make a clear distinction between the fear of
15 radiation and the fear of contamination. I think those are
16 very much related to it, and as far as what I could see from
17 this article that had been published in Science which I think
18 is much of the normal magazine, one of the best reputable
19 science magazines in the United States, a very clear indication
20 that people have the fear of contacting other people, even if
21 it was not clear whether they were contaminated or not.

22 And I think that gives us some indication that there
23 is a special infection concerning radiation because you can't
24 smell it, you can't see it, it's not essentially detectable and
25 that increases the fear of people, and I don't think it's so

1 much the factor of contamination but the factor of non-
2 visibility that triggers and initiates this fear and avoidance
3 response.

4 Q. Doctor, doesn't it suggest somewhat an
5 irresponsibility to suggest that the actions of the poor
6 unfortunates who are contaminated in Goiana, Brazil, is in some
7 way analogous to somebody seeking shelter at Hampton Beach?

8 A. Well, there are some analogies in the specific case
9 studies. I would be a little hesitant to make a clear cut
10 situation between people behaving in Brazil and people behaving
11 in the United States. As I've cited earlier, there is some
12 indication that people in South America act in many disasters
13 more emotional than Americans would do.

14 But I do think that since we are all talking about
15 hypothetical situations here, that this is a situation in which
16 we do have clear evidence from what I have read about this
17 specific issue that people have not helped other people in this
18 situation, that they deliberately short doors in front of them,
19 that they even tried to avoid that people are being buried, all
20 things that are typically non-altruistic and so that there are
21 some justifications for non-altruistic behavior if radiation is
22 involved. And this is an indication for me that radiation is
23 one of the factors that people are most afraid of.

24 Q. It would be fairer to say that where acute
25 contamination is involved, and not radiation. Isn't that

1 correct, doctor?

2 A. Well, contamination, as I said, I think we have to
3 distinguish here between what the perceptions are and what the
4 real perils are. The perception is that radiation is radiation
5 regardless if it comes from inside of a body or it comes from
6 products that attach to that body, or it comes from somewhere
7 else. I think that people are afraid of radiation and think of
8 radiation as a wave that can do them harm.

9 And I do not believe and I do not think there's any
10 evidence that I could recall that people actually make a
11 distinction between contamination as a part of something much
12 more worse than radiation that might be attached to a person.

13 Q. Have you made any search for this kind of
14 information, doctor?

15 A. I don't have any empirical evidence to prove exactly
16 that this is true but there is no evidence that it's not true.

17 Q. Doctor, on the last page of your testimony, you say
18 that in the event of an order to the beach population to
19 shelter, what must be expected is that many people will find
20 themselves in unsuitable sheltering space, and then others will
21 be, their ways will be blocked from entering shelters because
22 they're already filled. And then you end up by saying that
23 there'll be large crowds of upset and confused people milling
24 around outside unprotected.

25 Do I understand that you are asserting on the basis

1 of your professional training and education and experience that
2 this is what must be expected and is inevitable and that in the
3 last analysis, there'll be large crowds of upset confused
4 people milling around outside totally unprotected, and people
5 under these situations won't rise to the occasion as history
6 has shown that they generally do?

7 A. Well, this last sentence is a conclusion of a lot of
8 arguments that have been presented before and that they just
9 didn't count. What it says, and I think that it's fairly
10 obvious is that in specifically we have a situation where
11 shelters are not labeled and a situation where a lot of shelter
12 owners might have left earlier because of the reasons I've just
13 stated.

14 In a situation where people might have the perception
15 that the shelters are not very suitable to protect themselves,
16 and in a situation where people would run first to the shelters
17 that seem to be better suited for them than others, we do have
18 the problem of over crowding. That if all these factors come
19 together, that there is a high probability that we will have
20 confusion and that crowds of people -- and we're talking about
21 a quite substantial number of people -- will be confused and
22 they'll have difficulty in finding the appropriate protection.

23 MR. LEWALD: That concludes my examination, doctor.
24 Thank you.

25 THE WITNESS: Thank you.

1 JUDGE SMITH: Mr. Turk?

2 MR. TURK: Yes. Shall I proceed?

3 JUDGE SMITH: Yes, please.

4 CROSS EXAMINATION (Resumed)

5 BY MR. TURK:

6 Q. Dr. Renn, I'd like start off today first of all by
7 asking whether you had any input into the formulation of the
8 Salmon Falls questionnaire?

9 A. No, I didn't.

10 Q. When did you first become aware that it had been
11 conducted?

12 A. Could you speak up a little bit? I couldn't hear it.

13 Q. When did you first become aware that that
14 questionnaire had been utilized in a survey?

15 A. I think, well, I couldn't recall exactly the date
16 when this information was given to me, but it was certainly in
17 the late fall last year.

18 Q. Were you asked as to whether or not you had an
19 opinion as to the validity of the questionnaire?

20 A. No, I was not consulted for that.

21 Q. Were you asked after the fact?

22 A. Pardon me?

23 Q. Were you asked after that survey had been conducted?

24 A. If I had any input about the validity of the
25 questionnaire?

1 Q. No. Let me ask you again.

2 Were you asked to comment on whether you felt that
3 survey was a good one?

4 A. No, I was never asked about that.

5 Q. Not even after the fact?

6 A. No.

7 Q. Could you tell us your opinion of that survey
8 questionnaire?

9 A. Well, I think I've said that some of the things
10 already were mentioned in Mr. Lewald's questions. If I had to
11 do the same survey, I might have done it a little different.

12 Q. What would you have done differently?

13 A. Well, I would have not for example said about what
14 the sources would be, just to make very sure that the source is
15 not mentioned. And I would again state that --

16 Q. Well, when you refer to sources, --

17 MS. WEISS: Would you let him finish his answer.

18 MR. TURK: I want to be sure I understand you, Dr.
19 Renn.

20 BY MR. TURK:

21 Q. When you say, sources, do you mean references to
22 Stone & Webster or New Hampshire Yankee, or Massachusetts
23 Attorney General's Office?

24 A. Yes. But I would like to qualify that in this way,
25 that this bias does not say that the answers are biased towards

1 the alleged interest of the Attorney General. It may actually
2 be exactly the opposite.

3 But in order to rule out any bias, regardless from
4 which side it is, I would, if I had done the survey, I would
5 have left out any reference to a source.

6 Q. In order to avoid the possibility of a bias?

7 A. The possibility of a positive or negative bias.

8 Q. All right. What else would you have done
9 differently?

10 A. That's a very hypothetical question. I've done a lot
11 of surveys and I'm not quite sure what I would exactly have
12 done in this specific instance. I should have given more
13 thought to this. I think the procedure was well done, and I
14 don't think there's any problem in having a written
15 questionnaire sent out. I think the sampling was okay because
16 it was a total sample of everyone being identified there.

17 I think the questions were unbiased, as I've stated
18 before. So the only thing that comes to my mind right now was
19 the mentioning of the source. But as I said, this bias can go
20 in both directions.

21 Q. Have you had occasion, particularly in light of Mr.
22 Lewald's examination, to consider the questions asked in the
23 survey?

24 A. Do I consider other questions, is that your question?

25 Q. No. Have you had an opportunity now to look at the

1 questions which are raised in the survey?

2 A. Yes, yes. I've seen all four questions.

3 Q. Would you have asked those questions in the way they
4 are asked?

5 A. Well, everyone has a different way of framing
6 questions. But from my view on the questions, I don't think
7 that those questions are biased. For example, in Question No.
8 1, I might have, because if I didn't mention New Hampshire
9 Yankee or Stone & Webster, I couldn't mention them of course in
10 Question 1, too, because if I leave out all sources, I can't
11 put them in in the first question.

12 So I would have erased that reference to New
13 Hampshire Yankee and Stone & Webster, and just had it a general
14 question if they would have known if their building has been
15 designated as a potential shelter, leaving it open by whom.

16 Q. What do you understand to have been the purpose for
17 this survey?

18 A. I think the purpose of the survey was to find out
19 what the hotel owners and managers would respond to being
20 designated, or their spaces being designated as a potential
21 shelter, and specifically I think it focused around Question
22 No. 4 which is if they would actually let people into their
23 building or not.

24 Q. And essentially then you believe that the purpose of
25 the survey was to determine in advance what these persons'

1 response might be in an emergency?

2 A. Well, as I said, a verbal response and we are all
3 very cautious about verbal responses that I think a verbal
4 response is better than nothing.

5 Q. Do you know what the persons who were interviewed or
6 who responded to the survey, do you know what their
7 understanding was of the term, shelter?

8 A. I have not made any study about their images of
9 shelters. And what I can see from some of the answers sheets
10 here that they qualified their answer in the rubric of written
11 comments. For example, the first one that I have right here by
12 Robert Hurley said something about a wood frame building,
13 balloon construction since 1900, in the event of a release, I
14 plan to abandon my house and use one of the bikes, and so on
15 and so on.

16 So what I can see, and I mean, this is just an
17 example is that the respondents did understand what shelter
18 means and were able to qualify the quality of their shelters
19 and give some additional information about what the shelters
20 looked like, and if they felt those shelters were adequate or
21 not.

22 Q. I take it then that you have not spoken with any of
23 the respondents personally?

24 A. No.

25 Q. So your only way of knowing whether they understood

1 the use of the term, shelter, is based upon their written
2 response to the survey?

3 A. That is correct.

4 Q. Would you believe that it's important for the
5 respondents to the survey to have an understanding of the term,
6 shelter?

7 Q. Well, I do think that most people have a fairly clear
8 connotation of what shelter is. I don't think that there is a
9 lot of ambiguity in this term. Also, I usually think it is
10 good to define terms in public surveys. I do not think that it
11 is necessary for this specific survey. I think that the term,
12 shelter, as a non-native English speaker, I'm not absolutely
13 sure about it, but there's no indication that I've ever found
14 in the literature that the term, shelter, in English is not
15 well understood by the public.

16 Q. So you don't think it's important that they
17 understood how their building is to be used as a shelter,
18 that's not important in your mind.

19 A. Well, it's important that as a designated shelter
20 against or for the protection against radiation and I think
21 that has been clearly stated, but I do not think it is really
22 necessary to give a more elaborate definition on shelter.

23 Q. Do you think it would be important for the
24 respondents to understand the way in which New Hampshire Yankee
25 or Stone & Webster intended the use of the word, shelter?

1 A. Well, I come back to my first point, actually. I
2 think if no mentioning would have been made to Stone & Webster
3 and to New Hampshire Yankee, and also the the Attorney General,
4 I would think that we wouldn't go into this kind of argument.

5 Now, after this has been done, I think any more
6 information on the Stone & Webster report would probably have
7 introduced more biases to this questionnaire in the sense that
8 if you say, well Stone & Webster were asked to do this or to do
9 that, this would already give the bias that they have done
10 this. And while there may be some contentions on this side.
11 Or if you say, Stone & Webster have been asked by New Hampshire
12 Yankee to find enough suitable shelters, that would more or
13 less imply that there are enough shelters.

14 So I think regardless how you phrase the specific
15 purpose of the Stone & Webster Engineering Corporation study,
16 you would have dealt with a lot of ambiguities, and I think in
17 this sense, it might be better as it has been done here, just
18 to say that it was a study to identify potential shelters in
19 the beach areas, and not give much more qualification to this
20 specific study.

21 MR. TURK: Your Honor, I don't feel that that's a
22 responsive answer. I'd like to move to strike it, please.

23 MS. WEISS: The answer was clearly responsive to the
24 question.

25 JUDGE SMITH: We'll get the question back and rule.

1 Would you read it back?

2 (Reporter plays back the question.)

3 JUDGE SMITH: That was the question, Mr. Turk?

4 MR. TURK: Yes.

5 JUDGE SMITH: And you say it's not responsive?

6 MR. TURK: Right. The question is would it be
7 important for the respondents to understand the use of the
8 term, shelter.

9 MS. WEISS: No, no. The question was was it
10 important for the respondents to understand what use Stone &
11 Webster or New Hampshire Yankee intended to make, shelter. And
12 his answer was, no, because if you introduce some explanation
13 of what Hampshire Yankee wanted to do with it, it would have
14 introduced more biases and made it worse than -- it would have
15 made it worse rather than better.

16 JUDGE SMITH: It's not precisely responsive but it is
17 sufficiently responsive to his understanding of the question to
18 let it remain.

19 MR. TURK: Let me see if I can clarify it a little
20 bit, Your Honor.

21 BY MR. TURK:

22 Q. Dr. Renn, what I'm asking you is do you think that
23 the outcome of this survey could be affected by whether or not
24 the respondents, and each of them, understood the use of the
25 term, shelter?

1 A. Well, --

2 JUDGE SMITH: Wait. Let me go on just a little bit
3 better, if I may.

4 The use of the term shelter, as understood by Stone &
5 Webster, not necessarily identifying Stone & Webster with the
6 survey, but using their understanding of the term.

7 Is that what you meant?

8 MR. TURK: Yes.

9 JUDGE SMITH: To take out the element of bias but to
10 get the communication of meanings. Is that what you mean?

11 MR. TURK: Yes, Your Honor.

12 THE WITNESS: Your Honor, I think that most people
13 have a specific image of shelter and I think that will be
14 sufficient to state on any surveys. In the specific
15 questionnaire that have been used, there have been two
16 qualifications, precisely the one of physical characteristics
17 of material used in construction and the size of your building,
18 specific amount of shelter space was determined. So there have
19 been two qualifications right in here that shelter space refers
20 to physical characteristics and to size of buildings, which
21 coincide very well with what peoples' images is about shelters.

22 So I do not see any need for a further qualification
23 on the specific shelter. And I also, I mean, if you look into
24 this questionnaire, there's also another qualification we said
25 that sheltering would be for a short period of time, possibly

1 three to six hours, which I think might even include a pro-
2 sheltering bias, meaning that it is only for a short --

3 JUDGE SMITH: Forget bias.

4 THE WITNESS: -- time.

5 JUDGE SMITH: Forget bias in this question.

6 THE WITNESS: Pardon me?

7 JUDGE SMITH: I said forget bias in this question.

8 That's not the thrust of the question. The thrust of the
9 question is, would it be desirable if the responders of the
10 survey had in mind sheltering as envisioned by Stone & Webster.

11 THE WITNESS: I don't think so.

12 JUDGE SMITH: Not knowing any identity with Stone &
13 Webster necessarily, but the concept of sheltering employed by
14 Stone & Webster. And you don't think that would be important?

15 THE WITNESS: What I'm thinking is that if you would
16 include a definition or the image that Stone & Webster were
17 using in identifying shelters would not help very much in a
18 survey. What we want to do in a survey usually is to find out
19 what people believe about shelters, and if they feel whatever
20 has been designated as shelter is in their perception a
21 protective measure against radiation.

22 If that coincides with what Stone & Webster or other
23 companies have envisioned as a good shelter, that is, I think,
24 not important for a survey. A survey is really a recollection
25 of peoples' perceptions about images. And I think that is

1 exactly what it does.

2 BY MR. TURK:

3 Q. Let me see if I can summarize, Dr. Renn.

4 You understand that the purpose of the survey was to
5 try to gauge in advance whether people who own hotels or
6 restaurants or other commercial establishments would make their
7 buildings available as shelter in an emergency? Do you agree
8 that's the purpose?

9 A. That is the purpose, yes.

10 Q. And it's also your testimony that you don't believe
11 the respondents have any reason to understand the way in which
12 those buildings would be used as shelters? That's correct,
13 too, isn't it?

14 A. No, I don't think that is correct.

15 Q. Then is it correct that they should understand the
16 use to which that building will be made as shelter?

17 A. They should understand that the building should be
18 used as a shelter, but it is not absolutely for them to know in
19 which way these shelters have been envisioned by the Stone &
20 Webster survey.

21 Q. Well, what should they understand?

22 A. They should understand that their building has been
23 designated as a shelter in a nuclear emergency and this
24 sheltering would take place from three to six hours and that
25 they've been asked in the case of an emergency to let other

1 people in to take shelter in their own buildings.

2 And I think that is sufficient for getting a good
3 response.

4 Q. And in your mind if the respondents, or any of them,
5 did not understand the use to which their building would be put
6 as a shelter, then that would make their response to the survey
7 questionable?

8 A. I think it introduces more biases than it would if we
9 just leave it the way it is. And I do think that if you
10 include the specific qualifications that Stone & Webster put
11 into this designating shelters is not a part of the survey. I
12 mean, that is what Stone & Webster have done, and that is a
13 part of an objective or inner subjective study on what is a
14 good shelter or not a good shelter.

15 What I am concerned with, and I think what the survey
16 is concerned with, is how people perceive their own buildings
17 as shelters, regardless if Stone & Webster says they're good
18 shelters or bad shelters. That is not the point unless this
19 communication changes their own perception. And I doubt that.
20 I don't think that this kind of communication would have
21 changed the perception. It might change response to the
22 questionnaires, but not perceptions.

23 Q. So to summarize then, can you answer yes or no to the
24 following question: do you believe it's important that people
25 understand the use to which their buildings would be put as a

1 shelter?

2 MS. WEISS: Objection. That's been asked and
3 answered four times.

4 JUDGE SMITH: I believe it has been, Mr. Turk.

5 MR. TURK: The response that I heard before, Your
6 Honor, was, no, it's not important.

7 JUDGE SMITH: That's my understanding, yes.

8 MR. TURK: The more recent response tended to confuse
9 that.

10 MS. WEISS: In your mind, perhaps.

11 JUDGE SMITH: Well, what aspect of the response did
12 you find confusing, Mr. Turk?

13 MR. TURK: The last response that I got from Dr. Renn
14 indicated that it wasn't important that the people understand
15 the use to which the building would be put, but rather that
16 they have a feeling as to whether or not they consider their
17 building to be adequate shelter.

18 JUDGE SMITH: Yes, I understand that. Then he
19 introduced one other factor, however, and that is, he goes back
20 to whatever need there may be for them to understand the actual
21 use to which the shelter may be put would be outweighed for its
22 potential for bias.

23 MR. TURK: I don't see the logic in that.

24 MS. WEISS: Well, that's the whole sine qua non of
25 constructing a survey instrument is to avoid bias. So when he

1 answers your questions about would it be good or would it be
2 bad to add a definition, yes, he's thinking in those terms,
3 would it create a bias or not.

4 JUDGE SMITH: Which isn't exactly responsive to the
5 question.

6 MS. WEISS: Well, it is in the terminology of
7 surveys. I think he's explained that for the past 15 minutes.

8 JUDGE SMITH: I think you have his answers all
9 collected in those last questions and answers. I think I
10 understand what his position is.

11 MK. TURK: All right.

12 JUDGE SMITH: I would like to ask at that point,
13 however, if he could explain along that line, what was the
14 purpose of Question No. 2.

15 THE WITNESS: You ask me?

16 JUDGE SMITH: Yes, sir.

17 THE WITNESS: Oh, I'm sorry.

18 JUDGE SMITH: Question No. 2. Let me read it. "Does
19 your building have a basement or rooms with four stone or
20 masonry walls which could be considered an emergency shelter?"

21 THE WITNESS: I think that question too is also
22 referring to the image of a shelter, and that image of a
23 shelter contains a notion that it should be a basement or a
24 very thorough construction. And I think that is what Question
25 2 is referring to.

1 Now, just coming back -- I'm sorry, I don't want to
2 lengthen the process -- but I think the misunderstanding might
3 be about the purpose of surveys. I think it is always good to
4 educate people about what a good shelter is. And I don't think
5 it is bad to educate people about this specific information of
6 education them about what Stone & Webster had in mind. But the
7 second thing is that if you want to make a survey, you want to
8 have the unbiased "non-educated" view of the people about what
9 they think their shelter is or is not, and how they would
10 respond in a hypothetical situation.

11 And if that is the purpose of the survey to have this
12 kind of unbiased view, then I think too much qualification of
13 what has been done in the past is detrimental because that
14 would bias the outcome of the survey. And that is the general
15 rule of all surveys, never give information about what the
16 "objective" answer is because that biases your outcome and that
17 is not the purpose of a survey.

18 JUDGE SMITH: Go ahead, Mr. Turk.

19 BY MR. TURK:

20 Q. Dr. Renn, I'm going to leave this for a moment, and
21 perhaps I'll pick it up again.

22 I want to turn back to the table you have on page 78
23 of your testimony.

24 A. Yes.

25 Q. Am I correct that this table has absolutely no

1 dependence upon the size of the population? That was your
2 testimony previously, isn't it?

3 A. No. That is wrong. I said that some of the stages
4 in that time frame are insensitive to size of population. But
5 others of course are not. And in particular implementation
6 time is highly sensitive of population sizes.

7 Q. And is that the only one of these categories that is?

8 A. No. Access time is certainly. Notification is
9 insensitive. Recognition is probably -- it's not totally
10 insensitive but it is not a very vital factor that is being
11 influenced by population estimates. Preparation time is
12 sensitive to population. Orientation is, not as strong,
13 certainly as implementation and access. Those are the two that
14 are most sensitive to population size.

15 Q. Have you ever attempted to run an analysis or to do
16 an estimate comparable to this one if you were to assume that
17 the population of the beach was on the order of 25,000 to
18 30,000?

19 A. No. I just kept within the range which I have
20 outlined, which is 60- to 100,000. Certainly, it would be
21 possible to do this for 25,000 or for any other number but I
22 don't have those results available.

23 Q. You'll agree though that for a population on the
24 order of 25- to 30,000, the times would be shorter than the
25 times you indicate in this table?

1 A. Definitely, yes.

2 MR. TURK: Your Honor, I have nothing further.

3 JUDGE SMITH: Mr. Watson, FEMA's already passed on
4 this.

5 MR. WATSON: I have no questions, Your Honor.

6 JUDGE SMITH: Ms. Weiss, do you have any?

7 MS. WEISS: I have about ten minutes, Your Honor.

8 JUDGE SMITH: Mr. Brock, how about you?

9 MR. BROCK: No questions at this time, Your Honor.

10 JUDGE SMITH: Ms. Weiss?

11 MS. WEISS: Yes.

12 CROSS EXAMINATION

13 BY MS. WEISS:

14 Q. You were asked, continuing with the Chart on page 78,
15 you were asked some questions on Friday about what would happen
16 if you changed the rate of spontaneous evacuation from 25
17 percent up to 50 percent, and you responded that implementation
18 time would go down perhaps by a half.

19 And I wanted to pursue that a little bit. Would not
20 some of those spontaneous evacuees also be owners and operators
21 of motels, hotels, and other shelter facilities?

22 A. Yes, definitely. Now, what I have done with this
23 specific model is that I assumed that people will find shelter,
24 and you'll find that in my testimony, because if that would not
25 be the case, the time estimate wouldn't make any sense. So I

1 excluded from the model, this hypothetical model, that not
2 enough space would be available for the beach population.

3 Now, if we take into account a more realistic picture
4 that as I've outlined later on and justified in the testimony
5 that quite a few hotel owners might leave, that could add
6 additional time to implementation and access specifically and
7 that could of course then be coming back to let's say the
8 original numbers that I have outlined here. Now, I can't give
9 you a real quantitative answer to this because then we have to
10 insert a lot of assumptions about how many hotel owners would
11 leave, what kind of buildings they would leave behind, what the
12 strategy of people would be in the case that a lot of hotels
13 were just being blocked.

14 I could for example imagine that if you find out that
15 three hotels that you get into that the owners had already
16 left, that this might be an incentive for you to leave also
17 because you think, well, if the residents leave, that may be an
18 indication that I should leave too. So there are a lot of
19 dynamics that will take place.

20 But I think that if you take that into account, we
21 have to add additional time, because all the time has to be
22 added where you stand in front of the door and nobody lets you
23 in.

24 Q. Would it be accurate then that just changing the
25 assumption of the proportion of spontaneous evacuees from 25

1 percent to 50 percent wouldn't necessarily reduce
2 implementation time by a half?

3 A. Not necessarily if you take into account that we
4 change the assumption of the model.

5 Q. Now, it's my understanding that your chart represents
6 ranges of times for 90 percent of the people to gain access to
7 shelter. Is that correct?

8 A. Yes.

9 Q. Do you have an estimate for what it would take for
10 the median person to get in a shelter from the time of
11 notification to access?

12 A. I don't have an immediate number for that but I could
13 certainly try to give you a range of answers there. What we
14 have to take into account of course is that we just cannot
15 multiply let's say .5 now with the appropriate number, because
16 what happens is that the last ten percent that seek shelter
17 have a lot of more time consumption to find the appropriate
18 shelter than the first ten percent.

19 So we don't have just a proportional relationship
20 here. And I should make a kind of estimate right here what it
21 might be to have let's say a 50 percent percentile and I would
22 suppose that around a third of the time that I have written
23 down as the sum would probably be adequate. And for the first
24 five I think it should be a little more. I would suppose it
25 would be around 40 to 45 minutes.

1 For the maximum time, I think it would be a little
2 less than a third because that would account for that because
3 the maximum is really one in which a lot of those last ten
4 percent have a lot of difficulty so I think I would qualify my
5 answer to around 1.5 hours instead of 4.5 hours and the median
6 value would be I'd say around 55 to 60 minutes.

7 Q. Would you take a look at the survey instrument on
8 Attachment 12.

9 A. Yes.

10 Q. We were talking about Question 2 in particular.
11 Would the fact that many people answered, no, to Question 2,
12 and then went on to answer, yes, to Question 3, indicate that
13 they did not define the term shelter as limited to buildings
14 with four stone or masonry walls?

15 A. Could you repeat that question again?

16 Q. Yes. Many people -- maybe I'll break it into two
17 parts -- many people answered, no, to Question 2, and then went
18 on and answered, yes, to Question 3.

19 Correct?

20 A. Yes.

21 Q. And Question 2 contains, one might argue, a
22 definition of shelter and Question 3 does not. Is the fact
23 that many people answered, no, to Question 2, and then went on
24 to answer, yes, to Question 3 indicative that they did not
25 define, for purposes of this survey, the word, shelter, as

1 requiring a building with four stone or masonry walls?

2 MR. TURK: Objection, Your Honor. Speculative and
3 argumentative. The witness has already stated that he has no
4 knowledge of the respondents' understanding of the survey
5 beyond what's contained in the written response. Anyone can
6 make an argument as to what the answers mean.

7 MS. WEISS: Well, he's been asked about whether he
8 thought that that Question 2 introduced a bias, and I think we
9 can ask him if the responses to 2 and 3 suggest that there
10 wasn't a bias.

11 MR. TURK: There's no foundation for her postulate.

12 JUDGE SMITH: Overruled.

13 MR. LEWALD: I'm going to object, if I might, Your
14 Honor. There's no foundation from Ms. Weiss' question.

15 MS. WEISS: The witness answered, yes, many people
16 answered no to two and yes to three.

17 MR. LEWALD: I don't find that as a fact anywhere
18 unless you're going to so testify.

19 MS. WEISS: The witness answered, yes, that was true.

20 MR. LEWALD: He did answer, yes?

21 MS. WEISS: Yes, he did.

22 MR. LEWALD: Okay.

23 MS. WEISS: Is the objection overruled, Your Honor?

24 JUDGE SMITH: Yes.

25 BY MS. WEISS:

1 Q. You can answer that, Dr. Renn, or if you want, I can
2 repeat it again.

3 A. Let me first say that to Question 2 on page 63 of the
4 testimony, we said that only one in three indicated that they
5 felt that they should answer, yes, in this Question No. 2. And
6 for Question 3, it was 56.8 percent. So this qualified my
7 answer that there are indeed people that said, no, in the
8 second question, and, yes, in the third question.

9 Now, what my understanding of that specific question
10 that was just addressed to me is that is that a contradiction
11 if people say, no, to Question 2, and, yes, to Question 3.

12 Q. No. The question was whether that would suggest that
13 people when they were answering number 3, did not have in mind
14 necessarily that shelter meant, four stone or masonry walls?

15 MR. TURK: Your Honor, I get back to the same
16 objection. How do we know what people may have had in their
17 minds. The witness has stated he only can go on what the
18 written responses say.

19 MS. WEISS: And that's what we're asking. What would
20 the written responses indicate.

21 MR. TURK: You're asking for an indication what's in
22 peoples' minds. That's speculative.

23 MS. WEISS: No more than you did, Sherwin.

24 JUDGE SMITH: Overruled.

25 THE WITNESS: My feeling is that if they answer, yes,

1 on Question 3, that does not contradict any quantification or
2 qualification in Question No. 2. I think that people have a
3 feeling of what a shelter is and what it should be, and if that
4 has direct exit from the outdoors, it's a specific question
5 about access, and nothing else. And in this respect, I can't
6 seen any inconsistency between Questions 2 and 3.

7 BY MS. WEISS:

8 Q. With regard to the reliability of statements of
9 behavioral intentions, you answered a number of questions about
10 that today.

11 Is this situation -- and by that, I mean the Seabrook
12 situation -- distinguishable from others in the historical
13 record because there may be a conflict in people's minds over
14 what constitutes altruistic behavior?

15 A. I think that is true. I think we have a lot of
16 evidence about the connections between verbal intentions to do
17 something, and the actual behavior. And there's a whole school
18 of thought that we should also ask questions about attitude
19 towards a specific situation. Now, I think if you qualify the
20 specific situation, then it could be what we consider the
21 motive for people not to do what they say to do is that they
22 are more altruistic or more supportive if they see any kind of
23 a disaster or any kind of emergency or crisis situation.

24 And if that specific situation can be resolved in a
25 moral way, meaning that there is an altruistic behavior also by

1 leaving that area, then I assume we have a much higher
2 proportion of people that would do what they said they would do
3 than otherwise. And the reason for having this kind of moral
4 judgment is that people might not feel first obliged to have
5 any role in this emergency. Secondly, that they feel that the
6 protection they can offer is not sufficient to jeopardize their
7 own health, for example, and thirdly, that they feel that
8 everyone, including themselves, may be better off by leaving
9 the area.

10 MS. WEISS: I have no further questions. Thank you
11 very much, Dr. Renn.

12 THE WITNESS: Thank you.

13 JUDGE SMITH: Massachusetts Attorney General?

14 MS. SNEIDER: Yes, I have just a couple of redirect
15 questions.

16 JUDGE SMITH: Just a moment. I wasn't quite ready.
17 Do you have questions?

18 All right. Go ahead, Ms. Sneider.

19 REDIRECT EXAMINATION

20 BY MS. SNEIDER:

21 Q. Dr. Renn, Mr. Lewald asked you some questions on
22 Friday which referred to the studies of natural hazards recited
23 on page 71 of your testimony. Is that right?

24 A. Yes.

25 Q. And I believe he asked you if those studies dealt

1 with post-emergency response. Is that correct?

2 A. Yes, that's correct.

3 Q. Do those studies also include pre-emergency response?

4 A. In part, they do. Now, if you specifically
5 considered the studies on hurricane and flooding, they also
6 contain behavioral responses to pre-flooding and pre-hurricane
7 warnings so in this respect they cover both the pre-emergency
8 and the post-emergency situations.

9 Q. Now, just to get this clear, the 60,000 to 100,000
10 people you considered in your study, that was the size of the
11 beach population for the entire EPZ, including Massachusetts,
12 is that right?

13 A. That is correct.

14 Q. And the basis for those populations is stated on page
15 10 of your testimony, is that right?

16 A. Yes. On page 10, the estimates were a given, and as
17 I said before, that the lower boundary is the one that we took
18 basically from the numbers of the applicants and the upper ones
19 the numbers that the researchers that were testifying in this
20 Court had come up with, specifically, Adler.

21 So those were the two boundaries. And my major
22 argument was that if you take the one set of numbers or the
23 other set of numbers, it does indeed make a difference as we
24 can see, but in those cases, it gives rise to considerable
25 doubt about the feasibility of the sheltering option.

1 Q. You weren't assuming then that there are 60,000 to
2 100,000 people in the New Hampshire portion of the EPZ?

3 A. No. No. Definitely not.

4 Q. Okay. One last question. Have any of the EBS
5 messages that you have read indicated whether or not an
6 accident is fast developing

7 A. As far as I read the messages and I know that they're
8 still not in a final stage as far as I've heard in this hearing
9 but I haven't heard any reference to the qualification of the
10 accidents that have occurred. So I don't think there is
11 mentioning is that is a fast developing or a non-fast
12 developing accident.

13 MS. SNEIDER: That's all I have, Your Honor.

14 JUDGE SMITH: Any further questions of Dr. Renn by
15 anybody?

16 MR. LEWALD: This is Mr. Lewald, again, Chairman
17 Smith. I have one question that came up in Ms. Weiss'
18 examination, if I might ask the doctor.

19 RE CROSS EXAMINATION

20 BY MR. LEWALD:

21 Q. And that's, doctor, referring to your table on page
22 68, you talk about a minimum maximum median number. How are
23 you using the term, median, here? Are you using it in the
24 statistical median sense?

25 A. The median refers to a situation which I think is the

1 most probable one. That is what I would call it. I think that
2 you have a distribution. As you can see is that the maximum is
3 much more remote from the median than the minimum from the
4 median.

5 So what I felt was that the distributed is cued to
6 the minimum size, meaning that the maximum amount that I
7 referenced on page 78 is much less likely than the median so
8 that the median is closer to the minimum. So the median
9 represents the point of the distribution of all scenarios that
10 I feel is most likely.

11 Q. You didn't necessarily take the one that was in the
12 middle of the distribution, but --

13 A. It's the mode of the distribution, also. It means
14 the distribution with the highest probability.

15 Q. Considered to be most reasonable is that what I take
16 it?

17 A. Not the most the reasonable. I think it's the most
18 --

19 Q. Most probable?

20 A. -- Probable, yes.

21 EXAMINATION BY JUDGE HARBOUR

22 JUDGE HARBOUR: This is Judge Harbour. I have just a
23 question or two of the witness.

24 Dr. Renn, do you know who actually prepared the
25 different versions of the survey forms?

1 THE WITNESS: Well, I have talked to a Dr. Eckert who
2 seems to be the person that has supervised the whole thing.
3 And I have no knowledge what type of people he has involved and
4 who actually did the survey.

5 JUDGE HARBOUR: Do you have any knowledge as to why
6 the repeated mailings were sent out?

7 THE WITNESS: No. I would like you to ask that
8 Dr. Eckert directly because I don't feel competent to answer
9 that question.

10 JUDGE HARBOUR: In the questioning by Ms. Weiss, I
11 think the question was, assume or take it that a number of
12 people, a large number of people answered, yes, to Question 2
13 and, no, to Question 3. And what was the basis for your
14 assuming that that was true?

15 THE WITNESS: There is on page 63 as far as I recall
16 there is a statistical break up and it says on Question 2 that
17 two-thirds indicated, no, and 43.2 percent indicated, yes, on
18 No. 3, so they had to be a percentage at least of well, 20
19 percent around that said, no, on Question 2, and yes, on
20 Question 3.

21 JUDGE HARBOUR: Even if there were many non-responses
22 to the questions?

23 THE WITNESS: Well, I haven't really made up, you
24 know, that is very fast response. It's just looking into the
25 distribution of answers on Question 2 and 3 assuming that the

1 non-responses for Question 2 and 3 are around the same. If
2 that is not true, then certainly we have to reconsider that
3 answer.

4 JUDGE HARBOUR: All right. Thank you. That's all I
5 have.

6 THE WITNESS: Thank you.

7 JUDGE SMITH: Are there any further questions of Dr.
8 Renn, now?

9 (No response)

10 JUDGE SMITH: All right, Dr. Renn, you're excused.

11 (Witness is excused.)

12 JUDGE SMITH: Now, I understand that we are going to
13 meet tomorrow. There was some confusion. First the time was
14 set at 2:30, and then it was, as we understand it, changed to
15 3:00. We don't have our transcript yet.

16 But is that the understanding of the parties?

17 MS. SNEIDER: Yes, it is, Your Honor.

18 JUDGE SMITH: All right. We'll meet tomorrow and I
19 will try to assure that the better method of connecting us on
20 the telephone is used. I will talk to the operator in advance.

21 In the meantime, I regret that so much of your time
22 was wasted earlier.

23 Is there anything further this afternoon?

24 MR. TURK: Your Honor, just so I'm clear on
25 tomorrow's conference call, I assume the purpose is to argue

1 the subpoenas and I hear we're probably going to be going into
2 the written pleadings that we filed on the subject?

3 JUDGE SMITH: Yes. That will be correct. The
4 pleadings, however, as you'll recall, do not take into account
5 the Board's own observations and our own requirements. And
6 that probably will be equally important.

7 We also hope to give our rationale for our ruling
8 that we will not accept the Sholly-Beyea testimony. And we
9 also want to discuss if it would be practicable to start the
10 hearing next week at 9:00 on Monday, rather than at 1:00 as we
11 previously had, but we will take that up for discussion
12 tomorrow. So it will be a busy time following 3:00.

13 Is it still necessary to wait 'til 3:00? Are your
14 plans still intact, Mr. Turk, you're going to be busy earlier?

15 MR. TURK: Yes. I wish I could predict when I'd get
16 free. I'm on a motion calendar and I just don't know when the
17 motion will be argued. And --

18 JUDGE SMITH: If there's any chance that you luck out
19 and you get done very early, how about informing us and we'll
20 see if we can pick up the parties earlier.

21 MR. TURK: All right. Shall we ask the parties then
22 to stand by for a possible earlier commencement?

23 JUDGE SMITH: Well, I hate to ask them to stand by
24 but --

25 MR. TURK: For a telephone call advising them one way

1 or the other.

2 MS. SNEIDER: Your Honor, this is Carol Sneider from
3 the Mass Attorney General's Office. I have an appointment that
4 would at least take me until 2:30 which I made in light of the
5 earlier representation that the conference call wouldn't start
6 until 3:00 o'clock.

7 JUDGE SMITH: Are you going to represent the Attorney
8 General in this matter, too?

9 MS. SNEIDER: I will be here with Mr. Oleskey
10 tomorrow.

11 JUDGE SMITH: Well, if we could get an earlier start,
12 Ms. Sneider, it would be very helpful if you'd let Mr. Oleskey
13 handle it by himself.

14 MS. SNEIDER: Mr. Oleskey isn't here. I don't know
15 what his calendar is like now. We have been assuming that the
16 conference call would take place at 3:00 and then arranging our
17 schedules accordingly.

18 JUDGE SMITH: So what's your position?

19 MS. SNEIDER: All I'm saying is I can't speak for Mr.
20 Oleskey who I know has a very busy calendar and that we have
21 been arranging our calendars in light of the representation on
22 Friday that the conference call would take place at 3:00
23 o'clock.

24 JUDGE SMITH: Well, I understand that, but you're not
25 able to go earlier, is that it? Is that what you're saying?

1 MS. SNEIDER: Yes.

2 JUDGE SMITH: All right. We're adjourned until
3 tomorrow at 3:00.

4 MR. BROCK: Your Honor, if I could, I just had one
5 point of clarification. Is the motion to compel on the Ed
6 Thomas that was filed in conjunction with getting further
7 testimony from him, will that also be addressed tomorrow?

8 JUDGE SMITH: Mr. Thomas' appearance will be
9 addressed. So in that context, yes, it will be.

10 MR. BROCK: Thank you, Your Honor.

11 MS. SNEIDER: Your Honor, I have one question for the
12 Reporter. I wanted to arrange for a transcript from today's
13 hearing, I mean, cross examination.

14 JUDGE SMITH: Ms. Sneider, I've been thinking about
15 what I think is unnecessary inflexibility. I think you should
16 consult with your colleagues tomorrow and ascertain definitely
17 that you could not be present any earlier. We have a lot of
18 work to do. You have a lot of people that could represent you
19 on it.

20 Would you do that, please?

21 MS. SNEIDER: I will do that.

22 JUDGE SMITH: And inform Mr. Turk.

23 MS. SNEIDER: I will do that.

24 JUDGE SMITH: All right, thank you.

25 I'm sorry, did I interrupt?

1 MS. SNEIDER: I just had a question for the Reporter
2 about getting today's transcript.

3 JUDGE SMITH: Tomorrow.

4 Well, do you want to talk to him after we adjourn?

5 MS. SNEIDER: Yes.

6 JUDGE SMITH: All right. Anything further?

7 (No response.)

8 JUDGE SMITH: Nothing further. Then we'll adjourn
9 until tomorrow at 3:00 or at an earlier time if it can be
10 arranged.

11 Ms. Mitchell? Oh, she's off. That's right. It
12 would be helpful if the parties would reduce their reliance
13 upon the speaker phones.

14 All right, we're adjourned.

15 (Whereupon, at 4:57 p.m., the hearing in this matter
16 was recessed, to reconvene the following day, Tuesday, May 10,
17 1988, at 3:00 p.m., in the same place.)

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CERTIFICATE

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This is to certify that the attached proceedings before the United States Nuclear Regulatory Commission in the matter of:

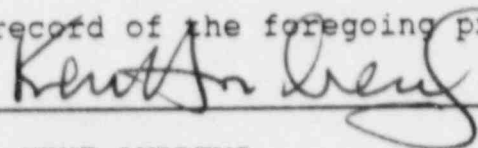
Name: PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE, et al/
(Seabrook Station, Units 1 and 2)

Docket Number: 50-443-OL
50-444-OL

Place: BETHESDA, MD

Date: May 9, 1988

were held as herein appears, and that this is the original transcript thereof for the file of the United States Nuclear Regulatory Commission taken stenographically by me and, thereafter reduced to typewriting by me or under the direction of the court reporting company, and that the transcript is a true and accurate record of the foregoing proceedings.

/s/ 

(Signature typed): KENT ANDREWS

Official Reporter

Heritage Reporting Corporation