

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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USNRC

'88 APR 25 P4:08

Before the Atomic Safety and Licensing Board

OFFICE OF SECRETARY
DOCKETING & SERVICE
BRANCH

In the Matter of)	
)	
LONG ISLAND LIGHTING COMPANY)	Docket No. 50-322-OL-3
)	(Emergency Planning)
(Shoreham Nuclear Power Station, Unit 1))	(School Bus Driver Role Conflict)

**LILCO'S MOTION TO STRIKE
TESTIMONY OF STEPHEN COLE ET AL.**

On the remanded school bus driver "role conflict" issue, Suffolk County has filed a 61-page piece of testimony (not counting attachments) called "Testimony of Stephen Cole, Ralph H. Turner, and Alan H. Barton on the Remand of Contention 25.C. -- Role Conflict of School Bus Drivers (April 13, 1988) (hereinafter "Cole testimony"). LILCO hereby moves the Board to strike certain portions of that testimony as inadmissible.

LILCO asks the Board to strike a great deal of the Cole testimony. The primary reason is that it dredges up old issues and asks the Board to reconsider them. Indeed, most of the testimony (as we shall demonstrate below) is nothing more than an attempted rebuttal of LILCO's 1983 case on role conflict.

Suffolk County's original direct case on role conflict in 1983 consisted of 101 pages of written testimony (not counting attachments). This testimony covered role conflict of LILCO personnel, Department of Energy personnel, school bus drivers, teachers, other school employees, crossing guards, ambulance drivers, Red Cross personnel, and others. On remand, the County's written testimony, covering only school bus drivers, is 140 pages.

Clearly part of the problem is repetitious testimony that attempts to resurrect issues and evidence long laid to rest. LILCO asks the Board to deny admission of such testimony, which we identify specifically below.

1. General Theory

Pages 10-19 (line 6) (except for one sentence, identified below,^{1/} on page 15) and pages 22 (line 18) -24 are inadmissible because they attempt to reopen and relitigate issues that were litigated in 1983-84. Moreover, this theoretical background material is cumulative and "unduly repetitious." 10 C.F.R. § 2.743(c) (1987). Certainly it is not "required for full and true disclosure of the facts." 10 C.F.R. § 2.743(a) (1987).

These passages offer a theoretical discussion of "role conflict" in general. The testimony starts out, for example, with "what is meant by the term 'role conflict.'" Cole testimony at 10. It goes on to discuss terminology (id.), examples of role conflict in everyday life (id. at 11), how role conflict can be resolved (id. at 12-13), and so forth.

Obviously the Intervenors had the opportunity to lay the theoretical underpinnings of their case in 1983. Indeed, they did define and discuss "role conflict" then. See Erikson & Johnson, ff. Tr. 1455, at 4-6. They attempted to discuss the literature as they saw it. Id. at 13-18. The Board discussed the theory of role conflict in its initial decision. Long Island Lighting Co. (Shoreham Nuclear Power Station, Unit 1), LBP-85-12, 21 NRC 644, 671 (1985) ("PID") (definition of role conflict), 672-73 (history and literature concerning role conflict). There is no right to repeat or supplement the earlier testimony.

The County must concede that all of this testimony could have been presented in 1983 but will no doubt defend it now as "background." Cole testimony at 10. However, there is no need for "background" on this remanded issue, when two members of the

^{1/} On pages 10-17, LILCO has identified only one sentence that is admissible:

The bus driver with children is likely to have an intense personal involvement with them and a less intense personal involvement with those with whom they interact in their role as bus driver.

Testimony at 15, lines 15-18.

Board have sat through extensive testimony on it already and the Board has clearly discussed the theory of role conflict and the history and literature concerning role conflict in its initial decision. PID, 21 NRC at 671-673. In these circumstances, the testimony is "unduly repetitious." 10 C.F.R. § 2.743(c) (1987).

Within these passages, an additional reason exists for striking the paragraph on page 13 beginning "It is also important to note" and the accompanying footnote 3. This testimony is outside the scope of the remanded issue. Indeed, it is outside the scope of the original issue. Contention 25.C alleges that not enough school bus drivers will be available; it does not allege that they will be available but impaired because of worry about their families. The paragraph on page 13 raises this second issue, which is that if the bus drivers do show up they will find their "concentration, motivation, and attitude on the job" affected by role conflict. (This is much the same as the theory of County witness Saegert, often repeated in this proceeding, that people are so frightened of radiation that they will be unable to process information and perform simple tasks in an emergency. See, e.g., Saegert, ff. Tr. 2259, at 12-13, 14, 16-19; Tr. 18,023-29 (Saegert), and, in the reception centers record, S.C. Ex. 16 (Radford et al.) at 20-27). It has nothing to do with Contention 25.C. It should be stricken as outside the scope of any admitted issue.

Pages 17, line 13, through 19, line 6, do mention bus drivers, unlike the testimony that precedes them. But they are not specific to bus drivers, and the testimony could as well apply to any emergency worker. Accordingly, this testimony is, again, simply an attempt to relitigate the general "role conflict" issue that has already been litigated and should be stricken.

2. Technological versus Natural Disasters

On page 22 beginning with the second paragraph (which starts on line 18 with "There is at least one other") through page 24, line 5, the Intervenors argue that

technological disasters are different from natural disasters because in technological disasters there is someone to blame. This theoretical point is something that could have been raised (and indeed was raised) in 1983.^{2/} See Purcell et al., ff. Tr. 10,727, at 44-45, 51 (people will mistrust LILCO because LILCO will be viewed to have caused the emergency). The Board found that "emergency workers would respond to a radiological emergency in essentially the same manner as they repond to nonradiological emergencies." PID, 21 NRC at 676. The issue should not be revisited on this narrowly focused remand proceeding.

3. Credibility

Moreover, this same testimony should be stricken, beginning on page 23, line 2, with "Such an emergency" and ending on page 24, line 5, with the phrase "unilateral assignment of bus driving responsibilities" in lines 4-5, because it attempts to reopen the issue of "credibility". The testimony itself admits that these issues have been addressed:

As has been demonstrated to this Board previously, LILCO has a low degree of credibility on Long Island and the people feel a great deal of anger toward LILCO.

Cole testimony at 23 (footnote omitted).

The last paragraph on page 26 (lines 10 through 20 beginning "Third") also should be stricken because it again attempts to reopen the "credibility" issue:

LILCO has very low credibility among the general public and apparently among bus drivers.

Cole testimony at 26 lines 13-14. The credibility issue has already been litigated and decided, it should not be reopened. See, e.g., PID, 21 NRC at 687-96 ("As to the argument that the public would perceive LILCO (and hence LERO) was responsible for any

^{2/} In the 1987 reception centers hearing the Intervenors also testified about their theories of the difference between technological and natural disasters. See S.C. Ex. 13 (Cole et al.) at 48-49; S.C. Ex. 15 (Johnson & Saegert) at 11.

radiological emergency, and thus less reliable as an information source . . ." PID, 21 NRC at 690); see also Cole, ff. Tr. 10,727; Purcell et al., ff. Tr. 10,727, at 36-38 (LILCO lacks "credibility" with school districts), 56-57 (LERO Public Schools Coordinator lacks experience), 59-60 (officials from school districts have said the LILCO plan is unrealistic and unworkable). See also, in the 1987 reception centers record, S.C. Ex. 13 (Cole et al.), at 44-47; S.C. Ex. 15 (Johnson & Saegert) at 13.

4. Telephone Overload

The Board should strike the last sentence on page 24 (beginning with "Also" on page 24, line 15), and the following language from footnote 34 on page 52:

This is because during an emergency at Shoreham the telephone system will be overloaded making it difficult to get a dial tone and difficult to get through to specific people.

because (1) it attempts to reopen the issue of telephone system overload, an issue that was expressly ruled nonlitigable, and (2) none of the witnesses (who are sociologists) is qualified to discuss telephone overload.

The possible overload of commercial phone lines was a "Phase I" issue and may not be raised again now. In Phase I of this proceeding the Intervenor (including Suffolk County but not New York State) proffered Contention EP 11, which alleged that commercial telephones are unreliable because of the possibility of, among other things, overload. The text of Contention EP 11 is found after LBP-82-75, 16 NRC 986, 1026 (1982). When Suffolk County and its fellow intervenors defaulted, their contentions were dismissed as a sanction. LBP-82-115, 16 NRC 1923 (1982).

Accordingly, when Intervenor again raised the issue of telephone overload in Phase II, as Contention 26.B, they were not permitted to litigate it. Special Prehearing Conference Order at 15-16 (Aug. 19, 1983); Tr. 4003-10, 4064-66, 4250-53. The Intervenor appealed the denial of Contention 26.B to the Appeal Board. See Suffolk County, State of New York, and Town of Southampton Brief on Appeal of Licensing Board April

17, 1985 Partial Initial Decision on Emergency Planning at 13-15 (Oct. 23, 1985). The Appeal Board denied their claim as one of those lacking "sufficient merit or significance (or both) to require further discussion." ALAB-832, 23 NRC 135, 143 (1986).

5. Fear of Radiation

Even more inappropriately, the paragraph at the top of page 25, lines 1 through 11, attempts to relitigate the issue of fear of radiation and the "shadow phenomenon."

For example:

[M]ost Long Island residents would not consider themselves or their families to be safe until they had left the EPZ and travelled a significant distance from Shoreham. Most school bus drivers, like most other citizens who live in and around the EPZ, will gather up their family members and leave the area by car.

Cole testimony at 25 (footnotes omitted). It even cites earlier shadow phenomenon testimony. *Id.* at 25 n.12. See also Saegert, ff. Tr. 2259, at 6; Zeigler & Johnson, ff. Tr. 2789, at 23; and, in the reception centers record, S.C. Ex. 13 (Cole *et al.*) at 26-36 (fear of radiation).

The first two paragraphs on page 54 (lines 1-19) of the Cole testimony should also be stricken because they attempt to reargue once again the County's thesis that fear of radiation will prevent helping behavior in an emergency. The Board has already accepted that people fear radiation. PID, 21 NRC at 666. This fear of radiation has been repeatedly cited by Suffolk County in support of its various arguments about how an emergency response might go wrong. Any additional testimony in the same vein is cumulative and unduly repetitious and attempts improperly to reopen an already-litigated issue.

The second paragraph of the Answer in footnote 35 (beginning with "The second likely reason" at the bottom of page 55 and ending with "role conflict" at the very bottom of page 36) also repeats the theory that fear of radiation, which Dr. Cole says has increased on Long Island, will prevent an effective emergency response.

6. Training/Exercise Litigation

The Board should also strike the last three lines on page 25 and the first three on page 26, which say that LILCO's training program is inadequate to help produce role certainty because the Frye Board found it to be "fundamentally flawed." This is a legal argument, not proper testimony. Moreover, it is irrelevant; the Frye decision had absolutely nothing to say about training as a means of producing role certainty. The flaws in training found by the Frye Board were entirely different. See LBP-88-2, 27 NRC ____, slip op. at 183-84, 194, 215-17, 224, 233, 236-37, 242, 249-52 (Feb. 1, 1988). In particular, the problems identified in the exercise involving school bus drivers who had not been trained in dosimetry and use of potassium iodide, *id.* at 234-36, had absolutely nothing to do with role certainty. Thus, the argument is beside the point. Moreover, any flaws in the plan found by the Frye Board either will have to be corrected, or no license will be issued, so on this ground too the Cole testimony is irrelevant.

7. Rebuttal of LILCO's 1983 Testimony

a. Literature

The section of the testimony beginning on page 27 with the heading "The Sociological Literature and an Assessment of LILCO's Misinterpretation Of It" and ending on page 37, line 6, should be stricken because it is an attempt to relitigate old issues. It is, in fact, nothing less than an attempt to rebut LILCO's 1983 written testimony.

This portion of the Cole testimony discusses no literature more recent than 1969. To be precise, it discusses the following works:

<u>Paper</u>	<u>Discussed in 1988 Cole Testimony at pages</u>	<u>Discussed in LILCO's 1983 Written Testimony at pages</u>
Killian (1952)	28, 30- 31, 35	52-54
Instituut Voor Sociaal Orderzoek Van Het Nederlandse Volk (1955)	29	54-55
Moore (1958)	29	55-56
Fogelman (1958)	29	56-57
Form and Nosow (1958)	29	57
Meda White (1962)	32-37	66-67
Barton (1969)	29, 34	58

Indeed, on pages 30-37, the County witnesses expressly and deliberately discuss LILCO's 1983 written testimony. This is not remand testimony; it is untimely rebuttal testimony, four years late. A remand is not a license to relitigate matters already resolved.

As noted above, all of these papers and books were addressed by name in LILCO's 1983 written testimony. Suffolk County cross-examined on them. See, e.g., Tr. 921, 922A, 928, 982-84, 996-1000, 1054 (Dynes, Miletic).

Also, on redirect examination in 1983, Suffolk County counsel asked her witness Dr. Erikson "do you agree with the interpretation of the Lilco witnesses concerning the three generations of research involved in role conflict and disasters?" Tr. 1427 (Suffolk County counsel) (see Attachment 1 to this motion). LILCO objected that this was not proper redirect because Suffolk County was supplementing its direct case. Tr. 1427 (LILCO counsel). The objection was sustained. Tr. 1427, 1431 (Judge Laurensen). Suffolk County never asked to submit proper rebuttal testimony. If it was improper for Suffolk County to rebut LILCO's testimony on the research literature in December 1983, then it is certainly improper for it to do so now.

Finally, the Intervenors addressed the literature in their proposed findings. See Suffolk County and State of New York Proposed Findings at 71-72 (Oct. 26, 1984) (Attachment 2 to this motion), where the Intervenors specifically cited Form and Nosow (1958) and Killian (1952). See also LILCO Reply Findings on Offsite Emergency Planning at 40-42 (Nov. 14, 1984), where LILCO addressed Moore (1958), Form and Nosow (1958), and Killian (1952). The Board addressed Killian's 1952 article in the PID, 21 NRC at 672, 673. It is improper for the Intervenors now to introduce testimony attacking testimony already heard four years ago. A remand limited to school bus drivers does not change that.

b. The Disaster Research Center Data

Likewise, the Intervenors' testimony on pages 37-40 (beginning with "Finally" on line 7 of page 37 and ending on page 40, line 7, just above the subhead) should be stricken as another improper attempt at untimely rebuttal. Although that passage discusses a recent book chapter by Russell Dynes (indeed the same one cited in LILCO's written testimony),^{3/} it addresses the same data that Professor Dynes presented in LILCO's "Phase I" written testimony in 1982 (never litigated) and again in LILCO's testimony in 1983, that is, the several thousand interviews, with emergency personnel from over 150 different disasters, conducted by the Disaster Research Center ("DRC"). The Cole testimony attempts to distinguish the Disaster Research Center data as irrelevant and in doing so makes the same legal arguments that the Intervenors made in their proposed findings to this Board and again to the Appeal Board. See Suffolk County and State of New York Proposed Findings at 72-75 (Attachment 2 to this motion).

^{3/} LILCO addressed this chapter in its written testimony only to give the Board a complete catalogue of literature since the last testimony on role conflict. LILCO did not attempt to reargue its basic case. See Testimony of Douglas M. Crocker, Robert B. Kelly, Michael K. Lindell, and Dennis S. Mileti on the Remanded Issue of "Role Conflict" of School Bus Drivers at 11-12 (Apr. 13, 1988).

LILCO first filed testimony on the DRC data in "Phase I" of this proceeding. See Testimony of Matthew C. Cordaro et al., . . . on . . . Role Conflict (Oct. 12, 1982). This testimony was repeated and litigated in 1983. LILCO's witness, Professor Dynes, was cross-examined on it at length. See, e.g., Tr. 1017-18, 1032-40 (Dynes).

Also, in 1983 Suffolk County's witness Dr. Erickson explained on redirect examination why he felt the 6,000 or so interviews by the DRC were not relevant. Tr. 1423-26 (Erickson). His criticisms then were much the same as the criticisms in the Cole testimony now, to wit.

1. They did not involve radiological emergencies (Tr. 1424 (Erikson))
2. The interviews were of administrators and not, for example, bus drivers (Tr. 1424-25 (Erikson))
3. The only questions asked were "where were you" and "what did you do" (Tr. 1425-26 (Erikson)).

See Attachment 1 to this motion.

The Intervenors also attacked the DRC data in their proposed findings. Suffolk County and State of New York Proposed Findings at 72-75 (Oct. 26, 1984) (Attachment 2 to this motion). They attacked them again in their reply brief to the Appeal Board. Suffolk County, State of New York, and Town of Southampton Reply Brief on Appeal of Licensing Board April 17, 1985 at 15-17 (Jan. 6, 1986). Their criticisms now are repetitive of those earlier arguments and grossly untimely.

8. Chernobyl

The answer beginning in the middle of page 42, line 10, with "Since the first survey" and ending on page 43, line 7, with "this increased concern" should be stricken. The portion on page 42, line 10, relitigates old matters, raising the point that the Intervenors have often argued before, which is that the controversy over Shoreham and the accident at Chernobyl have increased the concern of people on Long Island.

Similarly, the second paragraph in the answer in footnote 35 (beginning with "The second likely reason" at the bottom of page 55 and ending with "experience role conflict" at the bottom of page 56) should be stricken because it once again attempts to reopen the issue of whether Long Islanders are even more afraid of radiation than they used to be because of Chernobyl.

The Intervenors have been trying for some time to figure out how to use the accident at Chernobyl to their litigation advantage.^{4/} All they have come up with so far is to hypothesize that the accident has made people on Long Island even more afraid of radiation than they were before. They argued this theory last year in the reception center hearings, *Cole et al.*, S.C. Ex. 13 (*Cole et al.*), at 36-41. The -05 Board declined to admit a contention on the effect of Chernobyl on people's response to a Shoreham accident. Memorandum and Order (Ruling on Intervenors' Motion to Admit Contentions) at 5 (Oct. 28, 1986). And, the -05 Board struck testimony on the subject. Memorandum and Order (Ruling on LILCO's and Staff's Motions to Strike Suffolk County's Testimony on Contentions EX 38, EX 39, EX 22F, EX 44, EX 40C and EX 49C) at 10 (Apr. 17, 1987).

In short, the issue of the impact of Chernobyl on people's fear of radiation was litigated in the reception centers hearing. It was denied admission to the -05 proceeding. It should not be heard now.

9. Anti-planning Statements

The two sentences at page 19, line 15 through line 19, beginning with "Indeed, 255 school" and ending with "School Administrator's Testimony" and the first full

^{4/} The NRC has addressed the implications of Chernobyl generically. The Director of the NRC's Office of Nuclear Reactor Regulation has issued a decision on the Potential Implications of Chernobyl Accident for All NRC-Licensed Facilities, DD-87-21, 26 NRC 520 (1987). With respect to emergency planning, the Director did not find a need to change U.S. emergency planning rules. *Id.* at 527-30.

paragraph on page 43 (lines 4-7 on that page) should be stricken for a different reason. In these passages, the Intervenor's rely on statements signed by school bus drivers saying they will not agree to drive in a Shoreham emergency. There is a powerful policy reason for striking this testimony. As Suffolk County's answers to interrogatories show, the lawyers for Suffolk County counseled the people who solicited these statements:

Members of the public contacted counsel for Suffolk County, indicated that drivers wished to sign statements such as the ones provided, and sought advice on how such statements could be drafted. Following such conversation with counsel for the County, the forms were prepared.

Suffolk County's Answers to LILCO's Fifth Set of Interrogatories and Requests for Production of Documents Regarding Role Conflict of School Bus Drivers at 2 (Feb. 22, 1988). Thus, the County participated in the sabotage of emergency planning and now seeks to rely on the very evidence of its sabotage.

As a matter of policy, this Board should not accept evidence based on Intervenor's own efforts to make the public less safe. As the licensing board said in the Indian Point emergency planning proceeding:

Such activities [tending to undermine responsible efforts to provide emergency planning], one by a committee appointed to advise Rockland County's government on its emergency response plan, and the second by a party in this proceeding, are adverse to the objective both organizations presumably espouse, the responsible protection of children during a radiological emergency.

Consolidated Edison Company of New York (Indian Point, Unit Nos. 2 and 3), LBP-83-68, 18 NRC 811, 986 (1983). Such efforts, which are present in the Shoreham proceeding in great abundance, should be disfavored, not encouraged, by the NRC.

As discussed at length in LILCO's Motion to Strike Testimony of Brodsky et al. also filed today, April 20, 1988, the testimony relying on statements by unknown bus drivers is inherently unreliable. Not one of the witnesses who sponsor the testimony can attest to the reliability or origin of the "bus driver statements." Indeed the

County's answers to interrogatories disavow any knowledge of the origin or reliability of these statements. See Suffolk County's Answers to LILCO's Fifth Set of Interrogatories and Requests for Production of Documents Regarding Role Conflict of School Bus Drivers (Feb. 22, 1988).

10. Other

The reiteration at page 8 of the preamble and entire text of Contention 25.C should be stricken, except for the passage directed to the availability of bus drivers for school evacuation as shown below,^{5/} because it is beyond the scope of the remand proceeding. See Memorandum and Order (Ruling on LILCO Motion In Limine and Motion to Set Schedule) at 3 (Feb. 23, 1988). The issues raised by other parties of Contention 25.C cited in the Cole testimony were litigated and decided. PID, 21 NRC at 671-678 (general "Role Conflict" issue raised by the preamble), at 677-78 (effect of the role conflict on early dismissal of schools), at 674 (evacuation of persons without cars), and at 674, 678 (evacuation of persons in special facilities).

The question and answer at the bottom of page 57 and top of page 58 address whether polls are useful to predict emergency behavior. This testimony says absolutely nothing that Professor Cole has not said many times before in this proceeding. See,

^{5/}

C. The LILCO Plan fails to take into account the role conflict that will be experienced by school bus drivers. In fact, a substantial number of school bus drivers are likely to attend to the safety of their own families before they report (if they report at all) to perform the bus driving duties which LILCO assumes will be performed. Role conflict of school bus drivers will mean that neither school buses nor school bus drivers will be available to implement the LILCO Plan. Without an adequate number of buses or bus drivers, LILCO will be incapable of implementing the following protective actions:

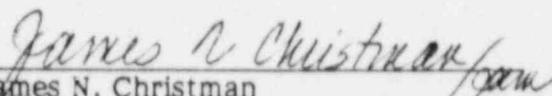
* * * *

2. evacuation of schools;

e.g., Cole, ff. Tr. 2792, at 25, 30-32, 64; see also PID, 21 NRC 663-67. It is cumulative and unduly repetitious and should be stricken. (Footnote 36 on page 58 is different and need not be stricken along with the offending text.)

Footnote 38 (on page 59) repeats Suffolk County's thesis that radiation is unique because it is invisible. This thesis has already been addressed many times in this proceeding, see, e.g., Tr. 2018-19 (Mileti), Cole, ff. Tr. 2792, at 26-27,^{6/} and was addressed by the Board in the initial decision, PID, 21 NRC at 676. This testimony should be stricken as cumulative and unduly repetitious.

Respectfully submitted,


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DATED: April 20, 1988

^{6/} See also Zeigler & Johnson, ff. Tr. 2789, at 23-25 (uniqueness of radiation).

ATTACHMENT 1

1 There are several questions in there
2 that point to the perceived importance of the
3 Shoreham issue to the Long Island population.

4 Q. Did you have something to add, Dr.
5 Erikson?

6 A. (Witness Erikson) No.

7 Q. I am going to direct the question to
8 both of you, because you both responded to these
9 questions from Mr. Christman, the article by Mr.
10 Quarentelli and co-authored by Dr. Dynes, we've
11 discussed a little bit on this record.

12 I believe one of you stated that in
13 your view, that article was not relevant to the
14 role conflict issue, although you noted that in
15 some respects, it's of course your contention, Dr.
16 Johnson.

17 What is the basis for your statement
18 that it is not relevant on the role conflict
19 issue?

20 A. (Witness Erikson) I think I would say
21 that the interviews described in the article you
22 are talking about are drawn from the larger
23 population of better views.

24 It was mentioned earlier, as part of
25 the sample of 6,000 that are available -- are

1 stored at the Ohio State Disaster Research Center.

2 And I would say those interviews are --
3 may or may not be -- I suspect they are relevant
4 to the larger question of role conflict.

5 But I question seriously how relevant
6 they are to the question of role conflict as it
7 bears on the question of the emergency plan in
8 Suffolk County.

9 And my reasons for saying that are
10 that none of the emergencies on which those 6,000
11 interviews were drawn involve radiological
12 emergencies, with the single exception of after
13 fire in the nuclear waste dump in San Antonio
14 about 20 years ago, which I remember, was
15 productive to about five or six out of the 6,000
16 interviews.

17 And in any event, were not among the
18 five or six interviews in Quarantelli and Dynes'
19 paper.

20 I would, say second, that virtually
21 all of those interviews, not only the 300 some odd
22 in this paper, but the 6,000, altogether were
23 conducted with persons who were identified by
24 Quarantelli in the paper and by Dynes both in the
25 paper and in testimony as, and I am quoting now,

1 authorities, or as administrators.

2 As far as I can tell from the record
3 that we have heard here, that no one was
4 interviewed, and out of all of these 6,000 people,
5 because they had the responsibility of driving
6 school buses, because they had the responsibility
7 of manning the street corners where children pass,
8 because they were office workers or meter readers
9 or representatives who were being asked to take on
10 a major responsibility in an emergency.

11 So that I would say under these
12 circumstances, that there are very few reasons to
13 suppose that the LERO Emergency Force, about which
14 we have been hearing at these hearings, and the
15 6,000 people who make up the interviews at Ohio
16 State have that much in common.

17 And then I would say, third, that so
18 far as can be discovered from the testimony we
19 have heard here, is that the only question asked
20 these 6,000 people directly was where were you at
21 the time of the disaster and what did you do were
22 your time thereafter.

23 And while that's a good question for
24 certain kinds of purposes, I would think it
25 doesn't satisfy the main social science into a

1 subject as narrow and sensitive as this one.

2 Q. Thank you, Dr. Eriksen. Do you,
3 gentlemen, agree with the opinions of the Lilco
4 witnesses concerning, what they call, the classic
5 stereotype of family upon which the traditional
6 definition of "role conflict" is based?

7 MR. CHRISTMAN: Objection. Beyond
8 the scope of the cross.

9 JUDGE LAURENSEN: I was writing a
10 note. I didn't hear the question.

11 Q. I will restate it. Do you, gentlemen,
12 agree with the opinions stated by the Lilco
13 witnesses concerning, what they call, the classic
14 stereotpe of family structure upon which in their
15 opinion, classic definitions of "role conflict" is
16 based?

17 MR. CHRISTMAN: And my objection was
18 I don't remember saying anything about that or
19 referring to it or alluding to it in any way,
20 shape or form during my cross-examination.

21 JUDGE LAURENSEN: Objection is
22 sustained.

23 MS. LETSCHE: Judge Laurensen, if I
24 might -- well, let me go on and ask him the
25 question.

1 Q. Dr. Erikson, do you agree with the
2 interpretation of the Lilco witnesses concerning
3 the three generations of research involved in role
4 conflict and disasters?

5 MR. CHRISTMAN: Same objection. We
6 are now supplementing our direct case I believe.

7 JUDGE LAURENSEN: I need some
8 clarification of what "three generations" we are
9 talking about here insofar as what the prior
10 testimony was that you are trying to --

11 MS. LETSCHE: I am talking about the
12 prefile testimony by the witnesses, Judge
13 Laurenson, which there is an extensive, probably
14 20, 30 page pages, of three generation of research.

15 JUDGE LAURENSEN: You are not talking
16 about anything testified by Dr. Erikson.

17 MS. LETSCHE: That's correct.

18 JUDGE LAURENSEN: Objection sustained.

19 MS. LETSCHE: Judge Laurenson, if I
20 might respond.

21 What we have seen on this record is
22 Lilco's apparent decision not to permit, not to
23 cross-examine these witnesses on any of the
24 substance of what's contained in their prefile
25 testimony.

1 Certainly questions concerning their
2 testimony and other cases and questions concerning
3 articles which they may or may not have cited in
4 their testimony, but there were little, if any,
5 questions concerning the substance of the
6 testimony that they have submitted in this hearing.

7 As I understood the Board's concern
8 and the Board's interest in this hearing, as
9 stated at the conference of counsel a week and a
10 half ago, it was an interest in having the
11 confrontation of witnesses and a demonstration of
12 where the witnesses's differ in their expert
13 opinions.

14 During my cross-examination of the
15 local panel, that's what we had. I went over
16 their testimony and the points that they made were
17 questioned in detail, and they were given an
18 opportunity to talk about them, and my aim was to
19 demonstrate areas in which these witnesses
20 disagreed with the witnesses presented by the
21 County.

22 What we have seen from the Lilco
23 cross-examination, however, is, as I stated before,
24 an apparent decision not to let the witnesses talk
25 at all about what they stated in their testimony

1 and in fact not to address had a what they stated
2 in their testimony at all.

3 The Board's question didn't do that,
4 but again did not go after the confrontation which
5 I thought was what you were interested in.

6 What I am trying to get on the
7 record -- apparently Lilco doesn't want it -- is
8 the confrontation between the witnesses, the
9 experts opinions of the witnesses, including the
10 County, stated by the Lilco witnesses.

11 I submit, if the cross-examination by
12 Lilco and by the Staff, FEMA and the questions by
13 this Board are not designed to get on to this
14 record the facts and the truth and the opinions
15 and where they differ on these expert witnesses,
16 the only alternative left to me is to try to get
17 it on the record through this means, and given
18 everything else that's happened in this proceeding,
19 I submit that my questions are proper.

20 MR. CHRISTMAN: May I say something?

21 JUDGE LAURENSEN: Please proceed.

22 MR. CHRISTMAN: I regret that my
23 cross-examination was not what counsel for Suffolk
24 County would like to have had it, and it did not
25 enable her to get speeches and supplemental on the

1 record.

2 But to put one's direct case on the
3 record is when one files prefile written testimony,
4 and the County has a great deal of discovery in
5 this case with which it could work when it wrote
6 its written testimony.

7 And nothing that the County's counsel
8 has said about my cross-examination or the Board's
9 questions, and I guess we both stand chastized,
10 suggests any reason why she should be allowed to
11 expand her direct case on redirect.

12 JUDGE LAURENSEN: Before we rule on
13 this question and the objection here, I want to
14 just direct a few observations, and this will be
15 only as to Suffolk County and Lilco.

16 Both sides here are represented by
17 very able lawyers. It's not our intention to tell
18 any of the lawyers how they should or shouldn't
19 try the case or what kind of questions they should
20 be asking.

21 Speaking for the Board, we have asked
22 what we believe to be the relevant questions, that
23 we felt answers should be given.

24 If there are other things that
25 someone else thinks should be asked, the only

1 thing is we can follow the general rules of
2 procedure.

3 But I think to a large extent, Mr.
4 Christman was correct, that the purpose of filing
5 the written testimony is to put what you want in
6 the record.

7 Now, your testimony is already in the
8 record, and if he wishes not to challenge it, then
9 it comes in without contradiction. It is
10 available for the County to cite for its proposed
11 findings and conclusions.

12 But insofar as the request that you
13 have made to ask us to reexamine this, we will do
14 so right now. We will have a ruling for you in
15 and moment.

16 (Discussion held off the record)

17 JUDGE LAURENSEN: The Board has
18 reconsidered the County's request, and we will
19 adhere to our prior decisions.

20 The objections to these questions
21 will be sustained. Is there anything further on
22 redirect?

23 MS. LETSCHE: Nothing further.

24 JUDGE LAURENSEN: Any
25 re-examination by Lilce?

ATTACHMENT 2

SUFFOLK COUNTY AND STATE OF NEW YORK
PROPOSED FINDINGS OF FACT AND
CONCLUSIONS OF LAW ON OFFSITE EMERGENCY PLANNING

TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION.....	1
A. Background.....	1
B. The Nature and Quality of the Evidence of Record.....	6
C. LILCO's Proposed "Basic Principles of Emergency Planning".....	13
D. LILCO's Characterization of "the Governmental Intervenors' Strategy" in this Case.....	27
<u>CONTENTIONS</u>	30
I. HUMAN BEHAVIOR (CONTENTIONS 23.A, B, C, 25).....	30
A. Evacuation Shadow Phenomenon (Contentions 23.A, B, C).....	30
1. Introduction	30
2. The Nature of the Shadow Phenomenon In Radiological Emergencies.....	21
3. The TMI Experience and Surveys Conducted on Long Island.....	34
(a) The TMI Evacuation Shadow.....	34
(b) Surveys on Long Island.....	35
(c) Use of Survey Data to Predict Human Behavior.....	42
(d) Alleged Bias in the County's Survey.....	46

1. Historical Resolution of Role Conflict

109. The County's witnesses testified that virtually all the available evidence -- studies of natural and technological disasters, research conducted after TMI, and surveys of persons relied upon in the Plan -- suggests that in a Shoreham accident, a significant proportion of the workers relied upon by LILCO will experience role conflict and many will resolve this conflict in favor of first ensuring the safety of their families. Erikson and Johnson, ff. Tr. 1455, at 13.^{59/} We agree. Setting aside the studies relating to TMI which we discuss separately below, virtually all research supports the proposition that in emergencies, **people** take actions to assure the safety of their families before they perform emergency work that does not relate directly to their families' safety.^{60/}

(Footnote cont'd from previous page)

Board cannot rely on such a generalized conclusion but rather must deal solely with the facts and evidence of record. Further, we note that the Zimmer Appeal Board termed the role conflict issue confronting it as a "serious question." See Cincinnati Gas & Elec. Co., ALAB-727, supra, 17 NRC at 772.

^{59/} Families tend to evacuate or take protective actions as a unit; thus, large numbers of those who experience role conflict will resolve the tension by reuniting with their families, even at the cost of delaying or not performing their emergency responsibilities. This outcome is recognized by most social scientists who have reviewed the literature pertaining to human behavior in crises. Erikson and Johnson, ff. Tr. 1455, at 15-16.

^{60/} See, e.g., the studies cited by LILCO's witnesses at Cordaro et al., ff. Tr. 831, at 44-45, 54-59, and Tr. 979-95 (Mileti, Dynes) and by the County's witnesses at Erikson and Johnson, ff. Tr. 1455, at 13-18.

110. LILCO's witnesses characterized most of the cited evidence as irrelevant; they did so by focusing on role "abandonment," asserting that the studies did not involve individuals with emergency jobs formally assigned to them and for which they were trained, and then concluding that if one does not have an assigned role in a formal plan, by definition, he cannot be said to have "abandoned" the role, even if during an emergency he attends to his family rather than participating in the emergency response. See Cordaro et al., ff. Tr. 831, at 43.^{61/} We find LILCO's reasoning circular and unpersuasive, particularly in light of the evidence that even trained emergency workers in identified emergency response organizations have delayed reporting or did not perform their known emergency roles in favor of first ensuring the safety of their families.

111. Specifically, the LILCO witnesses conceded that a 1958 study of Texas tornados found that people with assigned emergency roles, including key officials such as the director of civil defense, postponed or abandoned those roles to care for their families. Tr. 984 (Mileti). Similarly, a study of another emergency by Form and Nosow found that half the

^{61/} FEMA's witness McIntire testified that he was not aware of conflicts of such magnitude that response operations were negatively impacted. His opinion is based primarily on the Disaster Research Center ("DRC") studies we discuss below and his personal experience with the post-impact phase of emergencies involving FEMA and State-employed emergency workers. See McIntire, ff. Tr. 2086 at 3; Tr. 2091-92, 2101-04, 2120-23 (McIntire). He also testified that even in emergencies with which he was familiar, there could have been role conflict problems of which he was not made aware. Tr. 2094-95 (McIntire).

individuals belonging to disaster-oriented organizations did not perform their assigned emergency roles. Tr. ~~984-85~~ (Mileti). Similar findings regarding role conflict resolution in favor of family obligations by persons with assigned emergency roles or emergency training were made in studies concerning the response to Hurricane Carla (Tr. ~~985-86~~ (Mileti)), the Buffalo Creek flood (Cordaro et al., ff. Tr. 831, at 45-46; Tr. ~~980-82~~ (Mileti); 1399-1400 (Erikson)), ^{62/} and Hurricane Audrey (Tr. ~~990-95~~ (Mileti)), and in works by Fritz Killian (Tr. 1331-34 (Erikson); LILCO Br. ~~54; 63/~~ Tr. 1412 (Erikson); 981-83 (Mileti)), Hill and Hanson, and Thompson and Hawkes (Erikson and Johnson, ff. Tr. 1455, at 15-16).

112. LILCO's witnesses asserted that "the most all-inclusive work on role conflict/abandonment" is an unpublished preliminary DRC paper drafted

^{62/} Contrary to LILCO's assertion (see LILCO Brief, at 30), the Buffalo Creek flood does support the County's position on likely role conflict resolution, because everyone went home to be with their families when the flood occurred. Cordaro et al., ff. Tr. 831, at 45-46; Tr. 980 (Mileti). Moreover, contrary to LILCO's assertions (Cordaro et al., ff. Tr. 831, at 45), Dr. Erikson testified, based on his study of that event, that at Buffalo Creek people with a good deal of emergency training went home rather than engage in other kinds of rescue work. Tr. 1399-1400 (Erikson). Finally, contrary to the suggestion in LILCO's Brief (at 30, n. 38), we find no basis for believing that the circumstances under which Dr. Erikson performed his Buffalo Creek study had any influence on the reported facts about behavior during the flood. See Tr. 1403-04 (Erikson).

^{63/} Killian also reported on 2 incidents in which trained emergency workers, who were at the appropriate place and already on the job at the time of the emergency, largely stayed and performed their emergency jobs. We agree with Dr. Erikson that the likelihood of someone remaining at a post where he is already located is higher than that of someone reporting to that post if he were somewhere else at the time of the emergency. Tr. 1410-12 (Erikson).

in 1976 by Quarantelli and Dynes. Cordaro et al., ff. Tr. 831, at 69-70; Tr. 1012-16 (Dynes). Although the draft was purportedly based on 6000 interviews conducted over a 10 year period with emergency workers involved in 150 disasters, 6 events were examined in more detail.^{64/} The interviews were primarily with persons described as authorities and administrators. Tr. 1423-26 (Erickson). The interviews consisted of one question -- where were you and what were you doing during the emergency? -- with follow-up to the responses. Tr. 1026-27 (Dynes).^{65/} Dr. Dynes testified that the paper concluded that no person who was at work when an emergency began abandoned his or her emergency job, even though 12 people temporarily left and many delayed reporting for unknown amounts of time. See Tr. 1038, 1047-48 (Dynes); Cordaro et al., ff. Tr. 831, at 69-70; SC Ex. 1.^{66/}

113. In fact, the DRC paper showed that of 413 workers who were part of established emergency organizations for 6 events, 92 of them responded

^{64/} They were an earthquake, a flood, a hurricane, and three tornados. Tr. 1019 (Dynes).

^{65/} Dr. Dynes had not reviewed all the interview transcripts, and neither he nor Quarantelli was involved in the analysis of responses which form the basis for the paper's conclusions. Tr. 1028, 1053 (Dynes). Dr. Dynes described the interview subjects as people in actual emergency organizations, such as police, fire and civil defense departments and the Red Cross. Tr. 1017-18, 878-81 (Dynes).

^{66/} Dr. Dynes testified that these 12 people were not in critical positions and were not needed for the organization to respond, based on his belief that the emergency organizations continued to function despite the missing workers. He stated no basis for his belief, nor did the study attempt to elicit the information that could have provided such basis. Tr. 1038-43 (Dynes).

to an emergency by not performing their assigned emergency work -- they either abandoned their jobs, temporarily left them, delayed reporting to them, went to their families before reporting, or waited to see if they would be called to work. Thus, 22% of the trained members of emergency response organizations either took actions during the emergency that kept them from performing their emergency roles, or did not perform them because they had not been expressly told to report. Furthermore, of those people who were not already on the job at the time of the emergency, 33% responded by not performing their emergency jobs; of those already on the job, from 3 to 23% actually left their jobs depending on the emergency (3% left following the tornado; 23% left following the earthquake). SC Ex. 1; Tr. 1033-48 (Dynes). Finally, with respect to those categorized in the DRC paper as having performed their emergency jobs, there was no inquiry, and therefore there are no data, as to how soon after they learned of the need for an emergency response they reported to work. Tr. 1037-38 (Dynes). Thus, the DRC study in fact supports the County's position that role conflict may constitute a serious problem. Tr. 1398 (Erikson).^{67/}

^{67/} The Board, however, has decided that the DRC study is entitled to little weight. First, virtually all the interviews were conducted with authorities or administrators of emergency organizations; there were few, if any, interviews with school bus drivers, teachers, and other similar types of persons expected to take on major responsibilities in a Shoreham emergency. Therefore, the workers relied upon by LILCO and the people interviewed by DRC have little in common. Tr. 1423-26 (Erikson). The Board also finds that post-emergency assertions by administrators as to the performance and ability of their agencies to perform are likely to be somewhat biased and self-serving, and may not accurately reflect the true situation in the field. Further, Dr.

(Footnote cont'd next page)

114. Further, there is reason to believe that a Shoreham emergency will provide additional potential for role conflict. Drs. Erikson and Johnson testified that role conflict is far more likely to be resolved in favor of family obligations when the event involves the danger of radioactivity, rather than some other kind of emergency. People are more afraid of radiation than other potential sources of danger (see findings on Contention 23), and they are more apt to react with concern and alarm when they think members of their families may be in danger of exposure to it. Erikson and Johnson, ff. Tr. 1455, at 19-20. LILCO's witnesses agreed that people are fearful of radiation due to its unique characteristics, that the "character of the hazard" is one factor to be considered in understanding human behavior in emergencies, and that the behavior of emergency workers depends on their situational perception of "risk" or "hazard." Cordaro et al., ff. Tr. 831, at 93-96.^{68/}

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Erikson testified that it is important to distinguish between emergencies in which people are expected to report for work during the impact phase (such as an assumed Shoreham accident) and disasters whose impact has ended by the time persons are expected to provide assistance (those in the DRC study). Data on response to an emergency after the immediate danger has passed provide no basis to assume that the same response would occur during an ongoing emergency while the danger persists. Tr. 1400-02 (Erikson). We also find insufficient evidence to determine that the results or conclusions in the DRC paper constitute reliable scientific data that are applicable to the case before us. See, e.g., Tr. 1424-26 (Erickson). There is no indication that accepted methods of research or analysis were used in gathering or analyzing data, and the method of data presentation is so general, conclusory and, in many respects unexplained, that we find the paper to be of little practical use.

^{68/} LILCO asserted, however, that emergency workers can be trained and equipped to accurately assess the risk. We address this below.

LILCO, April 20, 1988

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CERTIFICATE OF SERVICE

OFFICE OF SECRETARY
DOCKETING & SERVICE
BRANCH

In the Matter of
LONG ISLAND LIGHTING COMPANY
(Shoreham Nuclear Power Station, Unit 1)
Docket No. 50-322-OL-3

I hereby certify that copies of LILCO's MOTION TO STRIKE TESTIMONY OF BRODSKY ET AL. and LILCO'S MOTION TO STRIKE TESTIMONY OF STEPHEN COLE ET AL. were served this date upon the following by Federal Express as indicated by one asterisk, or by first-class mail, postage prepaid.

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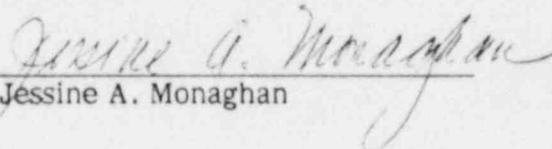
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