ORIGINAL

UNITED STATES
NUCLEAR REGULATORY COMMISSION

IN THE MATTER OF:

LONG ISLAND LIGHTING COMPANY

(Shoreham Nuclear Power
Station, Unit No. 1)

DOCKET NO: 50-322-OL-5
(EP Exercise)

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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of:	:	
LONG ISLAND LIGHTING COMPANY	:	Docket No. 50-322-OL-5
(Shoreham Nuclear Power Station, Unit 1)	:	(EP Exercise)

Court of Claims
State of New York
State Office Building
Third Floor Courtroom
Veterans Memorial Highway
Hauppauge, New York 11788

Wednesday, May 6, 1987

The hearing in the above-entitled matter reconvened, pursuant to notice, at 9:00 o'clock a.m.

BEFORE:

JOHN H. FRYE, III, Chairman
Atomic Safety and Licensing Board
U. S. Nuclear Regulatory Commission
Bethesda, Maryland 20555

OSCAR H. PARIS, Member
Atomic Safety and Licensing Board
U. S. Nuclear Regulatory Commission
Bethesda, Maryland 20555

FREDERICK J. SHON, Member
Atomic Safety and Licensing Board
U. S. Nuclear Regulatory Commission
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C O N T E N T S

	Direct	Cross	Redirect	Recross	Voir Dire
DENNIS M. BEHR		4976/ 5207	5197	5200	
CHARLES A. DAVERIO					
MARY E. GOODKIND					
MICHAEL K. LINDELL					
DENNIS S. MILETI					
ELLIOT D. PURSELL					

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EXHIBITS

	Identified	Admitted
Suffolk County Exercise Exhibit 57	5073	5172
Suffolk County Exercise Exhibit 58	5073	5172
Suffolk County Exercise Exhibit 59	5212	
Suffolk County Exercise Exhibit 60	5220	

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LAY-IN TESTIMONY
(None.)

A.M. RECESS Page 5029
LUNCHEON RECESS Page 5091
P.M. RECESS Page 5145

P R O C E E D I N G S

(9:00 a.m.)

JUDGE FRYE: Good morning.

MR. MILLER: Good morning.

MR. JOHNSON: Good morning.

JUDGE FRYE: After our problem yesterday with the building closing, I guess we really need to reassess where we stand with witnesses and who has to get away when. I know Dr. Mileti was supposed to be back tomorrow; is that correct?

WITNESS MILETI: I would like to be back home tomorrow, sir.

JUDGE FRYE: Yes, that's what I meant.

MS. MONAGHAN: Judge Frye, Mr. Miller and I discussed that a little bit, both yesterday while we were all milling around in the lobby and this morning. We have rescheduled Mr. Weismantle's appearance for Monday, since you had indicated that you thought we would be held over until Monday on this particular panel.

So, I contacted Mr. Weismantle last night and Mr. Miller to tell him that Mr. Weismantle would be here Monday.

As I understand it from Mr. Miller, he intends to finish with Dr. Mileti today.

JUDGE FRYE: Okay. So, we will get Dr. Mileti

back I suppose at a reasonable time.

MR. MILLER: Yes, sir. Let me just outline so the Board knows what we are going to do now in terms of jumping around a little bit, and the reasons we are going to jump around a little bit is to accommodate witnesses.

I am going to start this morning with Dr. Mileti and also Dr. Lindell, for that matter, since they sponsor testimony jointly. I am going to do that rather than finishing up with Mr. Pursell, because I realize that Dr. Mileti has to get out of here today. I will finish with Dr. Mileti today, and Dr. Lindell, barring some unforeseen circumstance so that he can get out tonight.

I'm assuming when I'm through with Dr. Mileti that there will be the redirect and other cross-examination and so forth. And, then I will at that time, whether that's the end of the day or first thing tomorrow, go back to Mr. Pursell and try and finish him up.

With respect to Mr. Weismantle, Ms. Monaghan did advise me that he would be available next Monday. I've also requested Ms. Monaghan to simply make inquiry to Mr. Weismantle as to whether he would also be available if necessary all or any part of Tuesday or Wednesday of next week, because right now I'm not prepared to say we will be on issues involving Mr. Weismantle on Monday. I think I will know better by tomorrow or at the end of the day in

that regard.

But, as of now it's hard for me to predict when we will really need Mr. Weismantle here.

JUDGE FRYE: Where do we stand with Ms. Goodkind?

MR. MILLER: We would expect to be inquiring into Ms. Goodkind's testimony tomorrow and perhaps part of Monday.

MS. MONAGHAN: Judge Frye, I'm willing to inquire of Mr. Weismantle as to his availability on Tuesday, but we've already switched him a number of times and he has, you know, cancelled and changed schedules and appointments in order to accommodate changes in the schedule here.

I'm not sure that we can keep getting him to switch things around. There is only so many times he can cancel meetings with people and reschedule them.

MR. MILLER: I would just ask for the inquiry to be made.

JUDGE FRYE: Okay.

MR. MILLER: I can't do anymore than that. I'm trying to give a best estimate.

JUDGE FRYE: Yeah.

MR. MILLER: Judge Frye, is there anything else you wanted to discuss on schedule before we get started?

JUDGE FRYE: Not really. I just wanted to find

out where we were.

MR. MILLER: I just had one very limited housekeeping matter. Yesterday, the Board was served with a pleading entitled "Contention EX-40, Calculation of Change in Total Population Dose as a Result of Mobilization Delays," dated May 4, 1987.

And, as the Board will recall, this is an issue that came up through Board questioning primarily during the matters relating to Contention 40. And, I'm not sure if the Board will recall, but I certainly recall, that when the matter came up -- and I'm specifically looking at the transcript from March 31, 1987 -- and we were confronted with this possibility of additional work and data being accumulated by LILCO, it was made clear on the record that the data would be first provided to Suffolk County and New York State so that we could analyze the data, determine whether there needed to be discovery; and, we also, of course, made clear to the Board that if the Board was going to want to hear additional evidence from LILCO regarding this total population dose calculation that we, of course, would reserve our rights to cross-examine any witnesses who sponsored such testimony.

And, the Board agreed with that assessment at Page 2,030 of the transcript. My only point, Judge Frye, is that contrary to what had been agreed upon, this matter was

now been brought to the Board's attention without first having been brought or provided to Suffolk County and New York State's attention.

At this point, it's too late to do anything about it but I would request that the Board simply put to the side the pleading that was handed to the Board yesterday.

I can represent to the Board that Suffolk County has sent the material that was delivered yesterday to Mr. Minor, who is a witness that would be looking at these calculations. Mr. Minor will endeavor as expeditiously as possible to review the data and the affidavits of Mr. Daverio and Mr. Lieberman. He will let us know what, if any, discovery he would like to have or receive in connection with the data and the calculations that have been performed.

Once we have that listing we will, of course, make requests to LILCO for such matters and such data. And, at that time perhaps we could come back to the Board and give the Board some idea as to when logistically we should schedule this matter if the Board intends to make this inquiry. If th Board decides that it does not need to hear additional evidence on this matter then, of course, that would moot everything I've been saying but it would also moot the pleading that was filed yesterday by LILCO.

So, perhaps we can just put everything to the side for the time being unless the Board wants to tell us they are not going to consider this, and we will discuss the matter further with Mr. Minor and come back to the Board at a later time.

JUDGE FRYE: Well, let us review the transcript and get back to you. It sounds to me like we need to review the transcript to determine whether or not we --

MS. MONAGHAN: Judge Frye, I spoke with Mr. Zeugin about it. And, both of us reviewed the transcript, and that was not our opinion of what was said in the transcript, that it required LILCO to provide the information to Suffolk County prior to providing it to the Board.

I think the issue here is whether Suffolk County has been provided with the calculations and work papers it would need in order to prepare cross-examination. And, my understanding from talking with Mr. Zeugin about it is that those have been provided with the filing that was made yesterday.

JUDGE FRYE: Well, I'm not talking about that, but I -- let us review the transcript and get back to you-all on this particular point.

MR. MILLER: That's fine, Judge Frye. At Page 2,030 is there I made a statement about how we needed the

material to assess it prior to it being delivered to the Board. And, the only comment by the Board was by you, and you said, "Fine." And, there was no dispute as to what I wanted to do.

JUDGE FRYE: You are going to get a chance to assess it in any event. There is no question about that.

MS. MONAGHAN: Right. Judge Frye, I think that the pertinent sections of the transcript are from Page 2,022 through 2,030.

MR. ZAHNLEUTER: With emphasis on 2,028.

MR. JOHNSON: Judge Frye, could we just address a little bit more the schedule for this contention and then the next two contentions?

I was wondering about the ways in which we might be able to possibly make up some of the time we lost yesterday. I estimate we lost approximately five hours of hearing time yesterday.

And, I know that you had expressed a desire to finish all of the hearing testimony except for FEMA by the end of the month. And, I also know that Mr. Miller told us that Mr. Lanpher expects to require additional time, more than was allotted on 15 and 16.

And, the Staff is very interested in those contentions as well, and whether we can possibly meet our schedule if we don't attempt to expedite things a little

bit.

JUDGE FRYE: Well, we are certainly going to expedite things, you know, to the extent that we can.

MS. MC CLESKEY: I would like to throw another inquiry into the pot, since you raised it, and that is whether any request for additional time on 21 will be forthcoming. We haven't talked about that.

And, at present we've scheduled one day for LILCO's panel on 21 and one day for Suffolk County's panel on 21.

JUDGE FRYE: Yes, and I have heard nothing to the contrary.

MS. McCLESKEY: I haven't either, but I'm wondering whether we are going to.

MR. MILLER: What's the question, Judge Frye?

JUDGE FRYE: Is one day on Contention 21 going to be sufficient?

MR. MILLER: From my preliminary discussions with Mr. Lanpher he has indicated to me that his rough estimate of time needed to inquire into the LILCO testimony on Contention 21 would be approximately one to two days. So I don't think we are far off.

MS. McCLESKEY: We are running into a real difficulty here.

JUDGE FRYE: Yes, we are, and we are also going to waste all our time talking about this.

MR. MILLER: And I would like to start with Dr. Mileti.

JUDGE FRYE: I think we ought to get started on this. When are we going to hear from Mr. Lanpher?

MR. MILLER: I'm not sure the Board is going to hear from Mr. Lanpher. What I had indicated to the Board last week was that if his estimates varied to any degree, he would file something with the Board, and it is my understanding from Mr. Lanpher that he has no reason to

believe at this time that the estimates I provided last week will vary to any significant degree.

So I suppose at this time the Board should anticipate roughly three to four days for Mr. Lanpher on Contentions 15 and 16 and one to two days for Mr. Lanpher on Contention 21.

MS. McCLESKEY: Judge Frye, may I ask, not to take up any more of the witnesses' and Mr. Miller's cross-examination time, that perhaps we can address scheduling further at the end of the day on the record, but after 5 because I would like to respond to what Mr. Miller just announced.

JUDGE FRYE: Let's do that. Let's proceed with cross now.

Whereupon,

DENNIS M. BEHR

CHARLES A. DAVERIO

MARY E. GOODKIND

MICHAEL K. LINDELL

DENNIS S. MILETI

and

ELLIOTT D. PURSELL

a panel of witnesses called on behalf of LILCO resumed their seats at the witness table and, having been previously duly sworn by Judge Frye, were further examined and testified

further as follows:

CROSS-EXAMINATION (Resumed)

BY MR. MILLER:

Q Drs. Mileti and Lindell, we are going to be starting this morning with your testimony which begins at the bottom of page 10, and we are going to endeavor to finish with your testimony today so that Dr. Mileti can go home.

Dr. Mileti, you were not here last week, but just to save a little time, at the bottom of page 10 in response to Question 7 and at various other places throughout the testimony there is a concept of perfect performance talked about in your testimony, and for your benefit, Mr. Mileti, the Board has indicated that it does not agree that the contentions raise the concept of perfect performance being needed to be demonstrated by LERO. So we are not going to talk in terms of perfect performance. We are going to talk in terms of adequate performance. Do you understand?

A (Witness Mileti) Yes, I do, quite clearly.

Q Would you turn to page 11 of the testimony, please.

MS. MONAGHAN: Judge Frye, this is just a little procedural matter. Since Dr. Mileti wasn't here last week he hasn't really formally adopted the testimony, so if we

could do that.

JUDGE FRYE: Yes, we had best do that.

This is your testimony, isn't it, Dr. Mileti?

WITNESS MILETI: Yes, it is.

BY MR. MILLER:

Q Now, Dr. Mileti and/or Dr. Lindell, most of these answers are sponsored jointly by the two of you, I'm just curious, first of all. On page 11 there is a statement at the beginning of the page, and there is a statement where you say "First, it is important to draw a distinction." Do you see that about the second line down?

A (Witness Mileti) Yes, I do.

Q And it goes on for some distance. Now I'm just curious, is there is a second or third point that you were going to make that was not made in this testimony because it just says "first" and I don't see any follow-up to that first?

A Let me take a look at it.

(Pause while the witness reviews his testimony.)

One could have put a second before the word "it" after the word "response" about in the middle of the paragraph, but it's generally all the same thing, or perhaps another way to handle it is to take the word "first" out. Sorry for the confusion.

Q Okay. Now at the end of that paragraph you have

a statement "Put simply, this contention" -- and you're referring to Contention 50 as a whole I believe -- "focuses on the wrong unit of analysis. Emergency response is by organizations and not by individuals."

Do you see that, sir?

A Yes, I do.

Q Dr. Mileti, you conducted a study that resulted in NUREG CR-3524; is that correct?

A I was a member of a team that conducted that study, yes.

Q When you conducted it as a member of a team, your NUREG study, Dr. Mileti, did you actually observe individual behavior during a test exercise or did you simply ask people whether they knew what to do and how to do it?

A Other members of the team did both.

Q Now your involvement was limited to what?

A Helping to conceptualize the study, develop measures and questions, reviewing for different bodies of organizational literature and interacting with Don Sorenson as he directed the field effort.

Q Did you conduct any of the interviews of emergency response personnel following the test exercise?

A No, I wasn't there.

Q Did you conduct any interviews of such personnel prior to the conduct of the test exercise?

A No. Other members of the team collected all that field data.

Q And you did not actually observe the test exercise, correct?

A No, I wasn't there.

Q Is it fair to say, Dr. Mileti, from your understanding of what others did that individual performance and actions were used to measure organizational behavior and effectiveness?

A Of course. The only real unit that exists are individuals. I mean you can't really observe an organization if you take the individuals out of it. There is nothing left.

Q But you say that the contention, Contention 50, focuses on the wrong unit of analysis because the contention looks at the performance of individuals and not the performance of the LERO organization; is that your testimony?

A My testimony is that it's my sense that one should make conclusions about the ability of an organization to accomplish its tasks, functions and goals in an emergency, and to the extent that that necessitates looking at the behavior of individuals, that's necessary in the context of organizational behavior.

Q Do you still believe, Dr. Mileti, that the

contention focuses on the wrong unit of analysis?

A I sure thought it did when I read it.

Q And you still believe that?

A I think so, yes.

Q Dr. Lindell?

A (Witness Lindell) Yes, I think so.

Q Dr. Lindell, do you agree that the measure of organizational response and behavior must necessarily be conducted through looking at individual behavior and actions?

A Yes, I do. It's the organization as a whole that is the important unit of analysis, but the observable behaviors are at the individual level.

Q Now there is a statement, the third sentence from the end of the paragraph, "It is quite possible not to have all individuals do their work perfectly in an emergency and still have the emergency response organization achieve its objective of protecting the public health and safety."

Would you agree with me that there could be circumstances where fewer than all individuals in an organization perform perfectly or less than perfectly that would result in the organizational response being ineffective?

A Yes, that's correct. It depends upon the nature of the task.

Q What is your opinion as to the unit of analysis employed by FEMA in looking at the results of the Shoreham exercise?

A (Witness Mileti) Is that my question or Dr. Lindell's?

Q A lot of my questions, and let me just clarify, if I don't specifically direct a question to you, Mr. Mileti, or Dr. Lindell, then either of you can feel free to answer.

A (Witness Mileti) In my opinion, FEMA looked at organizations.

Q Dr. Lindell, would you agree with that?

A (Witness Lindell) I'm not so clear. It's clear that FEMA loc ·d at individual behavior. I'm not quite so certain that FEMA in all cases carried the analysis through to judging the overall performance of the organization.

Q Would you agree with me that based upon its review of the results of the Shoreham exercise that FEMA concluded that LERO was not able to achieve its objective of adequately protecting the public's health and safety?

A I would say that given their definition of a deficiency that they would have been by implication certainly, they would have been forced to come to some conclusion about the organizational effectiveness.

Q Dr. Lindell, the conclusion FEMA came to was

that LERO had been unable to demonstrate the ability to adequately protect the public's health and safety, correct?

A Yes, I think that is what I said.

Q Now, I am down into Answer 8 on Page 11 of the testimony. I'm looking at that paragraph as a whole, gentlemen.

It's not your testimony, is it, that errors by individuals in an organization can never reflect a training problem? That's not your testimony, is it?

(The witnesses are looking at a document.)

A (Witness Mileti) While we are waiting for Dr. Lindell, I can formulate an opinion on that. One needs to look at the behavior of individuals to make the judgment about the behavior of an organization. And, there are circumstances in which a collection of observations that led to a conclusion that the organization could not achieve its goal would have to lead to that conclusion.

Q Dr. Mileti, my only question though is, would you agree with me that errors in performance by individual members of an organization can be the result of an inadequate training program?

A (Witness Lindell) I can -- it's easier for me to agree with that one. You removed the double negative, and it was easier to follow it through.

Q So, you agree with my last statement, Dr. Lindell?

A Yes.

(Witness Mileti) And, I was going to say, of

course.

Q And, for both Dr. Lindell and Dr. Mileti, your testimony and the opinions you offer is based solely on the FEMA report for Shoreham with respect to your understanding of LERO's performance on the day of the exercise?

Is that a fair statement?

A I focused a lot of my effort on the FEMA report, but it was quite impossible to divorce what I consider to be generic knowledge from doing that. But, in general, yes.

(Witness Lindell) I have the same answer. In general, it's a little bit difficult to separate out exactly the -- separate out the events from the significance of those events as I interpret them from my knowledge of organizational response to emergencies.

Q The last statement or sentence on Page 11 of the testimony, gentlemen, you state that you believe that LERO could have protected the public health and safety by promptly notifying the public within the 10-mile EPZ by making timely and appropriate decisions regarding protective actions and by facilitating the implementation of evacuation through effective transportation support and traffic management.

Is it fair to say that your opinion in this regard, which I assume is based upon the FEMA report, goes further than FEMA was willing to go in its report?

A (Witness Mileti) I would have to say that in judging that it would also be based on my knowledge of how things worked with the warning system that day as it was simulated. And, I'm sure FEMA makes reference to it in its report, but I had reviewed that in detail for another contention and I didn't exclude that knowledge.

Q So, Dr. Mileti, you are referring to the portion of that sentence which talks about the prompt notification of the public?

A And as that relates to evacuation, of course.

Q And, you are saying that -- do you agree with me, first of all, that your opinion in this regard goes further than FEMA was willing, or went, in its report?

A That's definitely my opinion. I don't recollect the precision that what exactly FEMA had to say. It probably does.

(Witness Lindell) If the question is addressed to, do I think that LERO activated the sirens and actually transmitted EBS messages and verified that people did receive EBS messages and so on and so forth, the answer is no. I realize that that did not happen.

Q Well, Dr. Lindell, let me ask you about the last part of this statement. The opinion that you offer that LERO could facilitate the implementation of evacuation through effective transportation support and traffic

management, do you believe, Dr. Lindell, from your review of the FEMA report that LERO demonstrated such a capability during the exercise?

A I think -- again, it sounds like you are referring to the traffic impediment, and I think that because of the nature of the way that FEMA tried to simulate the traffic impediment that those -- that the results that the organization behavior that was observed was quite inconclusive. The impediments were not physically present; there was not what I would regard as a high fidelity simulation of the impediment.

And, I think that created a lot of the problems that were observed on the day of the exercise. And, so I would say that given that that's inconclusive, the thrust of this is directed toward the other major aspects of transportation support and traffic management, primarily the ability to mobilize the field teams, send out bus drivers, ambulette drivers and so forth.

Q Well, Dr. Lindell, I'm not sure I really have an answer to my question, but let's focus on the bus drivers, then.

If you think the traffic impediments and the demonstration made by LERO was inconclusive on the day of the exercise, is it your opinion that LERO demonstrated the ability to facilitate the evacuation through effective

transportation support and traffic management by the performance of LERO bus drivers on the day of the exercise?

A Yes. I think they managed to dispatch into the field far more buses than would actually be used by the EPZ population in an emergency.

Q Now, Dr. Lindell, last week you -- you were here last week, and I had a brief discussion with Mr. Daverio about the LERO bus drivers, and I believe that we established that of the eight general population bus drivers that actually drove buses and were observed by FEMA three demonstrated problems. And, those problems resulted in a deficiency noted by FEMA.

Do you recall that discussion?

A Yes, I do.

Q But, notwithstanding any of that and notwithstanding FEMA's finding of a deficiency with respect to these bus drivers, your opinion is that LERO demonstrated the capability to carry out effective transportation management through the performance of bus drivers on the day of the exercise?

A Yes, I do. I disagree. I think I said last week that I disagree that there were any deficiencies demonstrated in this exercise, that the bus drivers -- in the case of the one bus driver who went to the wrong bus yard, he was prepared to take out his own credit card to

rent the bus and the bus driver that went to the wrong staging area, there is no indication that that would have had an adverse effect.

If you have, as a matter of fact, two different bus drivers both going to exactly the wrong transfer points, it could be that the net effect, one would go to one inappropriately and the other one would go to the other inappropriately. But, if the right numbers of bus drivers are there and they are capable of driving bus routes, then there is no adverse effect on the performance of the organization.

Q Now, Dr. Lindell, we don't have a situation noted by FEMA in its report about two bus drivers going to wrong transfer points, but each going to the wrong bus transfer point so that there is a balancing out. We have a statement by FEMA that a bus driver went to the wrong transfer point.

And, is it your testimony that that would have no impact in the performance of the LERO organization?

A I'm saying that the significance of that is not something that would lead me to doubt that the public health and safety would be adversely effected in an emergency, because I don't think that there are going to be that many people that are going to be taking buses in an evacuation.

Q Now, Dr. Lindell, is your opinion the same if

three-eighths of all LERO bus drivers go to the wrong transfer points?

A If that were based on a larger sample size, then it's conceivable that that might have an effect; that is, if there were hundreds or if there were 50 bus drivers that did that, then there might be a problem.

Q And, Dr. Mileti, would you agree that if three-eights of all LERO bus drivers go to the wrong transfer points that that could have an impact on the ability of the LERO organization to protect the public's health and safety?

A (Witness Mileti) No, Mr. Miller. In my opinion, you could take all of the buses out of the LERO plan and I don't think that would have an impact on public health and safety. I don't think they are needed.

I think it's nice that they are there, but they are not going to be used.

Q People just aren't going to use the buses?

A If there is someone who needs a ride, a ride could be arranged on the spot with a taxi cab. It's a minor phenomenon, in my opinion.

Q Would you look at Page 12 of the testimony, gentlemen?

(The witnesses are complying.)

Dr. Mileti, have you ever offered this opinion about the buses not being needed by LERO to the LERO or LILCO organization?

A I've said to many people on many occasions that people, when they evacuate, tend to find their own way out.

Q I understand. But, have you ever told LILCO: You don't need these buses, don't include them in your plan?

A I've told LILCO people aren't going to be using the buses. I've also prepared a tape to train bus drivers telling them that people weren't going to panic on the buses if they were on the buses. There might be some people who might need a ride. Most people who need rides find rides with friends. Most people have friends or relatives, and it's their preference in an evacuation.

Q Now, Dr. Mileti, is it fair to say that under NRC regulations and guidelines LERO is required to provide transportation for those who need it?

A I think that's what the law requires. But, not being a lawyer it's hard for me to interpret it. But, I sure have that sense, yes.

Q Well, are you unfamiliar with NUREG 0654, Dr. Mileti?

A No. I've seen it.

Q And, you are unable to tell me whether there is such a statement within NUREG 0654 requiring the provision of transportation assistance for evacuees?

A I think there is, yes.

Q Dr. Lindell, would you agree that there is such

a requirement?

A (Witness Lindell) I don't have a copy of NUREG 0654 with me, but -- and, again because it's an off-site issue and when I used NUREG 0654 it was mainly in conjunction with on-site evaluations, but as I recall there is something to that effect.

(Witness Behr) I believe that the NUREG does require that LERO provide assistance for transit dependent people in the EPZ.

Q Thank you, Mr. Behr. Now, on Page 12 of your testimony, gentlemen, it seems to me from having read Page 12 of your testimony that here your unit of focus is on individual performance.

Is that a fair statement?

A (Witness Lindell) No. I don't think that's entirely correct, although it would help if you would point to a particular area that you are talking about.

Q Well, there are many. Let's just look at the second sentence. "Individual performance is affected by a number of factors." And, you then list factors.

So, it seems to me you are focusing on individual performance.

A Yes, that's correct.

Q Is it fair to say, Dr. Lindell, that these factors that you list at the top of Page 12 of the

testimony, in your opinion, would also have to be looked at in evaluating organizational performance?

A I think that speaks directly to the issue here in this contention, that the organization provides training, that to the degree that it's not -- that the organization doesn't select for people who already have the knowledges, skills and abilities that are required on the job, the organization has to train people in the procedures -- the plan and the procedures, train them in how to use equipment if they don't already know how to use it, and that that -- what is provided by the organization facilitates performance by the individuals, and that in turn the individuals, as they perform, their performance is integrated back into the overall performance of the organization.

So, I think it's difficult to really separate these things out as saying specifically that this focuses at the individual level as if we were ignoring the organizational level.

Q Dr. Lindell, just to make sure that I have an answer to my question, is it fair to say that the same factors you list on Page 12 with respect to individual performance, in your opinion, have to be looked at in evaluating organizational performance?

A No. That's not quite it, but it's pretty close. What I'm trying to say is that these -- and what I

tried to say in the testimony was that these factors need to be taken into consideration to determine whether there is a training problem.

If there is a performance problem and you are trying to diagnose the nature of the training problem -- and that's what this contention is about, is training -- then one needs to determine whether, in fact, any performance problems that have been identified are training problems rather than equipment problems or procedure problems.

Q Would you agree with me, Dr. Lindell, that in looking at, or in evaluating organizational performance, you would want or need to look at all of the factors set forth on Page 12 of your testimony?

A Could you repeat that again?

A Would you need to look at all of these factors set forth on Page 12 in evaluating organizational performance?

A No. I would need those factors that -- perhaps it's a little bit confusing. There are two different roles in which, in essence, I'm responding here. One is in my role as a disaster researcher; the other one is a role as an organizational -- industrial organizational psychologist.

What I'm saying is that in interpreting the performance of the individual and how that effects the performance of the organization, I am responding as a

disaster researcher; that is, somebody that looks at how individual performance is aggregated into the performance of the organization. That's one issue.

Another issue is, to take a step back, given that there are any problems of individual performance what caused it, what is it attributable to? Specifically, is it attributable to training rather than to selection, placement, classification, equipment, materials or facilities? So, it's a separate issue.

Q Let me try this a little differently, Dr. Lindell. The factors that you set forth here on Page 12, you talk about the knowledge, skills and abilities that individuals bring to the job and classification policies of the organization.

Training would be a second factor. Equipment is a third factor. Materials, especially job performance aids, would be a fourth factor. And, the facilities in which the jobs are performed would be a fifth factor.

Is that a fair assessment of your testimony?

A Yes. Those are the major components that I look at in trying to diagnose if there is a performance error on the part of an individual and trying to determine what's the cause of that error.

Q Now, if you wanted to make a judgment about the adequacy of training of personnel within an organization, is

it fair to say that you would want to look at all these factors in making that judgment?

A I would need to make some estimation of the relative importance of those factors.

Q Dr. Mileti, do you agree with our discussion on this?

A (Witness Mileti) Well, part of it.

Q The last part about needing to look at all of the factors to make a judgment about the adequacy of training?

A If I were making a judgment about the adequacy of training, I would take an organizational or sociological point of view.

Q Okay. Well, let's hold that, then. Let me finish with Dr. Lindell.

Your point of view would be somewhat different; is that what you are telling me?

A If I were looking at the performance of an individual, I would want to look at different things than if I were looking at the performance of an organization.

Q Okay. We will come back to that, Dr. Mileti. Now, Dr. Lindell, I believe we discussed some of this at your deposition, Dr. Lindell, and I think in terms of ranking these factors that are on Page 12 that it was your opinion that you really could not rank these factors in

terms of their importance.

Is that a fair statement?

A (Witness Lindell) Yes, that's correct.

Q And, I believe you also told me that these five factors are all highly interrelated. Is that a fair statement?

A No. They are not necessarily interrelated.

Q They are not necessarily interrelated? You don't recall telling me at your deposition that these factors were highly interrelated?

A No, I don't recall having said that.

Q But, whatever, at this point you would agree that they are not necessarily interrelated?

A No. I don't necessarily believe that -- I don't believe that the selection, placement and classification policies of the organization necessarily influence its training, that training necessarily affects materials or that materials necessarily affect facilities.

There are -- there may be some contingencies, but to say that they are highly -- there may be some occasions on which you would take one action rather than another. You might, if there is a performance error, use one of these and that if you change a policy, say a selection policy, you might create a need to change the training program; that if you change the procedures or the

plan or the equipment, you would probably need to train people in those new procedures or in that new equipment.

But, you might be able to select for people who already know how to use that equipment or procedures. So, there is some degree of relationship there.

As far as highly interrelated, I don't remember if I said that. But, there is not an inevitable link given that you affect one that you necessarily change another one.

Q Dr. Lindell, from your knowledge of the LERO organization -- let's focus specifically with LERO and Shoreham -- do you believe that there is some interrelationship among these five factors with respect to the LERO organization?

A I think I just gave the examples there, that if you changed procedures that you will need to train people on those new procedures. If you change the equipment, you may need to train people in how to use that new equipment unless you've already selected for people who know how to use that equipment.

Q So, is it fair to say, Dr. Lindell, that in order to offer or make a judgment about the adequacy of the training of LERO personnel you would need to look at the interrelationship of these factors in the LERO organizational structure?

A Well, I think you used the word

"interrelationship" again. And, I would need to have information about those factors either directly from LERO or from my knowledge of the kinds of -- just in general, the kinds of things that people are being required to do.

I think you are asking me to say that I'm doing something that's different from what I did.

Q Well, what I'm asking you is this, Dr. Lindell. If you know nothing about any of these factors listed at Page 12 except for training -- I'm talking about LERO -- do you believe you can offer a judgment about the adequacy of training?

A I don't think that that's necessarily the case.

Q Would you explain your answer in terms of what your answer is? I don't -- are you saying that you could offer a judgment about LERO's training and yet know nothing about the other four factors listed on Page 12?

A I think it may be possible in some cases to offer a judgment about training in cases where people do not use any unusual kind of equipment. That is, if I were going to assess some aspect of the adequacy of the training of bus drivers, I would not necessarily need to know specifically what kind of bus they used, because buses are very much alike. I don't think that there is a whole lot of difference there.

I would not need to know specifically what kind

of self-reading dosimeter they used, because again the equipment is fairly well standardized, and I think I can make some reasonable inferences due to the nature of the equipment.

I don't need to have information about whatever kinds of screening tests they took or the exact procedure by which they were selected for their jobs.

So, you are asking a question that is stated as kind of a universal statement, and I can't -- I can't really make a response to that, because I think that there may be some instances in which I would need very little information about a specific LERO job, especially the equipment and the procedures, the facilities, the materials in order to have some reasonable opinion about the adequacy of the training.

Q Dr. Lindell, would you at least agree with me that one should have a higher confidence level in an opinion regarding the adequacy of training if one knew something about all of these factors rather than nothing about any of these factors?

A I would say that that's a non-controversial statement. I would agree with it.

Q And, can you tell me, Dr. Lindell, the extent of your knowledge regarding each of these four factors for the LERO organization, the four factors other than training?

A Mr. Miller, LERO is a very large organization.

There are over 1,000 people that were mobilized in many different jobs.

In general, I would hesitate to offer blanket statements about those. I would say that I felt confident that I had enough information to make the statements that -- to endorse the statements that were made in the testimony.

Q Yes, but, Dr. Lindell, I'm curious about the extent of your knowledge. The first factor, the knowledge, skills and abilities that individuals bring to their job in LERO, what would you say would be your level of knowledge regarding that particular factor?

A I would say that the way that the selection, placement and classification policies for LERO have been described to me that I know enough about how people are assigned to jobs; that is, people are assigned to jobs in accordance with the general duties that they perform which is similar to what Dr. Mileti has talked about of enormativeness.

That is, people are assigned to the position of Radiation Protection Coordinator on the basis of some training in radiation protection. Somebody is assigned as a Nuclear Engineer because they have qualifications in that area. People are assigned as bus drivers because they have experience driving heavy equipment.

Q And, Dr. Lindell, if indeed it turns out that

your understanding of selection, placement and classification policies of LERO is incorrect and that personnel are not necessarily assigned to LERO jobs that relate to their normal jobs, I take it that that would impact the confidence level you have in your ability to draw conclusions about the adequacy of LERO's training program?

A I'm willing to entertain that possibility, yes.

Q Now what is the extent of your knowledge regarding the materials, including job performance aids that are provided to LERO personnel?

A To a large degree it's based on the descriptions in the FEMA post-exercise assessment and my knowledge of the kinds of materials that emergency workers carry with them.

Q And the facilities that LERO personnel personnel performed their jobs, Dr. Lindell, you told me last week that you have not actually seen the facilities. Have you seen blueprints of the facilities?

A No. It turns out that I didn't really need to look at blueprints of the facilities because it didn't appear that facilities were implicated and there wasn't a reasonable supposition based on the description in the FEMA post-exercise assessment that the facilities themselves, except in one specific instance there was some question about noise and congestion.

That's the only instance I can think of in which a facility was implicated.

Q When you told at your deposition, Dr. Lindell, that you would be looking at each of these five factors in order to render your opinions regarding the adequacy of LERO's training, can you tell me now why you did not in fact look at each of these five factors to render your opinion?

A Yes. I went over the FEMA post-exercise

assessment and in my opinion in going through the blueprints and in going through more detailed analyses of each of those factors with respect to each one of the job descriptions was really unnecessary, that the information contained in the FEMA post-exercise assessment and the additional information that was provided to me in my review of the films and the documentation at the training center was sufficient to justify the conclusions that we are presenting in this testimony.

Q Dr. Lindell, would you agree with me that another factor that should perhaps be added to your list would be the motivational factor of LERO personnel?

MS. MONAGHAN: Objection. That's irrelevant to what's in this contention. There is no discussion in the contention or in any of the testimony about motivation as an issue here.

JUDGE FRYE: Where are you going with that?

MR. MILLER: I'm just simply trying to -- these witnesses have given me a list of factors that they think need to be looked at to draw conclusions about the adequacy of training of LERO personnel. I simply want to know of another factor you need to look at as the motivation of such personnel. It's a limited inquiry, but it's just another factor that I want to know if it should be added to this list.

JUDGE FRYE: All right. Should it be added?

WITNESS LINDELL: These are all factors that address the ability of an individual to perform his or her required task during an emergency. Certainly in textbooks on industrial organizational psychology one of the other factors that is addressed is motivation.

Now what happens is that in most situations, most organizational situations performance is motivation limited rather than ability limited, that is to say, that in a routine kind of job people usually perform at much lower levels than their maximum capability.

In an emergency people tend to be more ability limited than motivation limited, that is that they are very highly aroused and they don't have difficulty maintaining attention. The problem is how well can they perform is limited by their ability, and that's the reason why we addressed ability factors rather than motivational factors.

JUDGE FRYE: So motivation shouldn't be in there?

WITNESS LINDELL: My opinion is that motivation is not a relevant consideration in this case.

JUDGE SHON: Is a situation where you are just in an exercise but you realize there is no actual emergency sufficient to make the change from motivational limited to ability limited?

WITNESS LINDELL: It's clearly in my experience, it's clearly the case that people are less highly motivated in emergency exercises than they are in emergencies. Similarly, they tend to be less highly motivated in drills than they are in emergency exercises.

I think though that in emergency exercises people have a high enough degree of motivation because there are important job consequences for most of the actors. They are being evaluated and their organization as a whole is being assessed by FEMA or the Nuclear Regulatory Commission. If they do not perform adequately, I think most people presume there are going to be personal consequences for them. So they do have a fair degree of motivation in an emergency exercise.

JUDGE SHON: Thank you.

BY MR. MILLER:

Q Now in about the middle of the page, gentlemen, there is a statement about the numbers of ARCAs and deficiencies that were identified by FEMA during the Shoreham exercise, and you stated about half of them had little or nothing to do with training, but rather concerning equipment or procedures. Do you see that statement?

A (Witness Lindell) Yes.

A (Witness Mileti) I do, too.

Q Are you telling us that about half of the ARCAs

and deficiencies identified did relate to training?

A (Witness Lindell) Yes, that's correct.

A (Witness Mileti) I agree.

Q Now, if FEMA identified a problem as one which, in your opinion, resulted from or related to equipment, is it your opinion that that problem would not then be a training problem?

A If FEMA diagnosed it as an equipment problem and in examining not only their statement of what was wrong but going back through the post-exercise assessment and looking at the circumstances, that is looking at the context in which the performance error occurred, it was clear that in fact it was an equipment problem, then the conclusion, and consistent with what was said here, the conclusion was that the proximal cause of the error was equipment.

That does not mean that if you change the equipment you wouldn't have to train people to use the new equipment, but it does mean that the proximal cause was equipment.

Q Now, Dr. Lindell, if FEMA, for example, would have said the ENC copier broke down and would have identified that as a problem, that in your opinion, I assume, would be a pure equipment problem?

A Yes, it was.

Q If FEMA would have said that the personnel

dosimeters were not read correctly by LERO personnel, I assume that that would have indicated a training problem to you; is that correct?

A Yes, although it's conceivable that one could -- for example, one of the problem that was identified was that people, that some of the LERO workers were not reading their dosimeters every 15 minutes. One could, in my opinion, unreasonably, but one could take the position that that was an equipment problem as well, that is, that if LERO provided its personnel with self-reading dosimeters that had a 15-minute alarm built into it so that it would beep every 15 minutes, and that therefore if you provided that kind of equipment that you would not have a performance problem, you could say that that's an equipment problem.

Such equipment is not, to my knowledge, available on the market. So my conclusion was yes, that's a training problem and it's not an equipment problem.

Q Did you identify any problems from your review of the FEMA report that in your opinion resulted from personnel not following their training in the proper use or maintenance of equipment?

A That they did not maintain equipment correctly?

Q Did you identify any problems where it noted by FEMA that LERO personnel did not follow their training with respect to the proper use or the proper maintenance of such

equipment?

A I don't recall such a description.

Q How would you have rated that kind of problem, as an equipment problem or a training problem?

A I would have had to have seen the way that they described it, they way they described their conclusion, and that is in what they called a deficiency or an ARCA, and I would have had to have seen what happened on the day of the exercise, the circumstances that generated the problem and then had to come to a specific decision on the basis of the information available to me from the post-exercise assessment and from my knowledge of the kinds of equipment as to what reasonably is the proximal or more important explanation for the performance error.

Q Dr. Lindell, did you look at areas recommended for improvement in deciding whether most of those comments by FEMA related to training problems?

A No, I didn't. As the testimony says, we referred specifically to deficiency and ARCAs. We did not look at areas recommended for improvement.

Q Is there a reason why you excluded from your review areas recommended for improvement?

A It was not specifically excluded. I addressed deficiencies and ARCAs because clearly those are in FEMA's opinion issues of some significance. As an inspector for

the NRC we have often provided suggestions to people as to how they might improve their operations even though we don't think that there is really a serious problem. If we think that there is a better way of doing things, we offer suggestions, and that was my interpretation of that latter category.

Q Now, Dr. Lindell, did you review any other post-exercise assessment reports to determine whether or not the numbers of training related problems at Shoreham seemed to be more or less than have been identified by FEMA in other exercises?

A No, I didn't. I didn't make any comparative assessment with other FEMA post-exercise assessments.

Q Did you make such an assessment, Dr. Mileti?

A (Witness Mileti) In reference to this part of this testimony?

Q In reference to this testimony. I'm talking about a comparison of the numbers of ARCAs and deficiencies that related to training to other FEMA post-exercise assessment reports to draw any conclusions about the numbers of training related problem at Shoreham as compared to other exercises.

A No, I did not. Thank you for that clear question.

Q From your review of the Shoreham report,

gentlemen, do you recall any problems identified by FEMA that related to facilities in which individuals performed their tasks?

A (Witness Lindell) Any comments by FEMA ---

Q Related to any problems identified by FEMA.

A I think I mentioned one, that there was a question about one of the staging areas having too much noise.

Q Do you recall any that went to the selection placement for classification policies of the LERO organization?

A Only regarding the numbers of staff, and not regarding their qualifications.

Q Now while we are on that point, Dr. Lindell, could you just brief tell me what is the classification policy of LERO, or what are the classification policies?

A My understanding of the classification policy of LERO is that people should be assigned to jobs that as nearly as possible fit their normal job duties, that is to provide them with the qualifications to perform the tasks that they are called upon to exercise during an emergency or during an exercise or a drill.

Q How do you distinguish that kind of classification policy from placement of personnel?

A Classification and placement usually refer to --

it's a distinction that, unfortunately, I just made habitually, but it's a distinction that's made in the textbooks and it isn't terribly material in this case. The distinction is whether you place people on a level within a job or you differentially place them into different jobs. So classification would be the appropriate term here. It wasn't a trick question.

Q You have a statement toward the bottom of page 12 that in your judgment most of FEMA's recommendations for refresher training would be more appropriately corrected by means of job performance aids such as fact sheets and check lists.

Earlier in the testimony, I think on page 9, there was a statement that "One of the purposes of FEMA's post-exercise assessment report, in your opinion, is to apply FEMA's expertise to better LERO's response capability." Do you recall that?

A Yes.

MS. MONAGHAN: Judge Frye, Dr. Lindell does not sponsor the particular answer which Mr. Miller is referring to on page 9.

MR. MILLER: You're absolutely right. Do you still agree with the statement that FEMA -- one of the purposes of the post-exercise assessment is to apply FEMA's expertise to better LERO's response capability?

WITNESS LINDELL: Even though I didn't sponsor it, I can certainly agree with that.

BY MR. MILLER:

Q Dr. Mileti, do you agree with that statement?

A (Witness Mileti) It sure makes sense to me, yes.

Q It's fair to say, I assume, gentlemen, in looking at page 12 of your testimony that at least in this instance, however, you disagree with one of the FEMA recommendations, that is, for additional training?

A I think we think we have a better idea.

Q It sounds pretty catchy, Dr. Mileti.

A (Witness Lindell) Maybe we could go into advertising.

Q Is it your conclusion, gentlemen, that no additional training is needed for LERO personnel?

A (Witness Lindell) No.

A (Witness Mileti) Absolutely not. I think training should go on and not stop.

Q Additional training.

A You mean new training?

Q I mean additional training as recommended by FEMA in its Shoreham report.

A (Witness Lindell) I distinguish among three different kinds of training here. One is in terms of

refresher training, that is for people who were trained to do something, but apparently could not remember it over a long period of time. So they need to have refresher training, that is to make that information more available to them in memory on a chronic basis.

Another area of training or another way of looking at what FEMA talked about in training is the scope of training, and that is enlarging the amount of material that is covered in training. So for a particular job description that people should get training in materials or in areas that they did not previously receive training in.

Then, finally, there are recommendations about the availability of training, and that is that people who did not get training, and emergency worker training I think was one example, should get it. There were some I believe field job classifications in which training was not available to certain people and FEMA distinguished those instances from the other instances.

Q Dr. Lindell, from your review of the Shoreham report is it your opinion that FEMA utilized these same concepts of refresher training, scope of training and availability of training?

A No, they didn't use those labels. But there is a difference between recognizing a distinction and being able to verbalize the distinction. They didn't attach those

verbal labels, but they clearly differentiated those different kinds of training in terms of the kinds of recommendations that they made.

Q Is it fair to say, Dr. Lindell, that what you did in your review of the FEMA Report for Shoreham is that in every instance where FEMA stated additional training was needed, you attempted to determine in which of these three categories FEMA really meant to make its recommendation?

A Absolutely, because the idea of refresher training, the distinction between refresher training and the scope of training, or the availability of training, is keyed to determining whether the problem would be better solved by providing job performance aids.

For example, one specific difference of opinion we had with FEMA was over the provision of the LERO identification badges in providing numbers, that is, the dose limits and specific steps exceeding dose authorizations, providing those on the back of a badge.

Because my feeling is that the frequency of retraining would have to be so great, that is, to remember very specific numbers like that, I have had experience before myself in trying to remember administrative dose limits, because I have gone from one plant to another, and I have a hard time remembering them, even a couple of weeks later.

So, I think that the solution, the appropriate solution in that case is not retraining, because it is just not sensible to have people retrained every two weeks in

those numbers.

It is better to provide on a piece of paper, or on the back of the ID badge, in some readily accessible location the information that they need.

Q Now, Dr. Lindell, when a bus driver or bus drivers get lost in their route, or can't find their way, do you believe that there you need additional training from the standpoint of expanding the scope of the training that had been offered previously?

A I can't recall an incident of a bus driver getting lost on his route. I can recall an instance of a bus driver cutting short his route, but I don't recall anybody getting lost.

Q Mr. Daverio, do you recall a bus driver getting lost during the exercise?

A (Witness Daverio) The only thing I was trying to remember -- I think it said he did not run his complete route, and I don't know if they used the word, `lost.'

You might interpret it that way, but I don't think they used that word.

Q Well, do you distinguish, Dr. Lindell, from the standpoint of the training that would be needed between a bus driver who would not have run his complete route, and a bus driver who would have gotten lost in his route?

A (Witness Lindell) I would say in both cases my

assessment would be that what the bus drivers need is maps that are better keyed to the locations, and to the landmarks that are visible to the bus driver.

For example, a lot of people are not very good at reading maps. They are too abstract.

If you have schematic kinds of maps that have visible landmarks, especially things like particular stores or groves of trees, or a church, or a parking lot, or a service station of a particular kind, those are landmarks that people can relate to, and if you have job performance aids that have clear cut indicators of where people are supposed to take actions, take a certain turn, continue through the intersection, so they can keep track, then I think you have addressed the problem that you are talking about.

Q Dr. Lindell, the bus drivers had maps at the exercise. So, you are recommending or saying that the maps should be improved? Is that your testimony?

A I would say that -- I did not go into detail on that issue, but if they were given maps -- I could distinguish among three different levels of maps. One is an ordinary road map of the area, which might be difficult to interpret.

One that had eliminated all the extraneous streets; that is, all the ones on which the individual was

not required to travel, or to make a turn decision.

And then a third level of map which would be the best, that would have the previous kind of map, plus would have specific landmarks, identifiable landmarks.

JUDGE FRYE: So, you see an equipment problem and not a training problem, in short?

WITNESS LINDELL: Well, I label them material problems.

JUDGE FRYE: Materials, but it is not training.

WITNESS LINDELL: As long as they are trained to use those maps effectively.

BY MR. MILLER: (Continuing)

Q Now, Dr. Lindell, I assume you have never driven a bus, so I am assuming that you have no idea how difficult it could be to read a map as you are driving a bus.

A (Witness Lindell) Actually, I have driven large trucks when I was at the Air Force Academy. I received a military drivers license. It equipped me for driving large vehicles.

Q Have you ever driven a bus?

A I have not driven a passenger bus.

Q Would you agree with me, Dr. Lindell, that it could be rather difficult to drive a bus, put to one side whether it is full of evacuees, just drive a bus while reading a map?

MS. MONAGHAN: I am going to object to this. This is an issue that was delved into at great length in the prior proceedings on the plan litigation.

I don't think we need to be going back over that again. The issue here is whether or not --

MR. MILLER: Judge Frye, I am simply trying to establish with this witness, based upon what he just told this Board, that you need training to drive a bus while reading a map.

It is not purely an equipment or materials need. That is my only inquiry here.

JUDGE FRYE: I think we are getting into too much nitty-gritty here. Let's move on.

MR. MILLER: If the Board believes they will stop the buses and look at the map, okay.

JUDGE FRYE: He has already said the man needs to be trained to use the map, whatever he has got.

MR. MILLER: Okay. Fine.

BY MR. MILLER: (Continuing)

Q Dr. Lindell, let's look at the bottom of Page 12 of your testimony, continuing over to Page 13. You have a statement about systemic problems, and you talk about patters of deficiencies and ARCAs.

Is it your testimony, gentlemen, that for there

to be a pattern with respect to the LERO organization, that you would think all three staging areas would have to have had experienced problems during the exercise?

A (Witness Lindell) That would certainly bolster my confidence in a hypothesis there was a training deficiency if all three areas showed the same kind of problems.

Q But with respect to my question, Dr. Lindell, if two of the three staging areas experienced problems, is it your opinion that you necessarily would not have a pattern?

A It depends upon the kinds of problems.

Q Well, you have read the FEMA Report.

A I went through the specific objectives that were associated with each of the staging areas, and there was not what I would regard as a systematic pattern that would lead me to conclude that there were training deficiencies.

Q Now, if you think that you would rather see problems at 3 of 3 staging areas to bolster your confidence level with respect to whether there was a problem, what about problems at the EOC? What criteria do you employ to determine whether problems at the EOC, or the ENC for that matter, would be systemic problems?

A That is a little bit more difficult to call, but in some cases there are specific objectives that are listed in the FEMA Report that are common to not only the EOC, but

to other areas as well.

So, in going through this I was looking at some of the specific objectives. For example, under evacuation management, that was met at the EOC. That was also an objective that was set for the field, and in two cases it was met, and it one case it was a deficiency.

Q Dr. Lindell, what are you referring to if you have numbers like that available to you?

A I am referring to some notes that I prepared.

Q Summary review of the FEMA Report?

A Yes. It is a job performance aid. I couldn't possibly remember all this information without writing it down on a piece of paper.

Q Now, on Page 13 of the testimony, Dr. Lindell, you are talking about the fact that there were some deficiencies and ARCAs noted for Patchogue and Riverhead staging areas, and you say the Port Jefferson Staging area did not display similar problems, do you see that?

A Yes, I do.

Q And so I suppose that goes to your statement that since only two of the three staging areas had problems, that you do not consider there to be a systemic problem in the LERO organizational training, is that correct?

A That is correct.

Q Now, if in fact ARCAs and deficiencies had been

identified for the Port Jefferson staging area as well, would you then conclude that there was a systemic problem in the training of LERO personnel?

A Yes, I would be very likely to. I want to go back a step and say that the fact that there were ARCAs and deficiencies at two of the three doesn't necessarily rule out -- completely rule out the fact that there was a systemic deficiency. It is possible that Port Jefferson could have performed adequately not for reasons directly related to the training program.

That is, they could have improvised a response during the exercise that would have produced adequate performance, and thus avoided a deficiency, even though there was a problem in the training program.

So, I just want to clarify that one point.

Q Dr. Lindell, from my review of the LILCO testimony in this issue, I concluded that LERO's goal is not to train a group of free thinkers, of people who would implement ad hoc responses.

Are you disagreeing with that?

A No, I am not really disagreeing with that. I guess it would be clearer if I say that people should be trained according to -- trained to respond according to the plan and procedures of the organization.

To use the equipment that they have been given,

but that doesn't preclude people from improvising during an emergency.

As a matter of fact, people very often do.

JUDGE FRYE: So what you are really saying is that Port Jefferson may have lucked out?

WITNESS LINDELL: That is conceivable, and I don't want to rule out that possibility. Given this particular instance, given the information that was available in the post exercise assessment, I don't think that that was the case.

But I don't want to rule out the possibility that that could happen in some other exercise.

I am saying it is not a strict numerical criterion. I am not going for two out of three, or three out of three.

BY MR. MILLER: (Continuing)

Q Dr. Lindell, from -- you are aware of the fact, Dr. Lindell, that FEMA defined a deficiency in its report on Page 8, as demonstrated and observed inadequacies that would cause a finding that offsite emergency preparedness was not adequate to provide reasonable assurance.

A (Witness Lindell) Now, you have not been with us, Dr. Lindell, for all the issues, but during traffic issues that were litigated before this Board, we heard from LILCO witnesses, particularly Mr. Weismantle, that there

were problems experienced with the dispatching of traffic guides from the Port Jefferson staging area, and that in fact the reason that those problems were not identified as a deficiency by FEMA was because FEMA did not observe the inadequate response by Port Jefferson traffic guides because the FEMA observers were delayed at the scene of the fuel truck impediment.

Now, assume that I am correct in what I told you, Dr. Lindell. And there was this deficiency that should have been identified at the Port Jefferson staging area. I take it that you would agree with me that then there could well be a systemic problem in the training of LERO personnel, because all three staging areas would have had problems noted by FEMA?

MS. MONAGHAN: I object to the question, to the extent it characterizes LILCO witnesses prior testimony as agreeing that there would have been a deficiency in the terms that FEMA used the word, `deficiency' in its report.

JUDGE FRYE: Just remove the LILCO part of it. You can connect it up if it is in the record. It is a hypothetical.

MR. MILLER: Fine. It is in the record, and I think the Board will recall the testimony, and I will just make my question a pure hypothetical, Dr. Lindell.

BY MR. MILLER: (Continuing)

Q Assume with me that there would, or should have been, deficiencies identified by FEMA at each of the three areas. Is it then not true that those failures could have demonstrated a systemic problem in the training of LERO personnel?

A (Witness Lindell) That is an awfully long question, and I think I even disagree. It is difficult for me to respond to that, because as I stated before, just because FEMA thinks that something was a deficiency, does not necessarily mean that I think it was a deficiency.

That is, if there was a delay in some action that was observed by FEMA, that does not necessarily mean to me that there would have been -- that that would have met the definition of a deficiency in my opinion.

Q Dr. Lindell, I am asking you to make an assumption, and I will ask you to also assume that FEMA was correct in its identification of the deficiencies.

I am asking you to assume that there was deficiencies identified, deficiencies should have been identified by FEMA at each of the three staging areas.

Given your testimony, Dr. Lindell, is it not then true that this could have demonstrated a systemic failure of the LERO training program?

A Are you saying a delay in the dispatching of which field teams, the traffic guides?

Q Dr. Lindell, my question is far broader.

A I understand that, and I can't answer the far broader question because I have a more differentiated idea of what constitutes a deficiency, and if you can't give me a specific problem that I can solve, then I can't answer your question.

Q Well, I have asked the question in terms of a hypothetical. I have asked you to make assumptions, and my question has contained the word, `could', could have indicated a systemic failure of LERO training program.

If you are unable to answer that question, fine.

A I think it is sufficiently vague question that I cannot answer that question.

JUDGE FRYE: Mr. Miller, wasn't your original hypothetical having to do with response to the fuel truck?

MR. MILLER: My original question, Judge Frye, went to the fact that the traffic guides, although very late in being deployed and mobilized from Port Jefferson, that was not identified as a deficiency by FEMA, because the FEMA observer had been delayed in waiting for LERO's response to the fuel truck impediment.

JUDGE FRYE: So it was not observed.

MR. MILLER: So it was not observed, and therefore, did not fall under the definition of FEMA as a

deficiency.

JUDGE FRYE: Dr. Lindell, would you regard delay of traffic guides in reporting to their posts as a deficiency?

WITNESS LINDELL: Not necessarily in and of itself, because it depends upon if the traffic guides are unnecessary, if I felt that people could get themselves out appropriately.

JUDGE FRYE: You don't regard that as a deficiency?

WITNESS LINDELL: It is not necessarily a deficiency.

MR. MILLER: I think there is a way. I think the difficulty we are having Dr. Lindell is the word, 'deficiency' then.

BY MR. MILLER: (Continuing)

Q Would you agree with me that if FEMA identified problems at each of the three LERO staging areas, that there then could be a conclusion drawn that there was a systemic failure of the LERO training program?

A (Witness Lindell) Okay, we are getting a little closer. Since we are taking it one step at a time, it is a little easier to address it.

The next issue is --

JUDGE FRYE: Do you agree with that?

WITNESS LINDELL: Okay, I am sorry. I can't agree with that unless I state what I mean by systemic deficiency.

If by systemic deficiency you mean systemic with respect to that issue, that is with respect to dispatching of -- the timeliness of training, training of staging area personnel with respect to the timeliness of dispatching field personnel, then if you have the same problem in all three areas, yes, it is systemic with respect to that one attribute of the training program.

JUDGE FRYE: Okay.

JUDGE FRYE: Are we at a breaking point, Mr. Miller?

MR. MILLER: Yes, that will be fine.

JUDGE FRYE: Why don't we do that? Let's take a 15 minute break.

(Whereupon, a recess is taken at 10:30 a.m., to reconvene at 10:45 a.m., this same day.)

JUDGE FRYE: Let's go back on the record, please.

MS. MONAGHAN: Judge Frye, would it be possible to excuse Ms. Goodkind for the afternoon as long as Mr. Miller doesn't have questions for her?

I've already spoken with him about that, and he has no problem with that.

JUDGE FRYE: I have no problem with it.

WITNESS GOODKIND: Thank you, Judge Frye.

JUDGE FRYE: If we are not going to be dealing with any of her testimony, I see no point -- there is no need for her to sit here.

MR. MILLER: I have no objections to that.

JUDGE FRYE: Okay.

(Ms. Goodkind left the witness table.)

MS. MONAGHAN: As I told Mr. Miller, she will be in this building so if there is some need to get her, we can get her back in here.

JUDGE FRYE: How about Mr. Pursell? Do we need to have him sit here?

MS. MONAGHAN: He's sitting right there.

JUDGE FRYE: But, does he need to, is my question, while we are on this topic?

MR. MILLER: My answer, Judge Frye, would be no, we do not. We do not.

I'm trying to focus on Drs. Mileti and Lindell today obviously. There have been a couple of occasions, as you would note this morning, where I have asked Mr. Daverio a couple of questions.

But, I suppose if the Board wanted I'm willing to have --

JUDGE FRYE: Well, I think you probably should have a LILCO witness or LERO witness.

MR. MILLER: I was going to offer that they could all go except for Drs. Mileti and Lindell, but perhaps it does make sense to keep at least one LILCO witness.

JUDGE FRYE: Well, if they are next door, you know, we --

MS. MONAGHAN: Well, I think I ought to have some say in this. It's fine with me if Mr. Pursell, you know, also works with Ms. Goodkind in the other room but I would prefer to have Mr. Behr and Mr. Daverio here with Drs. Lindell and Mileti, please.

JUDGE FRYE: All right. Fine.

MR. MILLER: I obviously have no objections to any of this.

(Laughter.)

Just leave me at least one witness.

(Laughter.)

MS. MONAGHAN: The question is, do the rest of us have to stay, too?

(Laughter.)

MR. MILLER: Well, the Board has to stay, but, Ms. Monaghan, you and Ms. McCleskey are free to leave.

(Laughter.)

JUDGE FRYE: All right. Now --

MR. MILLER: We are back to Page 13 of the testimony, gentlemen.

BY MR. MILLER: (Continuing)

Q Now, Dr. Lindell, I was exploring this issue of the different staging areas with you.

Would you agree with me, Dr. Lindell, from your knowledge of the LERO training program that the personnel assigned to the three LERO staging areas each receive essentially the same LERO training?

A (Witness Lindell) That's correct.

Q And, would you agree with me that, of course, different FEMA evaluators observed and evaluated the

behavior of the LERO personnel at these three different staging areas?

A That's also correct.

Q And, I suppose it's possible, therefore, Dr. Lindell, that the difference in the problems identified at the staging areas and the numbers of problems identified by FEMA could be attributable to the fact that different FEMA evaluators were observing and commenting upon these LERO personnel?

A Yes, it's possible. I recognize that it is possible, but I have high confidence in the ability of the FEMA personnel to observe and record the important behavior or if they did not observe it to so note.

Q To make sure I understand, Dr. Lindell, you have high confidence in FEMA's capability of observing behavior but you have little confidence in FEMA's ability to interpret the behavior they observed.

Is that a fair statement?

A No, that's not a fair statement.

Q Well, you have indicated to me that you disagree with FEMA's interpretation of each of the five deficiencies identified in the report for Shoreham; is that correct?

A That is correct.

Q So, at least in that regard you have little confidence in FEMA's ability to interpret the data they

observed; is that correct?

A That's not correct.

Q That's not correct?

A No. I don't -- I would not characterize my regard for FEMA's ability to interpret the behavior as showing little confidence.

I would say that I have high regard but I don't give them a blanket endorsement. I wouldn't do that for FEMA; I wouldn't do that for NRC observers; I wouldn't do it if they were from EPA or any other federal agency, state, local government and necessarily any other disaster researcher.

Q Dr. Lindell, we are not talking about a blanket endorsement. You specifically disagreed with each and every deficiency identified by FEMA at the Shoreham exercise; is that correct?

A They identified what they regarded as five deficiencies. I have stated that I disagree with those five.

I don't know how to characterize my general level of agreement with FEMA other than to say that I think I generally agree with FEMA but I don't agree with those five deficiencies.

I think they were problems. I don't think they were deficiencies.

Q Dr. Mileti, on Page 19 of the testimony, you set forth several reasons for why there were differences between the analysis performed for NUREG 3524 and your analysis of the Shoreham report; is that correct?

A (Witness Mileti) Yes, it is.

Q And, one of those differences at the bottom of Page 19 was because the person's who evaluated the exercise did not seek to measure your social science factors as they conducted their exercise evaluation and different exercise evaluators looked for different things depending on what part of LERO and what FEMA objective they were evaluating.

Do you see that statement?

A Yes, I see it.

Q So, I assume, Dr. Mileti, that you would agree with me that it is possible that the differences that were noted in the FEMA report with respect to the adequacy of performance of LERO personnel at the three staging areas could be attributed to the fact that different FEMA evaluators were making observations of performance by LERO personnel?

A It's a possibility. The issue is whether it's probable or not. And, I would presume, given what we've heard about how FEMA observers are prepped to go and do their work that it's probably not probable.

But, certainly there were different observers

and different people.

Q Now, back to the top of Page 13 of the testimony, the second full sentence, in fact, the second and third sentences, "What performance errors were observed tended not to be systemic. That is, when one LERO subunit did not meet, or only partially met an objective, there was at least one other subunit that did meet the objective."

Do you see those statements, gentlemen?

A (Witness Lindell) Yes, I do.

Q Is it not true that in some instances problems, even under your definition, were systemic problems?

A I don't think there is any indication of that.

Q Well, let me ask you about at least two examples that come to my mind, Dr. Lindell. Are you familiar with the fact that route alert drivers, one from each staging area, were sent out and observed during the Shoreham exercise?

A I recall that route alert drivers were sent out.

Q Do you recall that in each case FEMA concluded that the route alert drivers should have completed their routes in a more timely fashion?

A I think that is correct. Yes, I think that's correct.

Q Do you recall, Dr. Lindell, that there were two simulated traffic impediments at the exercise?

A It would be hard to forget the traffic impediments.

Q Do you recall, Dr. Lindell, that in each of these two impediments FEMA identified problems?

A Yes.

Q Now, using these two examples, Dr. Lindell, are they not examples of systemic problems identified by FEMA at the Shoreham exercise?

A I would have to go back and -- if you could cite the specific deficiency or ARCA that would help me to go back into my notes, because that's the way that I've recorded it.

My recollection is -- and I will state that as a recollection, without a specific reference. My recollection is that for the route alert drivers, it was not clear to me that -- it's not clear to me at this point that that was a training problem. And, I think it had to -- I think it was what I would regard as a procedure problem; that is, that there wasn't sufficient -- there wasn't an adequate provision prior to the exercise of either enough personnel for route alert driving so that they could accomplish the routes, you know, to shorten the routes so that they could be accomplished within the given time.

Like I say, that's my recollection.

JUDGE FRYE: Now, the traffic impediments, was

that training?

WITNESS LINDELL: In the traffic impediments? That was true for the route alert drivers. Now, for the traffic impediments, as I've said before, I have difficulty drawing any conclusions from the traffic impediments because you can't see an invisible overturned gravel truck.

JUDGE FRYE: Okay.

BY MR. MILLER: (Continuing)

Q Dr. Lindell, is it your opinion, based upon your review of the Shoreham report, that nothing associated with either of the traffic impediments indicated a training problem among LERO personnel?

A What I've said is that it's inconclusive. It -- there simply is -- there's enough confusion about what took place in the way that the impediments were simulated that it's -- at the time that I read it, I had not talked to anybody in LILCO about it. They just sent me a copy of the FEMA post-exercise assessment report.

I read that, and it looked to me at the time that I saw -- I read about it in the post-exercise assessment that there was some kind of a problem with the simulation itself. And, it's impossible for me, at this point, to separate out what was a problem with LERO from what was a problem with the way that FEMA --

JUDGE FRYE: So, you can't draw a conclusion?

WITNESS LINDELL: I said -- that's why I described it as inconclusive. I just can't draw a conclusion on that.

BY MR. MILLER: (Continuing)

Q Would you look at Answer 9 of the testimony, gentlemen?

Dr. Mileti, I'm not -- I don't mean to exclude you from any of this. As long as you don't jump in, I'm going to just keep going ahead.

A (Witness Mileti) All right. Then, I will feel free to.

Q Okay. Now, Answer 9 of the testimony, there is a statement about why individual mistakes, in your opinion, would not lead to the failure of the entire organizational response in an actual emergency.

Now, I take it -- let me ask you, Dr. Mileti, I take it that it is not your opinion that there must be a failure of the entire LERO organization before one could reach the conclusion that the training for that organization had been inadequate?

A (Witness Mileti) I would reach a conclusion that the training were inadequate if the organization couldn't achieve one of its fundamental goals.

Q Do you believe that there must be a failure of the entire organization before you can reach the conclusion

that a fundamental goal of that organization could not be achieved?

A Not the entire organization, no.

Q And, in this next statement that LERO previously analyzed the demands of the emergency situation, to what are you referring when you make that statement?

A (Witness Lindell) Well, the demands of the emergency situation include the characteristics of the hazard agent, the characteristics of the community and the characteristics of the situation.

The characteristics of the hazard agent include the -- basically are addressed by NUREG 0396 and the implications of that in terms of source term and meteorological conditions for defining the risk area.

Then, the next is characteristics of the community, things like the nature of the road net, the location of various segments of the population, the location of special facilities like schools, hospitals, nursing homes and so forth.

And, so those are the demands of the emergency, how to -- what are the characteristics of the hazard agent, what are its potential impacts on the population and who is affected and how can they respond.

Q Now, when you state that LERO has previously made such an analysis or conducted such an analysis, Dr.

Lindell, to what are you referring?

Are you referring to the LILCO plan itself?

A The analysis is reflected in the plan and the procedures and inclusive of it.

Q I'm sorry. What was that last part?

A And inclusive of it.

Q Is there anything else that you are aware of where this analysis you are discussing is demonstrated or documented by LERO?

A In the training program.

Q And, is that last opinion, Dr. Lindell, based upon your review of the FEMA report?

A No, that's more based upon my review of the videotapes and the workbooks, the materials that were provided to LERO personnel.

Q Which you have characterized as a rather cursory review; is that correct?

A Four and a half hours of reviewing training videotapes is not what I would regard as a cursory review. As far as this question of anticipating the emergency demands, as far as looking at all the things that people did; that is, if I were going to do an inspection of their training program, that is if I were some kind of an inspector, then in that sense I would characterize it as a cursory review.

But, with respect to this particular question that you are asking, I wouldn't describe it as cursory.

Q Now, later on the page, at the beginning of the last paragraph, you have a statement regarding LERO's maintenance of information and control systems. Could you tell me what systems you are referring to?

A Yes. It's -- when you are talking about organizational information and control systems, it's not a physical -- not necessarily a physical system that you can point to. It refers very often to a policy or a procedure.

So, to that extent you can see it in the procedures, in written procedures, but it's reflected in the practices of the organization.

What I'm referring to here as far as information and control systems is systems by which they can obtain information about the status of the hazard and the status of the response. So, the information and control -- the information systems for the hazard have to do with obtaining information about the magnitude of the release, about meteorological conditions.

Those are used to define what the risk area is. Then, the information control systems for monitoring the status of the response include factors such as the feedback of information to the EOC from the staging areas as to when field teams are dispatched in response to an order from the

EOC that those teams be dispatched.

It's reflected in feedback to the staging areas from the -- for example, the traffic guides in saying we are on station.

JUDGE FRYE: Does any of this have to do with individual performance? This is what the sentence you were referred to talks about.

WITNESS LINDELL: Yes, it has to do with detection of errors, any possible errors or delays, in the performance of individuals within LERO. I wanted to make the distinction first about the information systems related to the hazard versus information systems related to the response to the hazard.

MR. MILLER: Dr. Lindell, I appreciate your wanting to make all these distinctions clear for us, but if there is a way to do it in a shorter fashion, I would appreciate it only because my time is limited today with Dr. Mileti's schedule.

WITNESS LINDELL: Certainly.

BY MR. MILLER:

Q My question was could you just tell me what systems are referred to, and I think you gave me a generic answer. So let me ask you in a particular sense. With respect to bus drivers arriving late or getting lost or missing segments of their routes, could you tell me what system is in place within LERO to prevent that from happening?

A (Witness Lindell) Well, there are two different ideas here. One is preventing it from happening, which is the idea of providing adequate training materials and job performance aids. The other one is detecting and monitoring the performance of personnel as they are accomplishing their duties. That is, that as the bus drivers are dispatched from the staging areas to the bus yards and then to the transfer points that if there is information transmitted or at a certain time there is supposed to be a certain number of bus drivers at a particular transfer point, that if there is a deviation from that expectation or that expected level

of staffing, that that information is transmitted back to the staging area or back to the EOC so that the EOC and the staging area can verify that the staffing of the transfer points has been completed. That is a specific example.

Q Okay. Let's take it in the context of my example. LERO bus drivers, and let's take the example from the FEMA report of the bus driver who missed a segment of his route.

Now tell me what system is in place within LERO to detect and correct that mistake?

A Running multiple bus drivers on any particular route. That is, if one bus driver misses it, that it can be corrected by the next bus driver coming through if it's a random error.

Q And is it your understanding, Dr. Lindell, that each and every bus route within the LERO organization for those routes there are multiple bus drivers that drive those routes?

A I didn't pursue that point in great detail because it's my understanding that in general that's the case, but that gets back to the previous statement that was made about is it necessary to have lots of bus drivers and there is going to be anybody on the bus, basically the question that Dr. Mileti raised.

Perhaps Mr. Daverio can answer that question

more direct correctly.

A (Witness Daverio) My rememberance of the plan is that we do have multiple bus runs per route. I don't think there is any route that has only one bus run on it.

Q Now, Dr. Lindell, what is the system that would detect and correct performance errors by bus drivers if you assume that 3/8ths of the LERO bus drivers perform inadequately by doing such things as missing segments of their routes?

A (Witness Lindell) If one were to assume that 3/8ths of the bus drivers missed portions of their routes, it's not an inevitable conclusion that the portion of a route that was missed by the first bus driver through would be missed by the second bus driver through.

Even if the route were missed by the second driver through, which I think is a very improbable even given the quality of the improvements or given the recommended improvements in the maps, even assuming that that did happen, people within the EPZ are given a telephone number to call if they need transportation assistance. So they can determine for themselves, phone that message in and get transportation assistance assuming that they did not have friends, relatives, neighbors or anybody else who could give them transportation assistance.

Q So your answer implies that the people who would

not be picked up because buses did not show could just simply get on the telephones and start calling LERO? Is that your testimony?

A Yes.

Q Do you think that is a logical conclusion about what people would do in an emergency?

A Mr. Miller, I don't think there is going to be anybody left there to call LERO on the telephone. I think they are going to have other ways out. I think people are going to get out other ways.

Q So you agree with Dr. Mileti that buses are not needed in any event?

A They are desirable. They are not essential.

A (Witness Mileti) And if they are needed, the person could just get on the next bus as it comes through.

Q If it not one of the missing 3/8ths.

Now let me ask you, Dr. Lindell, and I don't want to spend much time on this, but the traffic guides that were noted by FEMA to have arrived substantially late at their post in the field and that was in fact identified as a deficiency as well, what particular system within LERO would detect and correct that performance error?

A (Witness Lindell) The route spotters for one and other traffic guides if they were at the appropriate locations, but certainly the route spotters would be able to

detect if there were any traffic backups along the routes.

Q Now, Mr. Behr, if you want to add something, you can add it.

A (Witness Behr) The traffic guides are also required to report back into the staging area when they arrive at their traffic control point.

Q Now I assume, Mr. Behr, from that answer that at some point in time someone within LERO if they had not heard from particular traffic guides would reach a conclusion that traffic guides had not reported to their post; is that what you're saying?

A Yes, I think that is a fair conclusion.

Q How long would have to go by before someone within LERO would make this sort of conclusion?

MS. MONAGHAN: Judge Frye, it seems to me that we are going into a lot of detail that doesn't really have a whole lot to do with whether or not there are systems designed to detect and correct performance errors.

JUDGE FRYE: And, moreover, it seems to me that the systems that are being identified don't have much to do with training.

MR. MILLER: Judge Frye, I'm keeping this limited and I'm focusing just on the traffic guides, and I'm focusing on the traffic guides because FEMA identified that as a deficiency.

But the testimony here says that even if you have performance mistakes, not to worry, we have systems that will detect and correct those mistakes.

JUDGE FRYE: Right.

MR. MILLER: So I would like to find out from these gentlemen what those systems are because I don't believe there are any such systems, and I would limit that just to this traffic guide inquiry.

JUDGE FRYE: All right. Let's get the traffic guides out of the way and move on.

WITNESS BEHR: I think the answer to your question is that there is no specific time limit spelled out in the procedures. However, there have been cases and it has happened in a number of cases where when a traffic guide has not reported back into a staging area that the lead traffic guide has radioed to someone else in the field, be it a route spotter or another traffic guide, to please see if he could ascertain whether that traffic guide has arrived so that they determine whether the need to dispatch another one.

BY MR. MILLER:

Q And my question is can you recall, Mr. Behr, how much time had to go by before anyone was prompted to take such action?

A (Witness Behr) No, I don't recall.

Q Okay, let's move on then.

Can you tell me, Dr. Lindell or Dr. Mileti -- first of all, you seem to be using as a test for whether or not individual performance errors have any impact this concept of severe and irreversible consequences. Is that a fair statement, that there has to be severe and irreversible consequences before individual performance errors have any significance, in your opinion?

A (Witness Lindell) Yes. That relates to the issue of protection of the public health and safety. That is, once somebody receives an exposure, you can't reverse the fact that they received an exposure to radioactive material.

Q So hypothetically at least, Dr. Lindell, if a bus driver fails to show up his route and as a result people are delayed getting out of the EPZ and receive some exposure, under your definition that would constitute a severe and irreversible consequence; is that correct?

A Only assuming all of the above, yes.

Q So in my example, we have an example of an individual performance error that would result in severe irreversible consequences?

A No. What you said was in the first case if the bus driver failed to show up and that resulted in people not being able to get out in a timely manner and that further

resulted in exposure to radioactive material, then that would be a problem.

Then in your second statement you changed it and you're talking about assuming that there was a problem, and that's not the case.

Q Because you assume that people would get out by some other means such as with friends or neighbors?

A That's right.

Q Now you also refer on page 14 and also on page 13 at the bottom to backup mechanisms for accomplishing critical tasks. Are these backup mechanisms really different from the systems you've described to me?

A (Witness Mileti) I think those backup mechanisms are duplications in the ability to perform certain functions.

A (Witness Lindell) That's different from information and control systems. Information systems are designed to diagnose the state of something, whereas backup mechanisms for controlling or performing have to do with implementing some action.

So that, for example, if a siren fails that a route alert driver can go out and alert the people in that particular area that was supposed to have been covered by the siren.

Q So, Dr. Lindell, the dispatching of route alert

drivers to the exercise is an example of a backup mechanism in the LERO organization, correct?

A That's correct.

Q Can you think of any other examples? Just give me another one, if you would.

A (Witness Mileti) To help with evacuation there are a whole lot of other examples. For example, the traffic guides, the buses and mainly the EBS stations to get people moving on their own, the ambulance and ambulettes and how they might help.

Q Let's just take the first one, Dr. Mileti. Let me, if you could briefly, how the traffic guides are a backup mechanism.

A To facilitate evacuation, the primary mechanism is people getting in the car and going on their own.

Q Oh, I see. So under your definition the entire LERO organization is really a backup mechanism; is that correct?

A (Witness Lindell) No, that is not correct. With respect to traffic management and transportation support, I would say that that generally is the case, but as far as prompt notification of the public and dissemination of warning mechanisms one cannot reasonably presume that the public will intuit for themselves when is the appropriate time to take protective action.

Q I gather, Dr. Lindell, from your answer though that to a large extent you would believe the entire LERO organization is a backup mechanism?

A In terms of numbers of personnel that are assigned to functions, to perform specific kinds of tasks, I would say most of the LERO personnel in terms of numbers are assigned to backup mechanisms for accomplishing evacuation, yes.

Q Under your theory, Dr. Lindell and Dr. Mileti, and this ties back to a question that Judge Frye asked you, Dr. Lindell last week I think regarding the necessity of the LERO organization, is it your opinion that the LERO organization is really not necessary, with the exception perhaps of notification of the public functions?

A (Witness Lindell) I would say that it is desirable to have the LERO organization, that is that in order to provide reasonable assurance that the public health and safety can be protected.

Q Is it necessary, not desirable, but is the LERO organization necessary, in your opinion?

A Under certain circumstances it could be necessary. Under many other kinds of circumstances it would probably not be absolutely necessary.

Q Under the circumstances that were simulated during the exercise, including the timing of the release, do

you believe the LERO organization is necessary?

A (Witness Mileti) Mr. Miller, emergency planning is a good idea generically and in that the LERO organization involves emergency planning for nuclear power plants, yes, it's necessary and its useful. Can we and have we seen evacuations that have been successful by luck without emergency planning, yes, but we shouldn't count on that. Emergency planning is useful.

Q So you, Dr. Mileti, at least believe that the LERO organization is necessary?

A I think emergency planning generically, which would subsume LERO and others, yes, absolutely.

Q And you would agree, Dr. Mileti, that LERO is also required by NRC regulations and guidelines; is that correct?

A Yes, I have that distinct impression.

Q Now, Dr. Lindell, do you disagree with Dr. Mileti?

A (Witness Lindell) No, I don't disagree with Dr. Mileti.

A (Witness Mileti) I think what Dr. Lindell may have been saying is that there are certain things in emergency planning that are more important than other things and the, in my opinion, prime important thing is any emergency plan is getting warnings to the public. I call

that a warning system.

Q And, Dr. Lindell, let's wrap this up. With respect to the specific scenario that was exercised at Shoreham on February 13, 1986, under those circumstances you believe that the LERO organization is a necessary organization?

A (Witness Lindell) It's difficult for me to answer that in terms of saying it's a necessary organization because under those circumstances I would say that the circumstances involved in the scenario involve what I would regard as a rapid onset of an emergency situation. If there was a rapid escalation of the emergency, I think under those cases it is reasonable to believe that LERO may have been necessary.

Social scientific prediction is not sufficiently precise that we could say with exact precision that it would have been necessary or to say with precision that it would not have been necessary. It's in the ball park. That is, it's quite possible that LERO would have been necessary in that kind of emergency.

There is some possibility that an evacuation could have been accomplished without LERO providing transportation support and traffic management.

Q Is it your opinion, gentlemen, that all critical tasks to be performed by the LERO organization have backup

mechanisms associated with them?

A (Witness Mileti) Yes.

Q Now the last paragraph of Answer 9, and I'm not page 14 of the testimony, states that "LERO has multiple methods for detecting and interpreting unexpected situations during an emergency and for monitoring the quality and timeliness of each subunit's performance of its emergency response assignments."

Are these methods any different from the systems and the mechanisms that we've previously discussed?

A (Witness Mileti) Mr. Miller, I apologize. Where is that again?

Q The first full paragraph on page 14.

A I see it. Thank you.

Could repeat the question again, please.

Q The methods that you mentioned on page 14, are they any different from the systems and the backup mechanisms that we have previously discussed?

A (Witness Lindell) Maybe I could clarify. The point of this paragraph is really directed toward unexpected situations, whereas in the previous paragraph we were talking about routine demands; that is, that once you dispatch, once you give an order to the staging areas to dispatch field teams, it's a routine event that you expect that the field teams will be dispatched. The only question

is now long it will take and then when it is that the field teams have arrived on station.

In this paragraph beginning with the word "Finally," we are talking about unexpected events.

(Witness Mileti) For example, in reference to the road impediments, if that truck had really been turned over, there were multiple ways that that could have been detected in a real emergency. There are route spotters driving around in a real emergency, evacuation is being monitored by bus drivers -- the ones that are in their buses driving them -- traffic guides. The public can certainly notice an overturned gravel truck, they call in. The news media might have covered that.

It's important to have that kind of redundancy.

Q I would like to ask you just to focus on the timeliness part of this statement on Page 14. If you could, tell me what specific methods, if any, LERO has in place to ensure that unexpected situations are detected in a timely fashion?

A The more redundancy you have, the quicker one of them is going to pick it up.

Q Give me an example other than the road impediments, if you could, Dr. Mileti?

A Can I pick the unexpected event?

Q Well, I would like to have one from the exercise if you could do that.

(The witnesses are conferring.)

Dr. Lindell, maybe I could help speed this up. There are a number of free-play events that were used by

FEMA. I think it's somewhere in the neighborhood of 15 or so during the exercise.

I'm just asking you to pick any one of those.

A (Witness Lindell) Yeah, I'm sorry. I'm just drawing a blank right now. I can't think of a specific example.

Q Mr. Daverio, can you think of one?

A (Witness Daverio) Let me give you an example, and it may not be precisely to your question. It's in our testimony on the Ridge school bus.

Q Okay. That's a free-play incident. I will take that one.

A Okay. And, let me tell you how that would be -- if you remember how it went that day, they dispatched a school bus. They called the Superintendent a couple of times, made sure the bus was there, and at the end if they would have got to the Coliseum they would have known it was a school bus rather than no bus. Remember, there was controversy over whether you could find -- whether the bus ever got there or not.

So, I think that sort of is in the same type of ball game of what Dr. Lindell was talking about.

Q Okay. My only question is to give me, or describe to me, the method that LERO employs to ensure that in a timely fashion you can detect that there are problems

with, for example, the school bus being dispatched to the school?

A By the -- and I can't remember the title of who called, but -- and I could look it up for you, but he called the school Superintendent and said: Did the bus get there?

So, he would have got a timely feedback if the bus wasn't there and then could have taken the appropriate action.

Q Now, once the bus left the school and proceeded to the reception center, if a bus would be delayed in reaching the reception center what mechanism within LERO would get that information in a timely fashion to the LERO organization?

A At that point, I'm not sure that I would be concerned about timeliness because they are already moving out of the zone. You are doing what you can for them.

I don't know that a timely notification by the procedure on the day of the event would be required at that point. So, I wouldn't worry about it at that point, Mr. Miller.

Q Mr. Daverio, the timeliness could be a concern unless you are aware of whether or not that bus loaded with school children had, in fact, exited out of the zone. And, you would not know that until information was received by LERO from the destination point that the bus had arrived; is

that not correct?

A That's correct. And, I'm assuming they are trying to move out as expeditiously as possible. So, I don't know why a feedback that they couldn't get out or that they were in traffic someplace is a critical knowledge that's required at that point in time.

(Witness Lindell) I would just amplify on that.

JUDGE FRYE: Let's move on to a new subject. I think this is all fine. It's background information, but I don't see any relation to training.

MR. MILLER: Well, I don't dispute that, Judge Frye. In fact, I have basic problems with this entire testimony of Dr. Lindell and Dr. Mileti as to how it relates to training.

And, to be blunt with the Board, I'm not sure that much, if any, of this relates to training. But, it's here in the testimony.

JUDGE FRYE: Yeah, it is. You are quite right.

WITNESS LINDELL: Would you like an explanation of that? It will take two sentences.

JUDGE FRYE: How does it relate to training?

WITNESS LINDELL: It relates to training in that the existence of backup mechanisms defines the training criterion. That is, that if you have no backup mechanisms in order to have adequate reliability of performance then

training has to be 100 percent effective.

If you have backup mechanisms, then it is not necessarily the case that individual training has to be 100 percent effective. That is, you can --

JUDGE FRYE: It gets back to perfect performance?

WITNESS LINDELL: Even if -- okay. Even if you don't require perfect performance on behalf of the organization, if you select any criterion other than perfect performance, if you state as your performance objective -- if you develop an index of, say, 90 percent -- if you could define what constitutes 90 percent effective and say, okay, that's our criterion for the organization, then in order to relate individual training criteria to the performance of the organization you have to understand how various backup mechanisms, divergent or redundant mechanisms -- if you have no divergent or redundant mechanisms, you need a higher training criterion.

If you have more, then a lower performance criterion is acceptable on the basis of individuals.

JUDGE FRYE: Oh, that's great. But, the contention talks in terms of certain specific failures that occurred during the exercise that demonstrate that the training was inadequate.

Now, is it your position that the failures

occurred but don't demonstrate that the training was inadequate?

WITNESS LINDELL: That's exactly it. That's exactly it.

It's our way of saying how we define inadequate.

JUDGE FRYE: Okay.

MR. CUMMING: Judge Frye, I would like to point out for the record that in the contention language, it repeatedly uses the word "deficiency," although, in fact, that was not how the FEMA post-exercise assessment describes some of the training inadequacies.

So, I think it should be clear that the Intervenors have, in fact, described in the contention by their frequent use of the term "deficiency" language which doesn't directly correlate to the FEMA post-exercise assessment.

MR. MILLER: Judge Frye, I don't have the contention in front of me. But, I think we were rather careful -- or at least tried to be -- when we referred to particular deficiencies in capitalizing the word 'deficiency."

JUDGE FRYE: All right.

MR. MILLER: And, sometimes I suppose the word "deficiency" was used to indicate problem.

JUDGE FRYE: We can certainly sort those out.

MR. MILLER: Judge Frye, I am more than happy to try to look for a way to shortcut all of this testimony sponsored by Drs. Lindell and Mileti. Maybe I can try this one.

JUDGE PARIS: Can I inquire of something of Mr. Cumming?

MR. MILLER: Sure.

JUDGE PARIS: In two out of the four deficiencies, FEMA called for additional training, Mr. Cumming. Go ahead.

MR. MILLER: Thank you, Judge Paris.

BY MR. MILLER: (Continuing)

Q Dr. Lindell and Dr. Mileti, is it your basic assertion in this testimony which goes approximately from Pages 10 to 20 that for the LERO organization, training is somehow not necessary?

A (Witness Mileti) Absolutely not.

(Witness Lindell) No.

MR. MILLER: Okay. I'm not sure, Judge Frye, how to not go through this testimony. I don't understand that answer in light of some of this testimony, but I don't think I have a choice but to try to go through the testimony that's before the Board unless the Board is willing to tell me that the Board is not going to attribute any weight to this testimony.

MS. MONAGHAN: Judge Frye --

JUDGE FRYE: Well, I'm not sure the Board is willing to take that position.

MS. MONAGHAN: Judge Frye, Mr. Miller could have moved to strike the testimony --

JUDGE FRYE: I think he did.

MS. MONAGHAN: -- on grounds that it was relevant -- not this particular portion of it, he did not.

And, to now take the position that it ought to be stricken, it's too late for that right now. What I would like to say here though is that what the Intervenors' position is with respect to this contention is that one needs to look at all of these individual performance errors and by aggregating them one comes up with a problem with the LERO training program.

The position that we are taking here, and that all of these analyses goes to, is that that's not the way that you ought to be looking at it; that the way in which to examine the issue here is to look at overall performance of an organization and to try to assess that as opposed to bean counting the number of errors that occurred the day of the exercise, because it doesn't give you -- by doing that, you don't rate in any way how important or how significant the error was. You place no weight on that.

And, by looking at the three analyses that have

been provided here which look at it each from a different perspective, the purpose was to give the Board a different way of looking at it and looking at the whole organization and really to be able to come to the conclusion as to whether the organization could function and, therefore, whether the training program was effective in permitting that organization to carry out its role.

MR. MILLER: Judge Frye, I don't want to argue with counsel for LILCO. And, I will try to keep this as short as I can.

JUDGE FRYE: Let me just explore something. I don't know whether this will be helpful or not.

We spent a good deal of the morning now talking about various backup mechanisms and redundancies and things of that nature. In your opinion, are these essential if one is to conclude that the training program now in place is adequate?

WITNESS LINDELL: Yes, I think so.

MR. MILLER: I guess I will continue, Judge Frye.

JUDGE FRYE: I guess you will.

MR. MILLER: I will try to do this in as short a fashion as possible. I want it understood though on the record -- I think it is clear on the record, but I wasn't moving to strike this testimony. I was responding to Board

concerns about the pertinent --

JUDGE FRYE: The materiality, right.

MR. MILLER: -- testimony.

JUDGE FRYE: Yes.

BY MR. MILLER: (Continuing)

Q Let's look at Answer 10 on Page 14, gentlemen. Dr. Mileti, would you give me a brief definition of the terms "coordination" and "cohesion" which are used frequently throughout the remainder of your testimony?

A (Witness Mileti) It's hard to translate sociology into English, but I'm pretty good at it so I will try. But, forgive me if I'm sloppy at it.

Those who have sought to study whether organizations can achieve their goals, which is for all practical purposes the definition of organizational effectiveness, have concluded that the key factor in determining whether an organization can achieve its goals or be effective is cohesion of the organization and coordination of the organization.

And, those factors are determined largely by those that I sought to examine when I did my analysis.

JUDGE PARIS: What is cohesion?

MR. MILLER: That was the question.

WITNESS MILETI: Having it together.

JUDGE PARIS: Having it together?

WITNESS MILETI: In a --

JUDGE PARIS: Like in, they got it together?

JUDGE SHON: What's the difference between that and coordination? Coordination seems awfully close to having it together, too.

WITNESS MILETI: Those two concepts overlap a great deal, and different scholars call them by different names.

BY MR. MILLER: (Continuing)

Q But, there is a lot of overlap between those two terms, then? That is, coordination and cohesion?

A (Witness Mileti) There is a lot of overlap between most sociological terms and those, too, yes.

Q Now, in your NUREG study, Dr. Mileti, you focused primarily on the cohesion and the comprehensiveness between organizations and within organizations; is that correct?

A We focused on the factors we thought affected or determined whether or not emergency response would be effective. And, in reference to your word "comprehensive," we focused in reference to what we thought were the tasks that needed to be accomplished or the goals.

Q The focus in the NUREG study on comprehensiveness, was that a different focus than your use of the term "coordination" in this testimony?

A Coordination would be how well the organization did. Comprehensiveness would define at what.

JUDGE FRYE: At what?

WITNESS MILETI: Yes.

JUDGE FRYE: Coordination is how well they did, and comprehensiveness is --

WITNESS MILETI: What they were trying to achieve.

JUDGE FRYE: -- what they were trying to achieve?

WITNESS MILETI: Yes, whether they addressed all the emergency demands or not.

BY MR. MILLER: (Continuing)

Q Now, I take it, Dr. Mileti, that in your opinion the three factors on Page 14; the first factor, a clear understanding about what to do; the second factor, flexibility in approach; and, the third factor, a good idea about the overall inter-organizational emergency response, that in your opinion those three factors can be found within the LERO organization?

A (Witness Mileti) Yes.

Q Do you believe that any of those three factors does not exist within LERO?

A No, although on the basis of my assessment I have less information about flexibility in the FEMA

assessment than I do about the other two.

Q Do you have sufficient information about flexibility to have drawn any conclusions?

A Yes. I feel there is a basis for it in the LERO organization. I recollect helping put it there, and I observed some indicators of it when I did my assessment of the FEMA assessment.

Q Is it fair to say that with respect to these three factors you have less confidence in sufficient flexibility in approach existing within LERO than the other two factors?

A Absolutely not, no.

Q When you told me you had less information then, what was the point?

A Because there was less information recorded by the FEMA observers when they recorded what it is they recorded. And, therefore, there was less evidence of it. But, there was some evidence of it.

And, additionally, I wouldn't expect to find as much flexibility demonstrated in an exercise as I would in a real emergency.

Q Does flexibility in approach, Dr. Mileti, include the ability to, when necessary, carry out measures in an ad hoc fashion?

A I would define flexibility as the ability to not

take the implementing procedures so seriously that when a situation pops up that they don't cover, that someone can't innovate and try to cover them.

Q So, you are telling me, Dr. Mileti, that flexibility would require that personnel not adhere religiously to procedures but know when to deviate from such procedures?

A Sometimes procedures have flexibility built into them as well. But, you can't take an emergency plan too seriously.

If the plan could cover every contingency that could occur, you probably could avoid the emergency to begin with because you would know about everything that was occurring.

JUDGE FRYE: But, in short, you are saying at some point you have got to throw your procedures in the wastebasket and innovate?

WITNESS MILETI: At some point, you have to be able to think, too.

JUDGE FRYE: All right.

WITNESS MILETI: And, training and planning -- one of the -- I think Dwight Eisenhower said it first, the most important part of planning is the experience at being engaged in planning and thinking things through as they might occur in an emergency.

You can't go by the book all the time.

Q Now, Dr. Mileti, toward the bottom of Page 14 there is a statement that the factors we have been discussing have been empirically illustrated as relevant to exercise assessments at nuclear power plants.

Do you see that statement?

A (Witness Mileti) Yes, I do.

Q And, can you tell me the basis for your statement that these factors have been empirically illustrated?

A The NUREG report I reference in the testimony.

Q Is that the one example where, to your knowledge, these factors have been empirically illustrated?

A Yes, I think that's what I just said.

Q I mean, are you aware of any other studies or reports?

A No, I'm not.

Q The test exercise in the NUREG -- I keep referring to the NUREG, Dr. Mileti. You will assume with me that I'm referring to NUREG/CR-3524, okay?

A I do that automatically, yes.

Q Now, the test exercise that was involved in your NUREG study, was that a FEMA-graded exercise such as the FEMA exercise at the Shoreham plant?

A It was a FEMA-graded exercise, yes.

Q Of a commercial nuclear power plant just like

the Shoreham plant?

A Owned by a utility, yes.

Q So, you would draw no real distinctions between the different exercises, the one in your NUREG study and the one at Shoreham?

A I would not, no.

JUDGE PARIS: So, NUREG/CR-3524 was an analysis of an actual exercise?

WITNESS MILETI: Part of it was, yes.

JUDGE PARIS: Okay. That's what you meant when you said it had been empirically illustrated?

WITNESS MILETI: That's correct.

MR. MILLER: Judge Frye, I think we are up to Suffolk County Exercise Exhibit 57. I'm not sure.

JUDGE FRYE: 56 was the FEMA report on Indian Point. Does that sound right?

MR. MILLER: Yes. I think that's right. 55 was the Shoreham report and 56 was the Indian Point.

JUDGE FRYE: 56 was the report on Indian Point and was the last one, as I recall.

MR. MILLER: Okay. Let me mark as Suffolk County Exercise Exhibit 57 a copy of the NUREG/CR-3524 which Dr. Mileti and I have been discussing.

The first page of this simply has the title of the NUREG, and it's dated -- the date of issue, May 1984.

It's a multi-page document.

(The document referred to is marked as Suffolk County Exercise Exhibit Number 57 for identification.)

MR. MILLER: I would also like to hand out at this time and have marked as Suffolk County Exercise Exhibit 58 a copy of another multi-page document which -- the first page of which has at the top in handwriting "EOC." And then four columns, Objective and then FEMA Assessment and then FEMA Evaluation and then Cohesiveness Rating and then finally the column entitled "Comments."

(The document referred to is marked as Suffolk County Exercise Exhibit Number 58 for identification.)

JUDGE FRYE: Do you have any clips?

MR. MILLER: We will get some.

JUDGE FRYE: I think we should, because this has so many parts to it.

BY MR. MILLER: (Continuing)

Q Now, Dr. Mileti, the document we have identified as Suffolk County Exercise Exhibit Number 57, does this appear to be a copy of the NUREG/CR-3524 report?

A Yes, it sure does.

Q And, what we have identified as Suffolk County Exercise Exhibit 58, could you describe that to me?

A This is an overview of how I tried to view the FEMA post-exercise assessment in terms of the concepts I would want to put on and eyeglass as a sociologist as illustrated in the NUREG report.

Q Let me ask you first about Exhibit 58, Dr. Mileti. The handwriting in the margins and in the columns I assume is your handwriting?

A No, it's not.

Q Is it an assistant of some sort?

A Absolutely, yes.

Q And, I gather that the typed text are various portions and sections of the FEMA report for Shoreham?

A That have been photo-reduced I believe.

Q Now, does Exhibit 58 contain the entire FEMA report?

A I believe it leaves out the conclusions of the FEMA report.

Q When you tell me the conclusions were omitted, what conclusions are you referring to?

A What they concluded was a deficiency and their general overall conclusions and the title page and that sort of thing.

Q The sections that discuss the actual deficiencies and ARCAs, that has been omitted? Is that what you are telling me?

A Yes. I think that was excluded. And, I believe we also included in our analysis data on -- or, there may have been reference in the FEMA report that for my purposes served no purpose.

Q Can you just give me an example?

A The congregate care centers we excluded from our analysis, because they weren't really exercised. There was no data, so to speak.

Q Now, Dr. Mileti, I assume that Exhibit 58 was the basis for Attachment F to the LILCO testimony; is that correct?

A Yes, it was. It had a whole lot to do with it.

Q Well, am I correct that the data that is noted in the right-hand written column under "Cohesiveness Rating" was what's gathered and compiled on Exhibit 58 and then basically transferred to the format on Attachment F?

A Yes.

Q So, there should be a direct correlation between your cohesiveness ratings and Exhibit 58 and those identified in Attachment F?

A Except for the mistakes that were made that we tried to correct I believe before I was here as part of a package that was submitted to everybody.

Q Now, Dr. Mileti, what I would like for you to do, if you could do this, is to explain to me briefly how

you identified your cohesiveness ratings. And, I would be glad for you to demonstrate that with the very first example on Page 1 of Exhibit 58.

Let me just explain, my problem is that I see a bunch of underlining under the text of the FEMA report but I see no correlation between that underlined -- those underlined passages and the ratings that you identify in your column.

Is there a way that I can obtain that information or would it require you to go through each and everyone of these sentences and tell me?

A I could tell you how we did it for each and every one.

Q That's going to take far too long, I suspect.

A If you want a copy of what I brought with me today, you are more than welcome to it. But, in order for me to answer your question, I need to look at how I make the links.

Q Maybe you could just do it for the first one.

A I'm happy to.

Q The very first EOC-1 objective.

A What I tried to do -- and I need to give a short background -- was read the FEMA report from the point of view of what I, as a sociologist, thought would make a difference in terms of judging whether or not LERO could

accomplish its emergency response objectives. In order to do that -- thank God FEMA doesn't employ sociologists -- I had to take an ax to the FEMA report.

I put on my sociological eyeglasses, and I used this information to look for the kinds of factors I, as a sociologist, would want to discover. The first one, EOC-1 on this attachment, deals with role definition.

And, in Appendix F we gave it a cohesive rating within the organization; that is, the EOC that was being looked at. In reference to role definition, we wanted to know whether or not people knew what their job was.

And, I read the paragraph in regard to EOC-1 to see if there was any information that would lead me to make a conclusion that people knew what their job was. It says in that paragraph, "Initial notification of the Unusual Event..." et cetera, and I could read all that's underlined and there was enough there to make me conclude that in reference to notification that it worked; and, thereby conclude that the people engaged in notification knew that they had that job. If they didn't know that, notification wouldn't have occurred.

Q Could I just interrupt a second, Dr. Mileti? Do I assume then that the first passage which is underscored relates to role definition?

A It told me that someone knew enough to get

notification accomplished. Initial notification of the unusual event, et cetera was received by the LILCO supervising service operator in Hicksville, New York and on. And, it also goes on to describe other things in relation to verification of the notification, et cetera.

Q Your conclusion about role definition being cohesive for this particular objective, does that relate just to that first sentence of the FEMA report extraction?

Or, do you go beyond that to this entire two paragraphs?

A No. I would have included other things in there in reference to whether or not people knew their roles in order to have notification occur. But, an emphasis would have been on that first sentence.

JUDGE FRYE: Okay. So, if I understand you correctly, the entire underlined material in the first two paragraphs relates to all of these factors which have gotten a C rating over in the right margin?

WITNESS MILETI: That's correct. And, as it should be, if it's not underlined, then it didn't have anything to tell me about factors that aren't listed there.

JUDGE FRYE: I see. Some sentences or some statements might have a greater relationship to one factor as opposed to another?

WITNESS MILETI: That's right. And, it was

qualitative in the sense that I had to read the paragraph, knowing what I was looking for to make the judgment.

What I just tried to do with this was nothing more than formalize my reading of the FEMA assessment and catalogue what I was looking for when I was reading it. That's all it is.

BY MR. MILLER: (Continuing)

Q Dr. Mileti, I understand. You read the FEMA report sections, you made a judgment about what that report said to you about these cohesiveness factors, and you indicated that judgment in the column that's entitled "Cohesiveness Rating," correct?

A I had assistance in doing that. And, I would make one other correction, and that was that a C score, which stands for cohesiveness, means that it would contribute to that, not that it represented cohesiveness but one of the factors I would want to take into account in drawing a composite picture about whether or not that factor as a whole existed in LERO as a whole as illustrated by the FEMA report.

Q Okay. My first question, Dr. Mileti, is is there any way that I, just by looking at what has been identified as Suffolk County Exhibit 58, can determine which of your cohesiveness factors relate to which particular portions from the FEMA report?

A Absolutely, yes.

Q I can? Can you tell me how I can do that?

A I had to do it myself in getting ready to come here, because I thought it would be fair for me to be able to illustrate that.

And, I've done it in two ways. One is, in my testimony I've labeled every entry that I've made with a little footnote; and, then I've broken it down by EOC; and, then I've written the explanation of what came from where on this set of notes.

And, then I got tired of doing it that way, I'm sorry to say, and started color-coding things and color-coded entries on the FEMA assessment so, if asked, I could tell you where everything came from.

Q Dr. Mileti, I wasn't clear perhaps. My question is, can I look at Exhibit 58 and make the kinds of determinations that you apparently have made?

A If you are an organizational sociologist, you probably could. I take it you are not.

Q Let me just ask you this, Dr. Mileti. Are you offering your notes to me so that I can draw some conclusions about Exhibit 58?

A You can have a copy of them. I'm not going to let you take the only copy.

You might want to ask me a question, and I need

them.

MR. MILLER: Does counsel for LILCO have any objection?

MS. MONAGHAN: No objection to that.

MR. MILLER: Perhaps, Judge Frye, I can get a copy right at the lunch break and I will try to look at these notes during lunch.

I can't make any connection by looking at Exhibit 58, and I would like to be able to do that.

JUDGE FRYE: Is it color-coded, Dr. Mileti? Your notes are color-coded?

WITNESS MILETI: Half of them are, half of them aren't.

MR. MILLER: But, I will look at the notes over lunch and maybe I can draw some correlation and I can obviously then shorten any examination I would conduct on this exhibit.

I just can't understand the exhibit by just looking at it in the format that it was provided to us by counsel for LILCO. So, I would like to look at these notes during the lunch break and see if I can help formulate some opinions in my own mind.

JUDGE FRYE: All right.

MS. MONAGHAN: I assume that you will then make a copy of them if you need to retain your own copy, Mr.

Miller?

MR. MILLER: Oh, certainly.

MS. MONAGHAN: Okay.

JUDGE FRYE: If you are going to make copies, maybe you could make three copies for the Board as well. If we are going to get into it -- I mean, if you are going to use it, I think it might be helpful for us to have it.

MR. MILLER: I'm hopeful that we are not going to get too deeply into it, especially given the fact that I have to finish with Dr. Mileti today. I'm not sure we would be able to do that.

Let me look at the notes. If I see that we are going to get into this, I will make copies for the Board.

WITNESS MILETI: If I may add something, I didn't mean for this to confuse anybody. I read the FEMA report and formed an opinion and just tried to illustrate on what my opinion is based and took notes.

JUDGE FRYE: Yeah. I think I understand your notes. I think I understand your notes.

MR. MILLER: It's just that I think we are going to need the notes so that we can understand Exhibit 58. That's what I think I'm hearing from Dr. Mileti.

And, so I will look at the notes, and if I'm going to go into Exhibit 58 in any detail I will try to make copies of the pages of Dr. Mileti's notes. The color will

not show up on a xerox, I suppose, but --

MS. MONAGHAN: No, it will not. I sincerely doubt it unless you have access to a xerox machine that will xerox colors. There are such things but I don't --

JUDGE FRYE: There is probably one somewhere.

MR. CUMMING: Judge Frye, just so I understand what has transpired for the time when my witnesses appear, counsel for Intervenors has introduced an exhibit that he doesn't understand?

And now he has asked for personal notes of the witnesses to explain it. I thought the time for that --

JUDGE FRYE: Counsel has identified an exhibit which he doesn't understand because it was prepared by the witness.

MR. MILLER: Yes, but that's --

MR. CUMMING: I assume it was turned over during the discovery to --

MR. MILLER: It was not, Mr. Cumming, and that's the problem. Let me just state for the record --

MS. MONAGHAN: Yes, it was.

MR. MILLER: -- since Mr. Cumming has brought this up, Judge Frye, this is part -- let me back up. Discovery was concluded some time ago, as everyone in this room knows. We never were given nor made aware -- we were never given nor were we ever made aware of this analysis by

Dr. Mileti.

At some point in time, precisely on March 20th, 1987, we were served with LILCO's testimony on Contention 50. Then, for the first time we were at least aware of the fact that Dr. Mileti had conducted an analysis based on NUREG 3524. We still, however, had never been given this document that has been labeled Exhibit 58.

JUDGE FRYE: I don't want to --

MR. MILLER: I then filed a motion to strike with this Board which --

JUDGE FRYE: The Board is familiar with what has happened. And, I don't want to get into a rehash of what happened in the past.

Dr. Mileti is going to furnish you his notes so you can look at them at the lunch hour, and we will proceed from there.

MR. CUMMING: I didn't want to rehash it either. I just wanted an explanation. Now, I have an explanation from counsel.

JUDGE FRYE: All right.

MR. CUMMING: Counsel for FEMA has never seen this document before either.

JUDGE FRYE: That's Exhibit 58.

MR. CUMMING: It's potentially -- as all exhibits introduced that were not produced in discovery

before this Board -- an issue which FEMA has not yet established a position on. Before our witnesses go on, we will with respect to the nature of the review or what is required by the Nuclear Regulatory Commission and its adjudicatory body for FEMA witnesses to be able to testify to.

Normal procedure in a hearing would be, where an exhibit had been marked and entered, it would be fair subject for cross or direct examination of FEMA witnesses. Now, my witnesses have never seen this document either.

JUDGE FRYE: Well, if your witnesses haven't seen it, they obviously can't testify about it, you know. I think --

MR. CUMMING: I'm hoping that's the position my Agency takes. Thank you.

MS. MONAGHAN: Judge Frye, let me just make one thing clear, and it's just based on something Mr. Cumming stated.

This was turned over to Suffolk County. It was not turned over during the course of the normal discovery period but afterwards.

JUDGE FRYE: Let's get off of that subject. Let's get off of that subject.

I think we are getting bogged down in procedural matters. Dr. Mileti, let me -- I was flipping through your

testimony. Frankly, I think we have gotten into so many details here that I'm losing the forest in the trees.

Can you summarize for me, or refer me quickly to your bottom line with regard to this effort that you have accomplished?

JUDGE FRYE:

WITNESS MILETI: Certainly.

(Pause while the witness reviews his documents.)

MS. MONAGHAN: I think if you look at page 20, Question 16, that might be what you're looking for.

WITNESS MILETI: That's exactly what I just found,and my bottom line is in fact there.

JUDGE FRYE: And that would be based then I gather on the summary sheet to the attachment, Attachment F, "Summary of Cohesiveness Factors All Facilities," is that correct?

WITNESS MILETI: Unfortunately, no. It's based on that plus all the pages behind it.

JUDGE FRYE: But this summarizes the pages behind it?

WITNESS MILETI: In fact, it does summarize it, but I state in my testimony that I don't really consider all those scores additive. They really are nominal level of data, and the intervals between them can't be assumed to be equal, and therefore I don't want to treat those numbers as if they are real numbers. So I need to take into account the qualitative rankings that precede them.

JUDGE FRYE: Maybe I'm jumping ahead. What do you mean by qualitative rankings?

WITNESS WATTS: Whether an organization on the

basis of what I read when I read the FEMA report appeared to me as if it was messing up totally being able to achieve a goal or somewhere in the middle, and so I ranked them in terms of let's just say A, B and C. In this case we used the ranking C, PC and U, but it might as well be A, B and C, and when you add an A and a B together and then add a C in, it doesn't necessarily mean free.

So in that sense I don't consider the summary table, those numbers to be real numbers in the sense that two is twice one.

JUDGE FRYE: I wouldn't have thought so, no. The "C" means cohesive, does it not?

WITNESS MILETI: It would contribute to cohesiveness.

JUDGE FRYE: Contribute to cohesiveness?

WITNESS MILETI: Yes.

JUDGE FRYE: And PC would partially contribute I assume?

WITNESS MILETI: That's correct.

JUDGE FRYE: And U would not?

WITNESS MILETI: There was a problem, yes.

JUDGE FRYE: Okay. So the weighting really is in the three categories?

WITNESS MILETI: That's correct.

JUDGE FRYE: And in order to come up with a

favorable conclusion, which you have come up with, could these, and I'm reluctant to say numbers, could the recurrence of C, PC and U have changed very dramatically and still permit you to come up with a favorable conclusion?

WITNESS MILETI: I wanted to look, and what I did look at were the patterns of them rather than the numbers of them.

In other words, I wasn't trying to do a critical incident analysis in any way, and I'm not comparing the numbers of P's to the numbers of C's. I have a summary table because it helped me make judgments going across categories of concepts.

JUDGE FRYE: So you would really be when you went through the attachments to the summary table or the material behind the summary table, you would be looking through to pick up patterns?

WITNESS MILETI: That's right. If one tore them out of the testimony and laid them side to side from left to right and made a running look across a particular category of concepts like internal organizational cohesion or intra-organizational cohesion, a bird's eye view of the pattern, which is a qualitative array of what occurred in translating the FEMA assessment, as I chose to, is what I really need to make my assessment.

JUDGE FRYE: So basically you would be looking

at things like this intra and inter-organizational flexibility formalization for each one of the various things that FEMA looked at, each one of the various functions of LERO that FEMA looked at?

WITNESS MILETI: We certainly tried to do that, but in reference to that particular one there was very little information reported.

JUDGE FRYE: Right. I see that there is nothing on this first line that I looked at.

All right, I think I understand a little better what you were doing.

MR. MILLER: Judge Frye, I appreciate the Board's inquiry. I'm still optimistic that we will get through this today with Dr. Mileti. I will, like I said, try to take his notes during the lunch break and look at this Exhibit 58 in that context.

My initial question was just to ask Dr. Mileti if there was some way I could relate the underlying passages to particular the particular ratings.

JUDGE FRYE: I understand what you were trying to do. I just was getting, as I said initially, getting lost in the trees and I wanted to see if I couldn't bring the forest into focus a little bit.

MR. MILLER: Maybe we should just take the lunch break now.

JUDGE FRYE: I was going to suggest that it's probably a good time to do that.

(Whereupon, at 12:10 p.m., the hearing recessed, to reconvene at 1:45 p.m., the same day.)

AFTERNOON SESSION

(1:45 p.m.)

JUDGE FRYE: Back on the record.

Whereupon,

DENNIS M. BEHR

CHARLES A. DAVERIO

MICHAEL K. LINDELL

and

DENNIS S. MILETI

a panel of witnesses called on behalf of LILCO resumed the seats at the witness table and, having been previously duly sworn by Judge Frye, were further examined and testified further as follows:

JUDGE FRYE: Dr. Mileti's notes, were they helpful?

JUDGE PARIS: Did you complete your analysis, Mr. Miller.

MR. MILLER: No, sir. But in my typical characteristic manner of trying to be as honest as possible with this Board, I will tell the Board that in the space of a lunch break it was simply impossible to really try to digest all of the materials that we were handed right before the lunch break.

We made a very, very quick review of the materials. I think the best thing to do in light of Dr.

Mileti's time constraint is to simply try to go through Exhibit 58 without using or relying upon the documents that were provided to us before the lunch break. Dr. Mileti will have those available to him and I suppose if he gets a pertinent question where his notes are useful, he can refer to his notes and try to make that information available to everyone.

But there just simply wasn't time to conduct that kind of review during a lunch break. So we provided the notes back to Dr. Mileti and we made no copies of any of the notes of any kind for ourselves or anyone else.

MS. MONAGHAN: Judge Frye, just so it's clear, I think what Exhibit 58 shows is Dr. Mileti's correlations on a paragraph-by-paragraph basis, and in order to establish some of these cohesiveness factors it may be frequently relate to more than one sentence.

What Dr. Mileti's notes permit him to do is to try to relate more on a sentence-by-sentence basis, but I think Exhibit 58 by itself provides his thinking on the cohesiveness factors.

JUDGE FRYE: That was the impression I got, but let's go a paragraph or two. I would like to get a feel for this.

MR. MILLER: Fine. Can I pick the examples, please?

JUDGE FRYE: Yes.

(Laughter.)

BY MR. MILLER:

Q I will ask you, Dr. Mileti, about some of your ratings for Patchogue, and to be honest with you, I'm asking you about Patchogue because I know from my review of the FEMA report that Patchogue was one of the staging areas where there were some problems identified. So it's not a completely random selection on my part.

Why don't we turn to the Patchogue section of your Exhibit 58. The pages are not numbered. It's about half way through I think.

JUDGE FRYE: Is there an objective number or something that goes with it?

JUDGE PARIS: Is all of Patchogue together?

MR. MILLER: Yes. It says "Patchogue" at the top in handwriting, and it's maybe two-thirds through it.

JUDGE FRYE: And it's all clipped together, if I'm not mistaken.

MS. MONAGHAN: Right, it's all stapled together in one packet labeled "Patchogue" on the top. Each of the different units that were analyzed are separately indicated by their name at the top and all the pages that deal with that unit are stapled together.

BY MR. MILLER:

Q Now, Dr. Mileti, would you look at Patchogue staging area 4, objective staging area 4.

(Witness complies.)

On Exhibit 58 you have one rating, that is interorganizational, and you have it rated as a "C" for cohesiveness resource adequacy. Could you explain to me and to the Board how you derived that rating for those particular two paragraphs, or one paragraph from the FEMA report?

A (Witness Mileti) Yes, I can. I read what FEMA provided in reference to SA-4 for Patchogue and singled out the following three sentences or thereabouts on which I based that judgment which I'll explain when I get done reading those sentences.

The sentences were "The Patchogue staging area met the objective of demonstrating adequate space, parking area, equipment and supplies to support operations, SA-4. All operations were conducted on the first floor which was large enough to comfortably accommodate approximately 400 emergency workers."

And then going down to the sentence after that next one, "Two large parking lots are adjacent to the staging area. All equipment was kept in a locked storage room in the basement. The entire inventory as stated in OPIP 5.2.1 was verified."

I read those statements and we made the judgment that that was indicative of there being adequate resources there and that that was relevant in reference to what I had categorized as the interorganizational network or organizational field of organizations that responds to emergencies because that was set up for interaction between organizations.

Q Now, Dr. Mileti, could I ask, first of all, in your opinion, how does any of that relate to training?

A My general thesis in doing all of this was that in order to make an assessment about whether or not there is a fundamental flaw which was part of the contention in the training program, one would need to look at in reference to the exercise the good things that happened as well as the mistakes that happened rather than just the mistakes.

In order to conclude whether or not there is a fundamental flaw, I wanted to look at the good, the bad and what was in the middle, and I wanted to look at the good and bad and what was in the middle in reference to the concepts that my discipline and I as a sociologist think is important in terms of judging whether or not an organization can be effective because I think the purpose of training is to make an organization effective at accomplishing the goals it sets out to accomplish.

Q Dr. Mileti, is it fair to say that in wanting to

look at the good and the bad you did that irrespective of whether it was a training need or problem identified or a non-training need or problem?

A I looked at the whole ball of wax as it was revealed in the FEMA assessment in order to make a judgment about organizational effectiveness, and that would include anything that was relevant to training, and it would also include things relevant to in this case space or resources, which is why I catalogued it that way.

Q Now another follow-up question, Dr. Mileti. In that paragraph you were reading there is a statement you did not read which says at the bottom "However, only one first aid kit was available. It is recommended that consideration be given to acquiring more first aid kits as well as additional goggles, gloves and boots."

Now does that not indicate that perhaps resource adequacy could have been better than it was determined to be on the day of the exercise by FEMA?

A That indicates that somebody thought that there was only one first aid kit available and that they recommended that someone should consider if they need more.

Q Plus additional other equipment, goggles, gloves and boots?

A That's correct.

Q Now why is it that that did not impact your

rating so as to at least result in a PC or partially cohesive rating?

A I didn't think it was that central. It could have resulted in a PC, but there was so much of the other positive stuff that seemed more important in terms of organizational effectiveness that I judged it to be a "C".

Q Could I ask you, Dr. Mileti, to look at the staging six objective, which is further down on the same page. Let me ask you just with respect to resource adequacy again where again you have rated that as "C" or cohesive. Could you tell me what portions from the FEMA report supported your rating in that regard?

A The main portion was the following sentence. "The plan complement of guards was posted at all three entrances and sign-in badging was implemented properly."

Q Now, Dr. Mileti, at the end of this paragraph which is on the next page of Exhibit 58 it states "It is recommended that a guard should be stationed at this location and that this fire escape should be designed as a guard post."

Can you tell me why that statement did not again at least result in a rating of partially cohesive rather than cohesive?

A Because I judged that by and large there was resource adequacy.

Q Could you look at staging area eight under Patchogue, Dr. Mileti, and let's try looking at a different factor, communications ability which you rated as cohesive.

Can you tell me the particular portion of this paragraph that led you to that conclusion?

A It appears that it is part of a sentence that is read as follows, "And directed all operations through his principal subordinates."

Q That demonstrated communications ability to you?

A Yes, as well as there are some other things that could have been there, but in terms of my color coding, that's how it's coded.

Q Dr. Mileti, did you perform this analysis, or did your assistant perform this analysis?

A We both did -- well, my assistant that I used was Vicky Pallimiato. She did it. Then we talked and she did it again, and then the two of us sat down and did it again.

Q Did the results change from the three different times that you did the analysis?

A Absolutely. That is why we had some changes that we had to submit at the beginning of submitting this week when I wasn't here.

Q Does this person work for you at Colorado State?

A No. I think she is the Director of Training for

LERO.

Q Is she a trained sociologist?

A She has a bachelor's degree in anthropology and sociology, and she does speak sociology which made it easy for us to get along.

JUDGE FRYE: Dr. Mileti, does one need to be a trained sociologist in order to do something like this?

WITNESS MILETI: I think that -- yes. The answer is yes. I think in having a look at the FEMA assessment with the purpose of making conclusions about abstract sociological concepts one is best to have some training in sociology, but it's not that difficult. You certainly could sit down and talk with a sociologist for a while.

I have no problem in doing it and in making judgments because I think I understand what these concepts mean and what they're driving at, but I understand also that it's difficult for non-social scientists to sometimes understand the elaborate jargon that we can use.

BY MR. MILLER:

Q Dr. Mileti, can I ask you about staging area 10 objective for Patchogue. It's on the same page we were just looking at. You again rated resource adequacy as "C" or cohesive. Is it fair to say from my review of that paragraph that you base that upon the sentence "When the

radio of one traffic guide failed the traffic guide found a telephone and called the staging area"?

A Partly, yes.

Q What else did you base your rating upon?

A The objective of demonstrating the ability to communicate with all appropriate field locations and personnel was met.

Q Can you tell me, Dr. Mileti, when you have an explicit statement by FEMA that a radio failed why again that did not result in at least a rating of partially cohesive?

A I thought it showed, and that's why we have a "C" also in adaptability because that illustrated that that problem that was presented was able to be dealt with.

Q I understand why perhaps you would have rated this as a cohesiveness of adaptability in that regard, but with respect to resource adequacy should you not have rated this as partially cohesive at most?

A No, I don't think so at all because a replacement radio was promptly dispatched. There are always going to be failed radios whenever radios are used.

Q How do you define partially cohesive, Dr. Mileti?

A Well, in the original NUREG report that we did we didn't have anything in the middle. Partially cohesive

or something that would indicate that something was wrong, but not totally wrong is basically the offerant that we used, that is, somebody set out to do something, for example, and had trouble doing it, but then it finally got done. Partially cohesive, I never intended to be a good score. I mean it indicates that something was wrong, but not totally wrong.

Q And then in the NUREG analysis there was no such rating; is that correct?

A No, that's correct. We didn't do that.

Q How would you distinguish partially cohesiveness as a rating from neutral as a rating?

A Neutral in the NUREG report was used to signify when the field researchers couldn't form a consensus about how things went, and there was no neutral score given in the assessment we did on the FEMA exercise of the Shoreham assessment -- or Shoreham exercise.

Q But for neutral -- oh, I see. When there was no data available you just rated that as a zero; is that correct?

A And then we left the zeros out on the tables that we -- I mean there was no data available. So therefore we couldn't make a judgment on that.

Q So in Attachment F of the testimony any time something has been left blank, that indicates no data in

your opinion was available?

A We couldn't find an indicant in the FEMA assessment that could lead us to conclude something in this matrix, nor would there be data on everything in the matrix.

Q It appears, Dr. Mileti, from my review of Attachment F that there are a large, large number of factors where there was no data available to you; is that a fair statement?

A There are a large number of blanks where we had nothing from which we could infer any of these sociological concepts.

Q Let me ask you a different kind of question, Dr. Mileti, Patchogue field 6, that objective. You rate knowledge for that objective as PC or partially cohesive under interorganizational. Can you explain to me why knowledge in this case based upon this particular paragraph of the FEMA report was an interorganizational factor?

A I'm going to have to read this. I've got orange down and there is no orange here. My color code has failed. Let me take a look.

Q I'm looking at Patchogue field 6.

A I'm sorry, I was looking at SA-6. Okay, I see orange. I read the following section of the FEMA assessment. "However, only one traffic guide out of 14 who were interviewed at nine TCPs knew the location of the

reception center, and one traffic guide thought that the general public was to be directed to the EWDF. It is recommended that all traffic guides be trained to advise motorists with questions to tune to the EBS radio station, WALK FM for the latest information on all matters related to the emergency, including the location of the reception center."

A Now I have two questions, Dr. Mileti.

First of all, why is it that you believe that statement regarding the knowledge of LERO traffic guides constituted an interorganizational factor?

A The traffic guides are talking about or potentially interacting with the public in reference to information about the reception center and in reference to talking about the EBS station. And, therefore, there is an element of interaction or communication across boundaries of the organization.

Q So, Dr. Mileti, even though the only personnel referenced were LERO personnel you consider that to be an inter-organizational factor?

A (Witness Mileti) Oh, absolutely. I took an ax to LERO as well in terms of defining what was an organization for the purpose of this analysis and what wasn't, in that in my opinion LERO is more than an organization.

I view it as an organizational network; that is, the organizational response network that was designed to replace. Since one organization doesn't respond to an emergency, a multitude do; and, therefore, I defined it as a multiplicity, or view it as a multiplicity of organizations or a network of organizations.

Q Dr. Lindell, do you agree that you can view LERO in this manner?

A (Witness Lindell) Yes, I do. As a matter of fact, I think I said something to that effect last week. That was the discussion on emergent multi-organizational networks.

Q Can you explain to me, Dr. Mileti, why you have a statement by FEMA that 13 out of 14 traffic guides evidenced a lack of knowledge with respect to particular information that the public may need to know, that you concluded that merely indicated partially cohesive rather

than uncohesive?

(Witness Mileti) Well, I wouldn't say merely indicated, because I again consider PC as not a good score. But, one traffic guide knew and, therefore, some training did occur, some functioning of the training program did occur in that regard.

Q Is there a reason though that this was not rated as uncohesive or a U?

A Because there was some success with it.

JUDGE FRYE: If I followed that, then it would mean that in order to get a C you would, in essence, have to have perfect performance under that particular element.

WITNESS MILETI: Not necessarily perfect. This seemed to be something in the middle.

JUDGE FRYE: And a PC is also something in the middle?

WITNESS MILETI: That's what I meant to say, a PC is something in the middle.

JUDGE FRYE: Oh, I misunderstood that. And, then a C -- that would imply to me then that a C indicates that they got it completely correct.

WITNESS MILETI: Not necessarily, which is why I don't define these as additive scores.

JUDGE PARIS: To get a U, would you have assigned a U if none of the traffic guides had known where

the reception center was?

WITNESS MILETI: That's probably the case. They would have had to totally botch something up.

JUDGE SHON: Or, would it have to be that one of the traffic guides knew how to direct traffic in order to get a U?

WITNESS MILETI: They probably would have gotten several U's for that in reference to these concepts, because one sentence could indicate several things.

And, if a traffic guide didn't know how to do traffic and didn't show up because they didn't know they were supposed to do traffic, I would have given them a U in reference to knowledge as well as a U in reference to role definition.

BY MR. MILLER: (Continuing)

Q Dr. Mileti, let me just follow up with the Judges' questions, if I could.

It seems to me that if you could look at the ratings you have contrived on a scale that in order to have received a U or uncohesive rating there is only that one small part of the scale at the very end that could have been brought into play.

In other words, you would not give a U or uncohesive rating unless it was basically total failure with respect to a particular aspect of the FEMA report; is that

correct?

A I wouldn't say total failure. I think we gave out possibly some U's that were better than that.

Q But, in this case you --

JUDGE PARIS: Well, in this case, it's essentially total failure, isn't it? I mean, the fact that one knew where the reception center was saved them from getting a U; isn't that right?

WITNESS MILETI: But they got a PC, which I consider a bad score as well. That's correct.

BY MR. MILLER: (Continuing)

Q So, in this case you thought there had to be total failure of all 14 traffic guides not knowing the information?

Is it fair to say, Dr. Mileti, that on the other end of the scale is the C or cohesiveness rating but that with respect to a cohesiveness rating it would not take a perfect performance to receive that kind of rating under your analysis?

A That is fair, because I would never expect perfect performance.

JUDGE FRYE: But, it would have to approach it, wouldn't it, in order to earn a C?

WITNESS MILETI: I would never expect perfect performance. So, I don't know if I would expect it to

approach it.

JUDGE FRYE: But, to approach that level --

WITNESS MILETI: It would have to be substantially better than one out of 14.

JUDGE FRYE: Okay.

BY MR. MILLER: (Continuing)

Q Let me ask you, Dr. Mileti, hypothetically, if this statement would have read that 13 of the 14 traffic guides knew the location of the reception center, would you then have rated this for knowledge as a C for cohesiveness?

A Probably.

Q If the statement would have read that 12 of the 14 knew the location of the reception center, would you have rated this as a C for cohesiveness under knowledge?

A Probably.

Q How far down do you go before you go to the PC rating with respect to this particular sentence?

A It wasn't that precise.

Q Would 10 of the 14 knowing the location still result in a cohesiveness rating?

A It could have. Maybe yes, maybe no.

JUDGE FRYE: At that point, we would be getting into a transition area essentially?

WITNESS MILETI: It seems less clear.

BY MR. MILLER: (Continuing)

Q So, you are getting close to some point around 10 or 14 to maybe thinking about giving them a PC or partially cohesive rating?

A It would depend a great deal on the specific task here. And, I think it's getting a little cloudy there. This was a judgment.

JUDGE SHON: Dr. Mileti, in your view is knowing where the reception center is, the knowledge of where the reception center is located, that a portion of the traffic guides training, a portion that is essential to his performing his job?

WITNESS MILETI: Yes, it is.

BY MR. MILLER: (Continuing)

Q Dr. Mileti, with respect to the sentence we have been looking at with these traffic guides, given what you told me earlier regarding your communications ability factor, isn't it fair to say that you could have also given a PC to the traffic guides with respect to communications ability, because those traffic guides would be expected to, under certain circumstances, communicate the information they were aware of to the public?

A Is this in Field 6?

Q Yes.

A The main thing the traffic guide should know is how to guide traffic.

Q I understand. But, looking at this particular statement in the FEMA report, could you not have also have rated communications ability of the traffic guides, and if you would have done so would you not have also provided a PC rating to that factor?

A No. I think we tried to focus on the main task of the traffic guide.

If this had said, for example, one out of 14 traffic guides knew how to direct traffic, that would have been an U beyond a shadow of a doubt. And, if it had said one traffic guide out of 14 knew how to -- or, didn't know how to direct traffic, we probably would have classified it as a C. And, we tried to focus on the main function unless there was some indication.

But, again let me just clarify that this is nothing more than the notes to represent what was going on in reference to these concepts as I was reading the report.

Q Can you tell me, Dr. Mileti, with -- I just maybe want to do another one of these and then we will move on -- reference to the Patchogue Field 9 objective, which is the next objective in Exhibit 58, you rate for this paragraph -- this is one where a deficiency was identified by FEMA --

JUDGE PARIS: Where are you?

MR. MILLER: Field 9 for Patchogue.

JUDGE PARIS: Field 9?

MR. MILLER: Yes.

BY MR. MILLER: (Continuing)

Q For knowledge, under intra-organizational, you acknowledge as PC or partially cohesive. What particular statement in this paragraph led you to that conclusion?

A The four bus drivers dispatched from the Patchogue staging area were evaluated. They knew that they were bus drivers. And, then we can go on and it says, "...although one of them missed part of his assigned evacuation route. More confusion was evident on the part of the other drivers. One driver proceeded to the wrong transfer point, and completed his route only after being prompted by the Federal evaluator. The other driver took over two hours to get to his transfer point from the staging area because he initially went to the wrong bus garage."

And that is basically why we gave them a PC>

Q Now, Dr. Mileti, did you tell me that part of the reason that you looked at the knowledge factor for this paragraph was because the four bus drivers knew they were bus drivers?

A That's actually why I would say that they had good role definition or gave them a C for role definition. The latter part, which you can't see, which is the yellow part, is why we gave them a PC.

A few bus drivers didn't quite have the act together but some did.

Q If I understand this, Dr. Mileti, you are telling me that anyone in LERO that knew what their job assignment was or is would receive a C rating for role definition under your analysis?

A Absolutely. That's how I define that concept. And, that's one of the major problems in emergency response. Many people don't -- when you don't have emergency planning -- know what their job is and then those jobs, when there are no emergency plans, sometimes don't get done.

Q And, with respect to your knowledge rating, Dr. Mileti, despite all the problems identified by FEMA regarding the performance of these four bus drivers, again I guess from your scale, because there was not essentially total failure, you decided to rate this as PC or partially cohesive rather than U for uncohesive; is that correct?

A That's correct. But, again PC is not a good score.

Q Is there any way, Dr. Mileti, from looking at your analysis as set forth in Attachment F or in this Exhibit 58 that one could determine on the greater scale of things whether PC tended to be more toward the upper end of the scale which would be cohesive or the lower end of the

scale which would be an uncohesive rating?

A No, you can't, because they are all listed as PCs, and I wouldn't recommend it, because again these labels are nothing more than labels.

Q Can you tell me, Dr. Mileti, for Field 10, the next objective, why even though there is a statement about the dispatch of inadequate equipment there was no rating for resource adequacy under your analysis?

A Could you tell me what sentence you are looking at?

Q I would be looking primarily at the entire second part of the paragraph beginning with, "Second, the Road Crew was not informed that the impediment was a multiple vehicle accident..."

A Fine. I see it.

Q Essentially through the end of the paragraph.

(The witness is looking at the document.)

A Well, I have a note on the page that the EOC got a U for it, but I think that might be in reference to communication. And, I would like to check that just to make sure.

But, in looking at it right now, it probably should have gotten that code.

JUDGE PARIS: U for communication; is that what you are saying?

WITNESS MILETI: That's what I didn't look up. I should go and look at that.

BY MR. MILLER: (Continuing)

Q Well, I was asking about resource adequacy, why you did not apparently rate resource adequacy for this particular paragraph, given the statements about the equipment that was dispatched by LERO?

A As a U rather than a PC?

Q Well, it's not rated at all under -- the way I read Exhibit 58, you have a rating for clarity but not for resource adequacy.

A And, what I said was in reference to this somebody got a U. And, I would have to -- according to my note, I would have to go and look in reference to where it was placed.

And, then I said I think it probably should have been a U rather than a PC.

Q Maybe we are miscommunicating, Dr. Mileti. I'm looking at Patchogue Field 10.

A Yes, I'm there.

Q I don't see the factor, resource adequacy, listed.

JUDGE FRYE: I think what Dr. Mileti is saying is that resource adequacy may have gotten a U that hasn't been reflected on this exhibit. Is that -- am I correct?

WITNESS MILETI: That may be somewhere else, and I would have to look. And, I'm not sure.

BY MR. MILLER: (Continuing)

Q It should be reflected on Attachment F?

JUDGE PARIS: I would like for you to tell me why I didn't get -- why communication wasn't entered? If anything deserves a U, it seems like to me communication in this one does.

WITNESS MILETI: Yes, sir. I agree. And, I think we gave the EOC a U on that.

JUDGE PARIS: Yeah. Oh, okay.

WITNESS MILETI: Rather than Patchogue, since that's where --

JUDGE PARIS: Okay. Where would that show on your Attachment F?

WITNESS MILETI: Well, I would have to look. For example, it could be EOC-17 with inter-organizational communications ability. But, I would have to look that up. I can't tell by just looking at this.

There are many other U's in reference to the EOC.

JUDGE FRYE: But that's the only U under the communications ability that I see.

JUDGE PARIS: In other words, one down there under the inter-organizational --

WITNESS MILETI: That's right. So, that may be it. Let me take a look.

(The witness is looking at a document.)

MS. MONAGHAN: I think if you will look at the portion of EOC-17 that is in Suffolk County Exhibit 58 which is about four pages into the EOC portion of that, you will see that that does, in fact, deal with the traffic impediments issue and that that was coded in Dr. Mileti's analysis as a U under communications ability in the inter-organizational network section.

(The witness is looking at a document.)

BY MR. MILLER: (Continuing)

Q Dr. Mileti, I want to ask you, not Ms. Monaghan, to testify about this rating for Patchogue Field 10. The EOC-17 objective that was just pointed out, you did -- do you have that in front of you, sir?

A I did but --

Q Well, why don't you just -- why don't you explain to me again, is it your understanding that you rated communications ability as a U for this particular factor, looking at Patchogue Field 10 under EOC rather than Patchogue?

A Yes, it is.

Q Now, that's the point that Judge Paris raised, although I note that the U that was pointed out was given

under intra-organizational rather than inter-organizational.

Does that make a difference?

JUDGE FRYE: There is also one under inter-organizational.

MR. MILLER: Oh, okay. You are right, Judge Frye.

BY MR. MILLER: (Continuing)

Q Let me ask you to go back to my question about resource adequacy.

I've looked at Attachment F, and there is no rating for resource adequacy under Patchogue Field 10. So, is that just a mistake in your analysis?

A I think I've already said three times that there could have been a negative mark there, yes.

JUDGE PARIS: Could have been or should have been?

WITNESS MILETI: Should have been.

MR. MILLER: Thank you, Dr. Mileti. Judge Frye, I think I've explored this as much as I need to unless the Board has questions.

JUDGE FRYE: I have some questions, but I'm not sure that this is the appropriate time to get into them. You have got more to go, I gather.

MR. MILLER: Oh, yes, sir. I was just trying to follow up on the Board's inquiry about how to interpret this

data on Exhibit 58.

JUDGE FRYE: Yeah. I think we are happy with it as it now stands.

BY MR. MILLER: (Continuing)

Q Dr. Mileti, under your analysis that is reflected in Attachment F, was it possible to have taken a portion of the FEMA report which resulted in a finding of a deficiency by FEMA and yet not attribute any U or uncohesive ratings to that portion of the FEMA report?

A Absolutely. And, vice-versa. And, it happened in both directions.

Q What's the other direction?

A Where FEMA didn't find anything or didn't classify something as a deficiency and we zapped it.

Q Did you do that with respect to objectives having been fully met under FEMA's analysis?

A I don't remember, but it's possible.

Q Are you telling me that with respect to statements in the FEMA report that resulted in ARCAs that sometimes even though that was just an ARCA by FEMA you could have found an uncohesive or U rating?

A I believe that's possible, yes.

The reason is, FEMA and I would have been looking for something different.

Q I take it that it's also possible, Dr. Mileti, that when you had even deficiencies as identified by FEMA that under your analysis you could have found at least some factors that received C or cohesiveness ratings; is that correct?

A That's absolutely correct, yes.

Q What about when FEMA was unable, or failed, to evaluate or observe particular LERO performance? How did you take that into account in your analysis?

A If FEMA didn't write anything about it in the report, I had nothing to read and, therefore, I couldn't take it into account.

Q And that would get a zero rating or no data, no listing at all in Attachment F?

A Yes, it would.

Q Can I ask you, Dr. Mileti, if you would look at Port Jefferson Objective Field 10, which is the next to the last page of Exhibit 58?

(The witness is complying.)

And, for Field 10 under Port Jefferson there is a notation under FEMA Assessment, "Not Evaluated."

A I'm sorry, I didn't understand your question.

Q I'm just asking if you would turn to that please

in Exhibit 58, Port Jefferson Field 10 where you have noted under FEMA Assessment "Not Evaluated."

Do you see that, sir?

A Okay. I finally got the two sheets. Now, what do you want me to find on them, please?

Q Now, as is clear from FEMA's report, this objective was not evaluated by FEMA because this is the one where the FEMA evaluator was delayed in awaiting LERO's response to the traffic impediments.

Now, if it was not evaluated by FEMA, how is it that you nevertheless determined that there were four ratings, all indicating cohesiveness under your analysis?

A Because there were things there that I could read and make some conclusions about these concepts from. That is, the statement under the category "FEMA Evaluation," those two paragraphs. It was information for me to use.

Q So, as long as there was information in the FEMA report, you then applied your analysis to that information?

A Absolutely.

Q Thank you. Dr. Mileti, in the Attachment F to the testimony, I just want to ask you a quick question about the very first page of Attachment F entitled "Summary of Cohesiveness Factors, All Facilities."

I assume, Dr. Mileti, that this first page simply summarizes all the factors that are listed in the

Attachment F charts; is that correct?

A Yes. If you laid the charts out, end to end from left to right, this would be a bird's-eye view.

Q So, it simply tabulates the charts of Attachment F?

A That's correct.

Q Now, could you just briefly define for me, or tell me, the difference between intra-organizational relationships, intra and inter-organizational flexibility and inter-organizational network, the three columns you have here?

A Yes. Intra-organizational factors are factors inside of what has been defined as one organization.

Intra-organizational flexibility is the flexibility within an organization. Inter-organizational flexibility would be the flexibility in dealing between organizations, that cross organizational boundaries.

And, inter-organizational network are inter-organizational factors in which more than one organization was involved.

Q Now, Dr. Mileti, from our discussion of Exhibit 58 there were, however, times when even though it was just performance of LERO personnel being commented about by FEMA, you determined that that indicated something about inter-organizational network; is that correct?

A Absolutely, because again I define FEMA (sic) as more than one organization, as an organizational network.

Q You mean LERO?

A I'm sorry, although you could almost say the same thing about FEMA.

(Laughter.)

Q What I would like to know, Dr. Mileti, is how that -- given that statement, how is it that any performance commented upon by FEMA remained within your category of intra-organizational relationships?

A Because many of the things that they spoke about in the assessment dealt with what I would consider intra-organizational aspects of how we went about analyzing LERO's performance that day.

For example, the EOC was defined as an organization. And, so if there were a comment about what was going on inside the EOC; that is, somebody inside the EOC doing something inside the EOC, that was an intra-organizational factor. But, if it was how the EOC interacted with a staging area, for example, or another organization as we divided them up, then we counted it as an inter-organizational factor.

Q If you have a relationship between the EOC and the staging area, would that fall within inter-organizational flexibility or inter-organizational network?

A That would have been inter-organizational.

Q Yes, flexibility or network; or, could it be either?

A I'm sorry. Could you repeat the question?

Q I'm looking at your first page of Attachment F.

A Yes.

Q Would that fall within inter-organizational flexibility or inter-organizational network, or could it have been either?

A I'm sorry. Could you ask me what is what again?

Q If you looked at a relationship or activity between, for example, the EOC and the staging area?

A It depends on what it was that was described. If it gave information in reference to flexibility, then we took it as flexibility. If it gave information in reference to another one of these concepts, we took it as that.

And, in some cases one sentence gave information on several concepts.

Q Any activity, Dr. Mileti, that was observed and reported on by FEMA within one unit of LERO, for example, a staging area or the EOC, would, however, have stayed within your intra-organizational rating?

A Unless it pertained to flexibility, and then it would have gone into the flexibility category which on Attachment F we have combined inter and intra-organizational

flexibility, because there was so little recorded in the FEMA assessment that we could pull out in reference to that concept.

Q Dr. Mileti, could I take the total number of factors that you rated for any of these three categories as reflected on Attachment F and try to come up with a composite for a percentage calculation score, if you will?

Can that calculation be done and mean anything, in your opinion?

A It might mean something to you if you did it. It would mean nothing to me. And, I don't recommend that you do it.

Q Okay. So, let me just ask you as an example. If you look at this smallest category, intra and inter-organizational flexibility, and I total up all the factors which you seem to have rated, I get 11 factors. And, I see that you have five of those 11 rated as either partially cohesive or uncohesive.

And, I do the division and determine that in 54.5 percent of the time your ratings resulted in a cohesive rating but in the other 45.5 percent of the time there was a partially cohesive or uncohesive rating, would that mean anything to perform that sort of calculation?

A It would mean absolutely nothing. And, I also wouldn't recommend that you do it for the other categories

where it would come out seemingly more in favor to LERO. For example, the intra-organizational relations if you added all that up, there are a lot more C scores. But, I wouldn't do that.

JUDGE FRYE: Dr. Mileti, based upon your work here, what particular -- in what particular areas do you think training is lacking or needs more emphasis?

WITNESS MILETI: I would have to give that some considered thought. I would have to say that there were some problems revealed by my assessment, leaving FEMA's alone for right now.

My conclusion was only -- or, my analysis was only to help me formulate an opinion in reference to, is there a fundamental flaw, which is what I thought the contention really went to in reference to the training program. And, I thought there was simply too much success. as revealed by how I chose to do my review in terms of the concepts that I think make sense and are important to look at.

In terms of what are the particular things one might want to focus on, I think there probably are some. But, I don't have a list of them.

And, before I spoke on that I would have to give it some thought.

JUDGE FRYE: Well, let me go back to the way you

looked at it. You looked at it in terms of fundamental flaws revealed in --

WITNESS MILETI: That's correct.

JUDGE FRYE: -- the training program?

WITNESS MILETI: That's correct.

JUDGE FRYE: And, do I understand correctly that you didn't find any based on this?

WITNESS MILETI: If I were to find a fundamental flaw, what I would have had to have seen in order to do that, to come up with a conclusion that there is a fundamental flaw in the training program would have been when I laid these sheets end to end, presuming that I'm using my judgments in making codes in reference to different concepts I'm looking at, knowing that I attempted to be consistent but admitting that there is some judgment involved, my professional judgment, and it's not totally consistent, if I should do this again I'm sure I would find a few changes that I would want to make.

JUDGE FRYE: I'm sure. But, my point -- what I'm trying to get at, at some point we have to go back and write a decision.

If we look at this study that you have done, how does that help us in determining whether there is a fundamental flaw in the training program?

WITNESS MILETI: If I -- I could tell you what I

did. I laid the pages end to end, from left to right, and for me to think there was a fundamental flaw involved I would have had to have seen evidence somewhere, and I didn't, that several of these things -- let's just take the intra-organizational aspects -- were falling flat on their nose.

For example, if I had seen that very few people knew what their job was or what their job description was or what it was that they were supposed to do, I would consider that a fundamental flaw. Were there people who didn't know how to -- what street to take their bus down? Yes, there were.

But, there was enough evidence that enough people that came out of the training program that are part of LERO knew what their job was. So, I'm not saying that knowing what your job was was perfect. It certainly wasn't.

So, I saw no evidence of a fundamental flaw in that regard. Now, in answer to your question in reference to what would I catalogue on the basis of reviewing the FEMA assessment or my own assessment as the training needs specifically, I didn't have that in mind. I did this in reference to saying, was there a fundamental flaw or not?

And, it was simply my way of having a checklist, so to speak, at my side as I read through the FEMA assessment. In other words, I saw no systematic enough

patterns in reference to these abstract sociological concepts that I value so much to suggest to me that there was enough bad in reference to these good concepts that I think should be in a plan or in an organization's response to an emergency.

JUDGE FRYE: I guess what -- I may not be understanding you correctly, but are you saying that basically your conclusion is that there are no fundamental flaws in the LERO organization based on this?

WITNESS MILETI: I would infer that if there is no fundamental flaws in the LERO organization's potential performance in an emergency that there could not be a fundamental flaw in the training program.

JUDGE FRYE: I would tend to agree with you on that. And, this I gather is what you are saying, is you looked at the organization and you came to the conclusion based on this study that there was no fundamental flaw in the organization?

WITNESS MILETI: In its potential performance in response to --

JUDGE FRYE: In its potential performance? I see. Okay.

Now, in some of these categories, if you look, for instance, under inter-organizational network, the resource adequacy -- maybe this is not a good example -- you

have 13 PC's, four U's as compared to 67 C's.

Would that indicate -- I mean, would it be reasonable to draw an inference from that that perhaps that's an area that should be given some attention?

WITNESS MILETI: I certainly would go back and have a look at the reason for that. On occasion, we were very free in giving out PC's. And, we may have been giving out PC's that had nothing in -- in reference to things that had nothing to do with training, for example.

JUDGE FRYE: Well, as I say, that's probably a bad example because it's resources and that's not necessarily -- if you look, say, under intra-organizational relationships, knowledge, there are 17 PC's and three U's as opposed to 67 C's.

WITNESS MILETI: That would lead me to conclude that there was some evidence that some people didn't know some things and some evidence that some people did. And, that would not lead me to conclude that there is a fundamental flaw in imparting knowledge in the training program in LERO but that there may be some things we could go back and have a look at in reference to what --

JUDGE FRYE: In other words, this would be an area that could be flagged for a little bit more intensive study perhaps to see if some improvements might be made?

WITNESS MILETI: Diagnosis.

JUDGE FRYE: Diagnosis.

BY MR. MILLER: (Continuing)

Q Let me just ask you about one, Dr. Mileti. The priority setting under intra-organizational where there is nine PC's or U's flagged for a total of -- from a total of 24 factors, that would be another area where you would think perhaps some additional training would be needed?

A Again, I would want to go back and have a look at the specifics involved.

But, I wouldn't make that judgment just on the basis of the numbers. I would go back and look at the content of what led to what we've catalogued here as problems.

Q So, you would certainly want some additional diagnosis, as you just stated, for this factor I take it?

A I did not reach the conclusion in this assessment that I thought training was perfect in LERO. I reached the conclusion that I did not think it contained a fundamental flaw.

Q Did you reach a conclusion about whether or not training for the LERO organization was adequate?

A Yes, I did. In my opinion, I thought it was quite adequate.

Q Do you draw a distinction, Dr. Mileti, between a determination that there is no fundamental flaws in the

training program and a determination as to whether or not a training program is adequate?

A No. I would base the judgment that it was adequate on the basis that I thought LERO illustrated, as revealed in the content of the FEMA assessment, the potential to be quite an effective organization were it responding to a real emergency.

Q Can you tell me, in follow-up to Judge Frye's questions, how you are defining fundamental flaw?

A I would define fundamental flaw as something that could not be corrected; fundamental flaw as something that just was unworkable.

JUDGE FRYE: You would define it that way as opposed to say something that must be corrected before operation were authorized? You would find it as something that could not be corrected at all?

WITNESS MILETI: I thought that is what the whole point of the contention was going at. I think the whole point of having exercises, and I think in any exercise one could find things that are in need of being corrected.

JUDGE FRYE: Well, that's the whole purpose of having the exercise.

WITNESS MILETI: I agree.

JUDGE FRYE: Well, if I modify your definition of fundamental flaw to something that must be corrected before operation could be permitted, would that change your conclusion?

(Witnesses conferring.)

WITNESS MILETI: I would still continue to define fundamental as something that is irreversible.

JUDGE FRYE: No, but can you accept my definition?

WITNESS MILETI: I would be willing to call that as serious flaw.

JUDGE FRYE: All right. Did your study reveal any serious flaws in the training program?

WITNESS MILETI: Again, I would have to go back

and have another look.

JUDGE FRYE: Do you recall whether it revealed any serious flaws in the LERO organization?

WITNESS MILETI: I don't suspect that it did. In fact, in many ways the LERO organization stood out on some dimensions fairly well. In fact, one would predict that it would have more in reference to interorganizational cohesion in an actual emergency, more than you would expect from the more standard form of emergency response which actually involves a multitude of different organizations.

BY MR. MILLER: (Resuming)

Q I want to follow up again on Judge Frye's questions, Dr. Mileti. I thought you told me a moment ago that you really do not distinguish between a fundamental flaw in a training program and the determination that a training program is inadequate. Is that your opinion that you do not draw that distinction?

A (Witness Mileti) I'm not sure I understand the question.

Q If you defined a fundamental flaw as something which could not be corrected or which is unworkable or irreversible, which is what you have said it is in your opinion, do you draw a distinction between such a concept and the concept of an inadequate training program?

A Adequacy and fundamental flaw are different.

Q Do you would agree that you could have an inadequate training program which still under your definition would not constitute a fundamental flaw in a training program; is that correct?

A Yes, particularly in the sense that it would be, for example, presently inadequate but could be corrected.

Q So you could correct an inadequate training program?

A Yes.

JUDGE FRYE: But a fundamentally flawed training program would also by definition be inadequate.

WITNESS MILETI: Yes, it would subsume that.

JUDGE FRYE: And you could not correct that under your definition ---

WITNESS MILETI: Yes, I agree.

BY MR. MILLER:

Q Let's go to page 15 of the testimony, please. Dr. Mileti, on pages 15 and 16 you have a number of these factors that you say were taken into account in your NUREG study listed. I just want to ask you about a couple of those.

The factor of normativeness, which is in the first paragraph of Answer 11.

A Yes, I thought you might ask about that.

Q Can you just tell me how you define

normativeness?

A This is a general concept that has emerged from research over several decades in the social sciences about how it is easier for organizations when they respond to emergencies to do things that are more in line with what they do normally. In other words, in the generic sense it's better in emergency planning to have police do police work rather than fire work.

Q Now given that definition, Dr. Mileti, I assume you would agree with me that with respect to normativeness LERO does not typically perform -- well, LILCO personnel in LERO do not typically perform the kinds of emergency responsibilities they hold in LERO during their normal daily jobs; is that a fair statement?

A There are actually two responses to your question. In general absolutely yes, and I think that is one of the fundamental issues here and always has been, and I even remember speaking out on this several years ago during the other hearings, and it was in reference to normativeness is relevant in the sense that it makes it easier for people to learn how to do what they need to do in an emergency. It doesn't mean that you can't take people and teach them how to do those same things successfully through other means.

Normativeness generically as a concept is good

to design into an emergency plan, but that doesn't mean that you can't have an effective emergency response when it doesn't exist. At the same time, there was some attempt when LERO was being put together to take this notion into account, that is to take advantage of it to the extent that it could be taken advantage of.

And, therefore, people who were ascribed roles of driving buses were people who as a routine drive big things, and I'm sorry, I don't know more explicitly what big things are. They are not little.

Q Dr. Mileti, would you agree with me that given the composition of LERO in terms of the numbers and kinds of people that make up that organization that it is at least more difficult for LERO to satisfy the normativeness factor?

A More difficult than what?

Q More difficult than the typical emergency response organization?

A Yes, of course.

Q Now at the bottom of page 15 you set forth a number of subfactors which comprise the I guess the overall factor of having an understanding about interorganizational emergency response. These subfactors go on over to page 16.

A Yes.

Q Is it your opinion, Dr. Mileti, that each of the subfactors listed by you is necessary if you are to have an

understanding about the overall interorganizational emergency response?

A Certainly not, no. Some are more important than others and there can be varying degrees of some.

What is important is that there is a sense to which the interorganizational response network is integrated, and that is why back in '83 and in '84 I had the LERO training programs splice in information for every LERO member about overall emergency response in the overall LERO organization.

Q Can you tell me, Dr. Mileti, of the subfactors you list on pages 15 and 16 which are more important with respect to this particular factor of overall interorganizational emergency response?

A I would say the most important factor is the generic general category. That is, that the interorganizational response field is integrated, coordinated and has some cohesion to it rather than organizations operating autonomously.

We've learned that in emergencies for years. For example, not to elongate the day, and I'm the one that wants to catch the plane, but there was a tornado and information got out in the town that there was a bunch of people harmed at a drive-in.

One company sent out ambulances to the drive-in,

and there was no EOC at that time, and they didn't communicate back that it was in fact a rumor and nobody was hurt there. There were no cars there and no people there and it was closed for the season. And yet in traffic all the other ambulances in the city went one after another and wasted time out to that drive-in. There was no cohesion there and that hurt effectiveness in that those ambulances could have been used somewhere else.

Q Now, Dr. Mileti, with respect to my question about the subfactors, is it possible for you to tell me which, if any, of these subfactors on pages 15 and 16 are the most important?

A They are all important in varying degrees.

Q So you can't really rank them; is that your opinion?

A If I could have, I would have.

Q The factor of legitimacy of roles, Dr. Mileti, is that a factor which you believe LERO has more difficulty in fulfilling than perhaps the typical emergency response organization?

A No. In terms of how I would define this, I think it would have more easy in fulfilling this. This is legitimacy of roles in terms of the organizations participating in the response network. So in this sense it would be the degree to which a staging area like Riverhead,

for example, would acknowledge that the EOC was supposed to be in command and control.

Q Is there such a thing as an interorganizational legitimacy factor?

A This is interorganizational legitimacy.

Q And if you look at interorganizational, meaning LERO as compared to other non-LILCO organizations, such as hospitals, nursing homes and schools, do you believe that there is general acceptance of LERO by these other kinds of organizations?

Q Are you asking me about acceptance of LERO as it would occur in an actual emergency or in terms of what one would conclude about the current public opinion on Long Island?

Q Let's talk about the latter first.

A I really have no informed basis on which to make a judgment. I've not done a poll, for example, to measure people's perception, but I have a real good secondhand sense from the fact that these hearings are going on, for example, that a lot of people oppose Shoreham and a lot of people oppose LILCO and that sort of thing. I think that's common sense.

Q Would you look at page 16 of your testimony, please. Communications ability, the subfactor of communications ability, Dr. Mileti ---

A Yes.

Q --- you define it, I take it, as a high level of linkages between organizations; is that correct?

A Yes, it is.

Q I take it that it's not just the number of communications links, but the capability to utilize such linkages in an effective manner which is important?

A To communicate when communication needs to occur, yes. My ambulance story in the tornado is an event of that not existing.

Q Now, Dr. Mileti, in Answer 12 in the testimony, you explain the NUREG 3524 study that we've been referencing from time to time today. Can you tell me, and I'm looking at the last paragraph on the page, when you stated that you reviewed and summarized the results of actual studies of organizational effectiveness in non-emergency situations, just tell me the numbers of actual studies you looked at if you can?

A Well, it's difficult to do because from a theoretical point of view I study organizations. In my career up until that point I've looked at a lot, but in reference for an interim draft report that I prepared probably two or three dozen or thereabouts. That category of organizational research was part of that interim report that I sent to Oak Ridge to review and in the process NRC

decided that they didn't want that included, and other studies I was reviewing to put in a second draft of it never got included in that draft, and I know I sent you that draft. None of it in that category ended up in the final document.

Q Now with respect to the second factor where you state that you also reviewed the results of actual studies on organizational effectiveness in responding to emergencies, approximately how many other studies did you look at?

A My answer would almost be the same. In terms of what we ended up finally putting in the report was probably the major ones and particularly ones that were their own summaries of attempts to summarize, for instance, like Russel Dynes' work on organized behavior in disaster and that sort of thing.

Q And based upon these studies you then developed this integrated theory that is mentioned on page 16 of the testimony?

A Based on that study we developed that, which is these lists of concepts in my testimony.

Q All the factors and subfactors on pages 15 and 16, that's what was developed based upon your studies, correct?

A By and large, yes.

Q And then later on the page you say that you reviewed emergency plans at nuclear power plants. Can you just tell me approximately how many plants were reviewed?

A We ended up reviewing 17. There wasn't enough time, effort and energy to review all of them, but we wanted to do that, but it ended up being 17.

Q And then you conducted two case studies at nuclear plants which focused on the factors that you had developed in your theory; is that correct?

A Yes.

Q Now these are the case studies you can't tell me the names of the plants involved?

A I don't feel like I can feel free to do that simply because we promised our respondents confidentiality, in this case these two utilities.

Q And then you observed a test exercise. I take it that the test exercise observed was at one of the two plants that constituted your case studies?

A Absolutely, yes.

Q Did the factors that you had formulated from your review of the literature change in any way based upon the test exercise that was observed?

A I don't recollect that they changed in any way. We may have potentially changed some definitions, but I don't think so. What we tried to do was measure them and to

see if they were operating and indeed we did try to do that.

Q Now, Dr. Mileti, I know you did not observe the test exercise. Were you involved in each and every part though of the parts of the study for the NUREG that are listed on page 16 of your testimony?

(Witness reviews a document.)

A Well, I could tell you what I did and what I didn't do.

Q My time is running short.

A I didn't do everything, no. I did parts.

Q You were involved in the review of the literature I take it?

A Yes.

Q Did you actually conduct the two case studies?

A No, I wasn't there.

Q Let's look at page 17 of the testimony.

Dr. Mileti, I assume that from time to time I see the words "we" and "us" in this testimony and I know that you are obviously referring to the other authors of the NUREG analysis, but I assume you are here speaking only for yourself and not for the other members that helped author that analysis; is that correct?

A None of the other people who helped author that analysis helped me author this testimony. So I'm sure that my testimony isn't speaking for them, but I don't suspect

that they disagree with me.

Q Have they reviewed this testimony at your request or for any other reason?

A No, but one of them in particular is a good friend of mine and we talk about every week, and we usually talk about nuclear power plants.

(Laughter.)

MR. MILLER: Judge Frye, maybe we could take the afternoon break at this point. I'm on page 17 and I'll begin with Question and Answer 13.

JUDGE FRYE: Well, why don't we do that.

When we get through this afternoon I would just out of curiosity and maybe I shouldn't do it, but I would like to hear from the parties as to what they consider a fundamental flaw so that you all will be thinking about that.

MR. MILLER: Thank you.

(Mid-afternoon recess taken at 3:05 p.m.)

(3:20 p.m.)

JUDGE FRYE: Let's go back on the record, please.

BY MR. MILLER: (Continuing)

Q Page 17 of the testimony, Dr. Mileti. Now, in NUREG 3524, it is true, isn't it, that the analysis there was designed to evaluate the effectiveness of interaction between various and different organizations that could be called upon to respond to an emergency, is that correct?

A (Witness Mileti) The analysis was designed for that study, and in that study different organizations were participating.

Q And in the NUREG study, Dr. Mileti, there was no single organization where you broke that organization down into different sub units, is that correct?

A Yes.

Q You did not break any single organization down into different sub-units?

A Not that I recollect. It is possible we could have done that, but I don't recollect it.

Q Now, in the last sentence of Answer 13, you state that the theory proposes what would constitute attributes of an ideal emergency response organization in a radiological emergency.

Is it fair to say, Dr. Mileti, that you would

never expect to find the ideal emergency response organization?

A Yes, I think that is fair, yes.

Q So, the factors and the analyses conducted in NUREG 3524 really result in a description of an organization which in real life just doesn't exist, is that a fair statement?

A No, I don't think that is a fair statement. I think what those factors are are the factors that sociologists who have gone around studying the response of organizations to actual emergencies have concluded to be the factors that affect organizational emergency response effectiveness.

Q But none of the organizations you looked at in the NUREG study met all the factors that you compiled in your study?

A I wouldn't say that any organization would meet all of these factors if in an idea world sociologists could do the kind of research that they might dream up, one would get a score in reference to all of these factors.

Q Is there something you want to add?

A In the ideal world, an ideal organization would be one that scored totally cohesive on all those.

Q And certainly none of the organizations in your NUREG study scored a cohesive rating in all aspects for all

factors?

A I think my recollection is yes, that is indeed true.

Q And certainly you would not expect, based upon the results of the exercise at Shoreham, Shoreham or LERO did not score perfectly with respect to all factors under your analysis.

A Got a lot of PCs and Us that attribute to that, that is correct, yes.

Q Now, when you state, Dr. Mileti, in the first sentence of Answer 14, that the factors which were identified as important for organizational effectiveness in response to emergencies were taken into account in the LERO planning and training program, are you referring to the three basic factors that are listed on Page 14 of your testimony? A clear understanding about what to do, flexibility in approach, and a good idea about the overall inter-organizational emergency response.

A Those three general factors on Page 14 and the degree to which they would subsume the sub-factors listed elsewhere in this testimony.

Yes, in fact I will never forget how they were taken into account. Back in `83 or so, I was chatting with John Weismantle, who was in charge of LERO at the time --

Q I hate to cut you off, Dr. Mileti, but I don't

think we need the history, because I am in a hurry with this line.

A I thought I was the one in a hurry.

JUDGE FRYE: Everybody is in a hurry.

BY MR. MILLER: (Continuing)

Q Dr. Mileti, the last sentence on Page 17, that during the exercise in your opinion, LERO exhibited all the factors described in the NUREG study that are critical to effective emergency response.

Do you mean to say by that statement that all of the primary factors in all of the sub-factors listed in your testimony at Pages 14, 15, and 16, were exhibited by LERO during the exercise?

A No. The three general categories. There simply wasn't information in the FEMA report that would lead me to be able to make a conclusion about all of those factors.

Q And it is true, is it not, Dr. Mileti, that with respect to certain sub-units of LERO as you broke LERO down, certainly some of those factors were not consistently exhibited by particular sub-units of LERO?

A I wouldn't expect that there would be an exhibit of those factors by all sub-units of LERO. I could only conclude from the exercise what was written down and recorded by FEMA. That was the data base.

Q Now, on Page 18 of the testimony, Dr. Mileti,

you discuss the method used to apply the NUREG factors to the Shoreham exercise.

Is it fair to say that you utilized the methods that are listed on Page 18 of the testimony, because this was the only way that permitted you to apply the NUREG analysis to the FEMA Report at Shoreham?

A I thought this was the best way I could take the concept that I wanted to take into account, into account.

I could have, for example, done an interview with people who participated in the exercise, but it would have been a year later, and I wouldn't have trusted the data as much as I trusted the data recorded in the FEMA assessment.

Q Why would you not have trusted the data as much? Because of the passage of a year's time?

A Sure. A year would have went by. People don't recollect things as well about what would have happened, although I have to say I would have trusted the data a whole lot better than a behavioral intention mode.

Q Now, Dr. Mileti, you stated that each organizational sub-division within LERO was treated as if it were a separate organization.

There are approximately, I think, 10 organizational sub-divisions that you looked at within LERO, is that correct?

A My counting revealed nine.

Q And the EOC, the ENC, Brookhaven, the three staging areas, those would be examples of the different organizational sub-divisions you looked at?

A Yes, they would.

Q Dr. Mileti, within those various sub-divisions of LERO, in your opinion are certain sub-divisions more important in terms of the function they perform for LERO than others?

A In general I would have to judge that I think the EOC is perhaps the most important sub-division of an inter-organizational response network to a disaster or emergency, because that is where most of the information is.

Q And the EOC, is it fair to characterize it under LERO's structure, as essentially the command center, or the brain center, if you will?

A The EOC. That is where all the information is. It is in that way analogous to most EOCs.

Q Do you consider the ENC to be more important than other organizational sub-divisions within LERO?

A It is going to be hard for me to rank all these things.

Q I am not going to ask you to rank them all. Let me just try to do this all at once. Would it be fair, in your opinion, to basically say that the EOC, the ENC, and

the three staging areas would probably constitute the most important organizational sub-divisions within LERO?

MS. MONAGHAN: Judge Frye, I am not sure how this is relevant to Dr. Mileti's analysis here. I am going to object on that basis.

MR. MILLER: It is limited inquiry, Judge Frye, to get --

JUDGE FRYE: Overruled.

WITNESS MILETI: I think I kind of leave it at the EOC as being obviously more important. What the particular characteristics of a particular emergency were might make one of the other sub-divisions more important than one of the others, but it is -- all emergency planning is important.

BY MR. MILLER: (Continuing)

Q Now, Dr. Mileti, the example you give at the middle of Page 18 of the testimony, it is a FEMA comment you use as an example: Verification of this initial notification was received within fifteen minutes.

You say it was taken as indicative of there being adequate resources to accomplish this task, and role definition was also clear enough to have the task performed.

This example, I take it Dr. Mileti, explains how you conducted your study of the Shoreham Report as depicted in Suffolk County Exhibit 58?

A (Witness Mileti) It is supposed to be indicative of that, yes.

Q And I take it that using this example, Dr. Mileti, you assumed that 15 minutes was the appropriate amount of time for verification to be given and received?

A I don't think I used the word, `appropriate.' I just said 15 minutes. That seemed like a short amount of time.

I don't think I took the time element here. On the other hand, working with Vicki, who had more knowledge about what was anticipated, I am sure here judgments entered into that and I can't speak for her.

By putting this in the testimony, I meant to illustrate that notification occurred, therefore, there had to have been the resources available for that communication to occur, and it worked. And that the people who knew that they were supposed to engage in that as part of their job function, performed it.

Q The latter part of your explanation, Dr. Mileti, does that go to the role definition point?

A Yes.

Q Dr. Mileti, looking at this example, do you believe you could necessarily determine something about role definition from this statement in the FEMA Report?

A Absolutely, yes. Unless they are robots that

are engaged in the behaviors, and it is presumed people did.

Q Is it not possible that the verification could have been given by persons who under the LERO plan were really not responsible for providing such notification?

A I am sure that is possible, and I have always said in the world of human behavior, if you can pick it up, it is possible.

Q And if my example would have been the case, then you would not have concluded that role definition was satisfied under this example that you use in your testimony, would you?

MS. MONAGHAN: Judge Frye, I think it is pretty clear that what Dr. Mileti was using was the FEMA Report, and FEMA made the assessment that this was, in fact, done.

JUDGE FRYE: I think this is fairly clear. Why don't we move on to the next point?

MR. MILLER: Okay. Let me just try.

JUDGE FRYE: I think you have your point made.

BY MR. MILLER: (Continuing)

Q Let me just try it this way, and I will wrap it up and go on, Judge Frye.

Dr. Mileti, is it fair to say that you merely looked at the FEMA Report, and did not attempt to go beyond the FEMA Report in drawing or reaching your conclusions regarding whether factors were satisfied or not satisfied?

A (Witness Mileti) In general, yes.

Q Now, at the bottom of Page 18, you describe how the scores were recorded that were reflected at Attachment F to the testimony. The example you give about -- for a partially cohesive rating, quote: Patchogue bus drivers were not gotten out on time.

You say this constituted a partially cohesive, in your opinion, because this was not -- would not have created a major response problem. That is the definition you employed, correct?

A On this page, yes.

Q Can I therefore assume, Dr. Mileti, that factors you rated as uncohesive would have been indicative of a major response problem?

A I would imagine that if we thought something was a major response problem, it would have been coded a U.

But again, both PCs and U's are bad scores.

Q Dr. Mileti, did you create this scoring system that is set forth on Page 18?

A I certainly participated in it in discussions with Vicki, and we both contributed to it.

Q Now, you state on Page 19, Dr. Mileti, that neutral values were not recorded, since they were not obvious in the Shoreham post exercise assessment.

If I recall, Dr. Mileti, Mr. Pursell in his

analysis stated that there were neutral comments in the FEMA Report, and those were not included within his analysis.

So, do you disagree with Mr. Pursell in that regard?

A That is not what we mean by neutral scores, and I have to say, even though I have been here for the whole discussion of the CIT thing, I thought originally I understood what a critical incident technique is, and I would have to read some documents before I could comment on it.

By neutral values, I was considering how we approach neutral scores in the NUREG Report, and that was when the group doing the coding couldn't come to a consensus, and it is almost as if our PC category subsumed what was originally coded as neutral in NUREG Report.

We did not, by and large, leave any words that were accounts of what went on that day, out of our purview when we were doing our review.

Q So, what you are telling me is that a neutral value would be a value or comment in the FEMA Report that you and your assistant could not agree upon?

A No. That is what occurred in the NUREG Report, when the people who were making a judgment about cohesiveness scores could not come to a consensus, they coded it as neutral.

Q And what constituted a neutral value under your study of the Shoreham Report?

A There were none.

Q There just were none in your opinion

A We took all the FEMA words into account. We did not record neutral scores in our study.

Q Dr. Mileti, do you have a copy of NUREG-3524? It's Exhibit 59. I think we've handed --

A Yeah. In fact, I have two.

Q I'm just looking at the abstract of the NUREG. There is a statement that says that the purpose -- this is the very beginning of the abstract. "The purpose of this research was to determine if existing regulations have led to effective interfaces between utilities and offsite organizations in emergency planning and response."

Do you see that, sir?

A Yes, I do.

Q Do you believe that your analysis of the Shoreham report looked at both emergency planning and emergency response?

A We looked at the FEMA assessment as our data base and took that as indicators of behavior or of our concepts.

Q I assume, Dr. Mileti, that given the fact those comments were made in the context of the FEMA exercise that they would relate more to emergency response than the emergency planning; is that a fair assumption?

A It's hard for me to distinguish between the two. I would have to presume that the response that was observed was related to the plans and the training.

And, that was the theory that underwent the

assessment.

Q One of the conclusions you reached in the NUREG study, Dr. Mileti, was that the actual response that was observed at your test exercise was not as well coordinated as the planned response; is that correct?

A In reference to inter-organizational factors, which is what one would expect.

Q Did you see any indication of that from your review of the FEMA report at Shoreham?

A I had no basis to compare it to. I mean, we didn't do our study in reference to the plan. We did it in reference to what occurred.

Q Well, from your familiarity with the LILCO plan, Dr. Mileti, do you believe that there was any indication that the response demonstrated during the exercise was not as well coordinated as the planned response under LILCO's plan?

A I would hypothesize that. That's consistent with sociological theory; it's consistent with behavior of organizations in emergencies.

One would presume that the normative structure, which is the plan, and the performance structure, which is how people actually behave, there is always a difference. However, I would have to also hypothesize that in reference to LERO that I would predict increased cohesiveness in the

inter-organizational field in an actual emergency.

Q Could you just say that last part again?

A I would predict increased inter-organizational cohesiveness to be observed in LERO in an actual emergency. In other words, I would expect things to be better in a real emergency than in the exercise.

And, I would expect things to be better or not as good in the exercise as in the plan.

Q You found in the NUREG study, Dr. Mileti, that internal cohesiveness within an organization increased during the test exercise but that inter-organizational cohesiveness decreased?

A Correct. Absolutely.

Q Do you believe LERO would be any different in this regard?

A Absolutely. And, the reason is simple. LERO comes from LILCO. LILCO is an organization.

The great reluctance in emergencies when you try to organize inter-organizational relations in emergencies is that organizations are reluctant to give up the autonomy they need to give up to have something like an EOC work.

And, I don't think LERO would suffer from as many of those problems as when we try to coordinate a multi-organizational response in the typical sense.

Q But, LERO still has to work with other

organizations, does it not?

A Absolutely.

Q And, in that regard would you expect to see decreased cohesiveness during an actual response between inter-organizational structures?

A There could be some in reference to how LERO might relate to other organizations outside of LERO. But, the most significant inter-organizational relations are those pointed to maximizing evacuation; and, for example, that's protective action.

And I think, therefore, that one could expect greater effectiveness in an organization like LERO to get warnings out on time, for example, to enhance consistency in those warnings and EBS messages. And, in the inter-organizational networks like those defined in this assessment.

Q Do you expect problems, or would you expect problems, Dr. Mileti, with legitimacy during an actual response involving the LERO organization?

MS. MONAGHAN: Judge Frye, it seems to me that this question really goes to the credibility issue that was litigated in the plan proceeding.

MR. MILLER: It's a limited inquiry. I will not pursue this much longer, but it is one of the factors in the testimony.

JUDGE FRYE: Yeah, I thought so. It's overruled.

WITNESS MILETI: I was going to say, I think that's probably one of the most interesting pieces of sociological work that I could imagine ever doing. And, in thinking about the potential data base available on which to offer a hypothesis, I could -- I would envision a two-tail directional hypothesis. I could think of reasons why -- how LERO might relate to other organizations on Long Island that it's at odds with right now, might dissipate. The generic principal is that when emergencies occur, people come together. I think that principal would hold between the County and LILCO if an emergency actually occurred.

At the same time, I would have to predict that a week or two or three after the emergency, that there probably would be a fleet of attorneys, even larger than there currently are, on Long Island and that conflict would probably escalate way beyond where it is now.

Those are the hypotheses I would offer.

BY MR. MILLER: (Continuing)

Q It does sound like an interesting study.

(Laughter.)

Now, Dr. Mileti, Answer 15 to your testimony explains the differences between the method that was used to assess organizational effectiveness for LERO and the method

that was utilized in your NUREG analysis; is that correct?

A Yes.

Q You have, first of all, that the research performed for NUREG/CR-3524 had the factors clearly established before a data collection began.

Can you tell me briefly, Dr. Mileti, why that is an important distinction in your opinion?

A If one is going out to measure concepts like the kind sociologists like to measure in particular, it's nice to use the best measurement tool you could within the limits of your resources put together. And, if one had in mind a study to measure those concepts, one could create a better set of measurements or data base of those concepts than if one used another data base.

Q So, it's nice to be able to create your own data base before you conduct your own study?

A No, that's not what I said. It's nice to create the best, the most reliable and valid measures you can and then go to the field and implement your methodology in the most appropriate way.

Q Since, in the case of Shoreham, Dr. Mileti, you relied on an existing data base, the FEMA report, can you characterize for me how you think that limits the usefulness of your study?

A I think it limits my confidence in the data in

the following way: One, I didn't feel comfortable about combining scores in reference to a particular concept into one score for that concept. I think it made the data, therefore, less editive, if you will. And, that's why I laid the pages out from left to right and tried to make an assessment without adding things.

And, we had to infer concepts from what FEMA happened to record. And, what we were able to assemble, therefore, would not be as precise as if we put together a study with the explicit purpose of measuring these abstract concepts.

And, I wasn't surprised that the people who participated in the FEMA exercise didn't have the sociological jargon in mind. I suppose we should all be glad they don't.

Q Now, when you state, Dr. Mileti, further down on Page 19 that it was necessary, therefore, to use indirect measures; we had to infer the NUREG factors from the text of the Shoreham post-exercise assessment, is it fair to say that your assessments were, therefore, unstandardized?

A They were very unstandardized. Basically, I've presented this as note taking in terms of how I read the FEMA assessment.

A standardized measure is the same measure. We didn't have the same words. In one case, we had to infer

that someone knew what their job was on the basis of a communication being completed. That inferred that the job was known about. And, in another case we concluded that someone had -- knew their job or had role definition on the basis of something totally different.

Q And, I take it, Dr. Mileti, from the statement at the very bottom of Page 19 that another limiting factor was this fact that the different exercise evaluators may have looked for different things depending on what part of LERO was being looked at and what FEMA objective was involved?

A That's always an issue in social research when there are different people doing the measuring.

Q And, then on Page 20, Dr. Mileti, you talk about a fact that there was no valid way to integrate the scores compiled on the basis of the Shoreham report into single scores for each factor within each organizational subdivision of LERO.

You did, I take it, develop such composite scores in the NUREG study?

A Yes. All the scores in that study are of that character.

Q Those are at the end of the NUREG study; is that correct?

A Yeah, I believe in one of the appendices.

Q Appendix E?

A That's correct.

Q Now, Dr. Mileti, you did not assign a number score to your factors in the NUREG study, did you?

A We assigned C, U and N. Those aren't numbers.

Q Did you attempt any sort of a percentage calculation about success or failure based upon your NUREG studies?

A I don't believe so. But, I'm sure in the process of doing this we would have tried it out.

Q Dr. Mileti, if you looked at Appendix E in the NUREG, is there any way for you to relate or compare your results as set forth in Appendix E of the NUREG to the results that are reflected in Attachment F of the LILCO testimony?

A No. And, I wouldn't do that. I don't think it would be a legitimate comparison.

They were both qualitative studies done in different ways.

Q Now, Dr. Mileti, in Answer 16 of the testimony on Page 20, you state, "Within the limits imposed by the available data..."

Are the limits you are talking about the ones referred to on Pages 19 and 20 of the testimony?

(The witness is looking at the document.)

A Yes, they are.

Q You state that the analysis within those limits demonstrates that LERO exhibited a high effectiveness potential during the exercise.

Can you, as precisely as possible, tell me what you mean by "high effectiveness potential?"

A I think the whole point of emergency planning is to construct an organized response to a future emergency in which significant emergency goals can be met. And, I think LERO illustrated in reference to enough indicators of cohesion, to use my jargon, potential to be able to accomplish what are the major emergency tasks in reference to an emergency at Shoreham.

For example, I think the public would have been warned. I think the evacuation would have been carried out effectively. I think we would have maximized the odds, that the public would have formed good perceptions about what the risk was and what to do, and then from a cohesive point of view there is enough going on here that the organization probably would have worked.

Q That's your best judgment, I take it?

A Absolutely. I mean, my judgment is all I have to offer.

Q Now, on Page 21, Dr. Mileti, you end up with -- I think you characterize it as your bottom line conclusion.

The training program, in your judgment, appears to be fundamentally successful.

Do you draw a distinction -- well, let me ask you this, Dr. Mileti. Is the training program, in your opinion, fundamentally successful or is it structured with the potential for success?

A Well, let me distinguish between planning elements or plan and behavior, which is what would happen in an exercise or in an actual future emergency.

I tried to look at the FEMA assessment in terms of measuring these factors that I think are the determinants or causes or independent variables of success in an emergency. And, I attempted to measure these as best I could.

And, on the basis of them coming out the way they did, which seemed okay but there were some problems, I would judge and predict the dependent variable into the future of effectiveness in emergency response on the basis of this assessment as saying that it looks to me like LERO could effectively manage a future emergency.

And, from that I conclude, since that's the object of the training program, that the training program in my judgment appears to be fundamentally successful.

Q I was more or less using your words on Page 20, Dr. Mileti. And, is it fair to say that your analysis

indicates to you the potential for success of LERO's training program?

A In a real emergency, yes.

Q I think, Dr. Mileti, the only other place you appear in this testimony is Page 54 in response to Question 62. I believe I'm right about that. I don't really have much to ask you about this particular answer, Dr. Mileti, except let me just ask you this.

Is it your opinion that a training program cannot teach common sense?

A I don't think you can teach people to have common sense.

Q Do you believe you can teach people to use good judgment?

A I think you can help people form better judgments and more informed judgments.

Q Do you believe you can teach people or train people to use independent judgment?

A If by independent judgment you mean to do it alone or make a decision on their own, I imagine you probably could. But, you would have to look at it in reference to what.

Q So, with respect to Contention 50.E, Dr. Mileti, it -- the contention itself is set forth in Attachment A of the testimony if you want to look at it, I take it that you

would agree that a training program can train people to exercise independent judgment and perhaps good judgment but not common sense.

Is that a fair statement?

A I don't think you can teach someone to have common sense. Some people just don't have it. And, I don't think there is much you can do about it. And, unfortunately I know of too many of them in my life.

I think if one wanted to teach someone how to make decisions, I think decision-making could be something that people could learn how to do, what factors to take into account and that sort of thing.

Q And, I'm curious, Dr. Mileti, about your statement I think in response to a question by Judge Frye earlier today that during an actual emergency at some point procedures get thrown in the wastebasket.

Was that your statement?

A I don't think I made a statement anything like that.

Q Do you recall some statement about the procedures going somewhere?

A Well, you've got me pointed in the direction of a wastebasket, and I don't recollect that.

Q You just don't recollect that?

JUDGE FRYE: I think that was my statement. I'm

not sure he totally subscribed to it.

BY MR. MILLER: (Continuing)

Q Do you believe, Dr. Mileti, that during actual emergency responses ad hoc responses by personnel will almost invariably be required?

A If by that you mean, do I think people need to be flexible and know when to exercise good judgment and not go by the letter of the book, then I think those circumstances arise. I think that's why flexibility is important in an emergency response organization.

And, the people in the social sciences have known that for two or three decades, and other people for longer.

(Laughter.)

Q I take it, Dr. Mileti, that the need to be flexible in the way you have just described would certainly tend to arise more in an actual emergency than perhaps during an exercise that's graded by FEMA?

A That's a possibility. Then, again it may not be a possibility. It would depend on the actual emergency.

Q Well, in an actual radiological emergency, would you expect there to be more occasions that would require personnel to be flexible and to adapt than you would expect to see in the context of an exercise as conducted and graded by FEMA?

A Well, as you know, I've only seen a couple of FEMA exercises by reading about them. And, I think that an actual emergency would likely be longer and would involve more things.

So, in that sense it's possible. That's the hypothesis I would make.

MR. MILLER: Judge Frye, at this time I would like to move in Suffolk County Exercise Exhibits 57 which is the NUREG report, and 58 which is -- I will characterize it as Dr. Mileti's work papers for Attachment F to the testimony.

JUDGE FRYE: Any objection?

MS. MONAGHAN: No.

MR. ZAHNLEUTER: No objection.

JUDGE FRYE: So ordered.

(Suffolk County Exercise Exhibits marked 57 and 58 for identification are admitted into evidence.)

MR. MILLER: And, I would have no further questions for Dr. Mileti.

JUDGE FRYE: Mr. Zahnleuter.

CROSS EXAMINATION

BY MR. ZAHNLEUTER:

Q Dr. Mileti, on Page 12 of your testimony, there are several references to job performance aids. You believe

that job performance aids would correct most performance errors, right?

A I think it would depend on the kind of performance error it is. I don't think that is a good categorical statement to make in reference to anything.

Q What kind of performance error would not be corrected by a job performance aid?

A One in which more detailed training was needed.

Q And is there a specific example that you can give me regarding the exercise on February 13th?

A Probably dosimetry might be an example.

Q Are there any others?

(Witnesses conferring.)

Dr. Mileti, are there any others?

A There could be. I would have to go back and have a look. I don't certainly recollect.

Q So right now, to the best of your recollection, you believe that dosimetry would be an area that would require more training as opposed to job performance aids?

A (Witness Lindell) No, it's the reverse of that, that dosimetry ---

Q Excuse me, I asked Dr. Mileti the question and I really meant to have an answer from him and then you can answer afterwards, Dr. Lindell. I think that's the rule we've been following.

JUDGE FRYE: Well, we've been following that rule where the answer was subscribed to only by the person that you're directed the question. Now you've got a joint answer.

WITNESS LINDELL: I also sponsor this

testimony. That's the reason I spoke up.

JUDGE FRYE: So I think you have to give him a crack at it.

MR. MILLER: Judge Frye, I would like to clarify this procedural matter also. I had always assumed that the rule was that you could at least direct your initial question to anyone on the panel that sponsors the answer, and if that person cannot then respond, then of course the other person can add or could contribute. But I felt that the lawyer did at least have control as to whom the initial cross-examination question is directed.

JUDGE FRYE: Oh, I think you do clearly, but when you've got an answer where two of them have sponsored it, I think you may have consultation or they may consult with each other before they answer.

MR. MILLER: Okay. Thank you.

JUDGE FRYE: That way you've got an answer. Where only one sponsored it, then I don't think consultation would be proper.

WITNESS MILETI: I'm sorry. I thought we had talked about how the numbers for dosimetry were useful in terms of giving it on a card for somebody to take out with them in an emergency.

BY MR. ZAHNLEUTER:

Q Well, Dr. Mileti, didn't you just tell me that

dosimetry was an area where job performance aids would not be corrective?

A (Witness Mileti) No, I thought it was the other way. I apologize.

Q You just said it the other way. Okay.

Now, Dr. Lindell, you were going to add something?

A (Witness Lindell) No. It's just that when I heard the question and I apparently misinterpreted it as well. I thought you were talking about an area in which job performance aids would be effective. So that's the reason I also responded that dosimetry would be effective in that area, or that job performance aids would be effective with respect to dosimetry.

Q Let's flip the question around then so that we understand it together. Are there any areas where job performance aids would not be adequate?

(Witnesses confer.)

A (Witness Lindell) A job performance aid wouldn't fix a broken copier.

JUDGE FRYE: But would a training program.

WITNESS LINDELL: Well, if you got into it -- I mean it's hard to conceive of a situation in which something would be absolutely inappropriate because if you brought a copier or a repairman onto the staff or trained somebody to

repair copiers and provided them -- I mean job performance aids, most copying machines have troubleshooting guides. That's a job performance aid. So if there was a minor malfunction, yes, I suppose that a job performance aid would be of some effectiveness.

JUDGE FRYE: I hear what you're saying, but you might need to train personnel in how to repair the copier.

WITNESS LINDELL: Absolutely. I've run into problems with copiers before and I can use the troubleshooting guide one some cases, but there are other things that are simply beyond the ability of anybody to use a troubleshooter's guide for. So it's very difficult to answer the question absolutely in the negative.

BY MR. ZAHNLEUTER:

Q Let me focus this a little more. On page 12 in the second paragraph in the second to the last sentence you say "In our judgment, most of these recommendations for refresher training would be more appropriately corrected by means of job performance aids such as fact sheets and check lists."

A (Witness Lindell) That's directed specifically toward dosimetry, the fact that people could not remember their administrative dose limits and the procedures for obtaining authorization to exceed those limits.

Q Well, it says most of these recommendations, and

that leaves some room for a recommendation that would not be corrected by job performance aids, and that's what I'm asking about right now.

Is your testimony more appropriately in our judgment all of these recommendations for refresher training would be more appropriately by means of job performance aids?

A No, sir.

Q What is it that occurred during the exercise on February 13th that would not be more appropriately corrected by means of job performance aids?

A Just a moment and I'll look.

(Pause while the witness reviews his documents.)

I have these cross-referenced and it will take some time to sort through them. If you want to pursue the question, it could take five minutes or more to go through and identify the exception. I don't have the exception code, but I can find it given enough time.

Q Well, Dr. Mileti, do you have anything to add to this question?

A (Witness Mileti) No. Our work in reference to these sheets was done together, and most of the effort that I expended in preparing this testimony was in reference to my P's and Z's and U's, and I would have to rely on Dr. Lindell's pages that he has here.

MS. MONAGHAN: Perhaps Mr. Zahnleuter could give him an example and then maybe they could respond giving an example. That might move things along.

JUDGE FRYE: I think Mr. Zahnleuter started out asking for an example, didn't you?

MR. ZAHNLEUTER: I think I did, and I don't really know why things got so troublesome.

BY MR. ZAHNLEUTER:

Q Let me start from another direction. On this page 12 you describe job performance aids as maps, check lists and fact sheets.

Are there any other type of jobs performance aids that you could give as an example?

A (Witness Lindell) Well, I think the LERO ID badges are an excellent example of the kind of job performance aid that could be used.

Q How about OPIPs?

A Those would constitute a job performance aid. In general the definition, the generic definition of a job performance aid would be something or a general defining criteria criterion for a job performance aid would be something that assists people in remembering either numbers that may be easy to forget or long lists of steps.

Q Would the purpose of a job performance aid be to increase the level of performance in the event that a LERO

worker couldn't remember what to do correctly?

A Yes.

Q Is there any limit to what a job performance aid could constitute?

A Well, yes, there is a limit in that if you took the -- as a matter of fact, I just established the limit on a job performance aid. I had the ARCAs and deficiencies coded according to certain areas, but I didn't have the ARCAs and deficiencies listed specifically. So if I had to cross-reference from one piece of material to another piece of material it would take me too long to do that cross-referencing to go through and identify the one or two exceptions. That would be an ineffective job performance aid, and it obviously in this case did not assist my performance.

A (Witness Daverio) Mr. Zahnleuter, if you would like, maybe we can give you one. I didn't sponsor the answer, but if you would like I can probably come up with one.

Q Come up with a job performance aid?

A No, a non-job performance, one of the issues that was non-job performance fixable, because I heard Dr. Lindell saying he would need time. We could give you one if you would like to have an example of one we think would fit.

Q In other words, one of the issues that was

fixable by training?

A (Witness Lindell) Right.

A (Witness Daverio) But not by job performance, right.

Q Okay. What would that example be?

A I think if you look in our testimony we talk about the bus driver problem and that when we analyzed that we discovered that it wasn't so much that the maps weren't the problem, but it was a tradition, I'll use that word, that developed in running the drills at that staging area where people could volunteer to go to different places, and therefore to change the map wouldn't have done anything because what was happening is that they could volunteer.

So a better map wouldn't have improved the performance. We had to do some kind of different training to reinforce and fix how we ran drills so that that could not happen again. So there was no job performance aid that would have solved that singular problem.

Q Dr. Mileti, FEMA found that the radiation monitors at the coliseum during the drill didn't -- or that they had performance errors because they did not monitor at a quick enough pace. Do you recall that?

A (Witness Mileti) I have to admit I don't, but I'm willing to presume that it's there.

Q You will assume that it's true.

Do you recall by any chance that FEMA recommended that the radiation monitors be given training?

A I do, yes.

Q And do you disagree with that FEMA recommendation that the radiation monitors receive more training?

A I'm of the generic opinion that everybody should continue to have training as is appropriate. I wouldn't suspend training.

Q Well, we are specifically talking about a recommendation for refresher training of radiation monitors because of inadequate performance at the exercise. So do you agree or disagree with the FEMA recommendation?

A I would have to answer as follows. I think if that was an identified problem, then an appropriate way should be discovered to rectify the problem, and if training is an appropriate way, then sobeit.

However, I really think someone like an industrial psychologist who knows about that might be better to make a judgment than a sociologist.

Q Do you have an opinion of whether a job performance aid would help increase the level of performance of a radiation monitor?

A It sure would help me if I were a radiation monitor to have a job performance aid. One of the things

that we've learned, not just me, but other people who have researched emergencies, is that the functional equivalent of job performance aids help.

Q What kind of job performance aid would help a radiation monitor increase the pace at which that person monitored evacuees?

A I would have to say I don't know the answer to that question.

A (Witness Lindell) It might be possible to come up with a job performance aid that would do that, but I would say that the question is determining how -- if the rate at which evacuees could be monitored was determined using some kind of a behavioral sample, the question would be to train -- that is, there is a criterion there of I believe it was 90 seconds.

(Witnesses confer.)

If that's the criterion, then I would say that there might be some kind of equipment or there might be some kind of job performance aid that might be able to speed the monitoring process, but that in all likelihood in this situation the most effective way of improving the performance of the organization would be to train those who did not reach the training criterion of 90 seconds retrain them so that they could improve their performance. It may be a question of manual dexterity, in which case it's a

selection problem and not a training problem.

Q Well, Dr. Lindell, FEMA did not evaluate every monitor; that's correct, right?

A I believe that is correct.

Q So your recommendation is just the people that FEMA monitored that FEMA found took too long would be retrained?

A No. I would say that if FEMA found that some of the radiological monitors were not capable of maintaining that 90 second time, then that LERO should investigate the degree to which either people can be trained to that criterion, that is the available pool or labor cannot be trained to that criterion, that the procedures be changed so that they can handle -- if in general people can't do it any faster than 120 seconds, that the number of monitors be increased so that they can handle the expected number of evacuees.

Q So in other words, you would agree with FEMA that refresher training would be appropriate?

A Either that or job redesign.

Q Now on page 12, again in the second paragraph, in the middle of that paragraph you have a sentence "For most of the training related performance errors FEMA recommended correction with refresher training to improve LERO's workers knowledge of specific facts."

You are referring to improving the long-term knowledge of specific facts by LERO workers, right?

A Yes, the long-term retention of facts like administrative does limits and procedures.

Q And your position is that LILCO's training program is effective; is that right?

A In general it's effective, yes.

Q And you would agree with me then, wouldn't you, that an effective training program should bring about a relatively permanent change in behavior?

A It may not be possible to achieve certain kinds of changes in behavior. A training program, for example, cannot change somebody's personality. A training program cannot change my ability to "slam dunk." I'm notoriously lacking in that ability and a large part of the problem is my height.

Q You would agree with me, wouldn't you, that an effective training program should strive to bring about a relatively permanent change in behavior?

A Where it's feasible, and that's the question that we're addressing is that if people are generally incapable, people generically or at least the pool of workers available to an organization is generally not capable of learning specific facts and that the problem can be better resolved by provision of job performance aids, in

a sense redesigning the job so that people can perform effectively, then that makes a lot more sense than trying to beat into their heads something that they are going to keep on forgetting. It's just better to do it the most reasonable way and the most reliable way rather than the most difficult way.

Q When you say redesigning the job, do you mean making the job easier so that people with a generic incapability of performing can perform easier?

A Well, in this particular case I think I made the point that it's difficult for people to remember isolated figures like 3.5 rem or 5 rem, administrative does limits versus NRC dose limits versus EPA PAGs and things like that. Those numbers are a little bit difficult to remember for most people.

As a matter of fact, we demonstrated that ourselves here in my inability to remember the NUREG CR number for Dr. Mileti's paper or even some NRC reports that I've done myself. It's just difficult to remember isolated numbers. It's a lot more effective to provide those number on some kind of job performance aid like the LERO ID badge rather than to try to drill people every week or two weeks to make sure that they remember the number. It's just not that important to remember the numbers.

It's easier and more effective for them to have

that number written down some place so that they can refer to it.

Q Now as we talked earlier though, we are not just talking about numbers, but we are talking about maps, check lists and fact sheets, right? What is a fact sheet?

A Well, in this case the LERO ID badge is a fact sheet. It contains certain facts and numbers.

Q And a check list?

A A check list would be a sequence of actions to take. That is again on the back of the ID badge.

(Witnesses conferring.)

In the last appendix there are copies of the LERO ID badge and it has radiological information and job related information. It says under radiological, and here I'm looking at road crew job code No. 21, and I'm just picking one at random, "Read the dosimeter every 15 minutes." That's a specific reminder. And then it says "If zero to 200 MR goes off scale, read zero to 5R and inform the route logistics coordinator." That is a specific instruction. It says if an identifiable condition occurs, a specific identifiable objective condition occurs, that worker can verify for himself and then take a specific action. So that's an example of a check list, a systematic list of actions that need to be taken.

Q Given the amount of LERO training that has occurred, and given the need for job performance aids as you describe it, isn't it true that the training that has occurred has not resulted in a relatively permanent change of behavior?

A I guess my point is that there are some kinds of behavior that simply can't be achieved, and that it is not -- it would not be a particularly effective training program if it wasted its time trying to change behaviors. It simply can't be changed.

Q And is it your testimony that all of the actions that were exhibited during the exercise fell into the category of job performance aids correctable?

A No.

Q Okay. And what actions that occurred during the exercise would not fall into that category?

A I think we are back to the original question. I said it would take me about five minutes to sort through those items, but I think you gave an example with respect to radiological monitoring at the reception centers.

That would be a case in which a job -- it is not obvious to me at this time what kind of a job performance aid would improve performance.

It seems to me that selection or training, or redesign of procedures would be more appropriate than

provision of some job performance aid.

MR. ZAHNLEUTER: Okay. I have no other questions.

JUDGE FRYE: Mr. Johnson, any questions?

MR. JOHNSON: Yes, sir.

CROSS EXAMINATION

BY MR. JOHNSON:

Q Dr. Mileti, I would like to focus on some statements you made concerning your findings about fundamental flaw.

It seems that you were drawing inferences about the fundamental success, or potential for success, of the organization, or organizational effectiveness from that to the training programs effectiveness, or whether there was a fundamental flaw. And in describing what you meant by fundamental flaw, it wasn't clear to me whether you were attributing that description to the performance at the exercise, and organizational effectiveness in general, or to the training program specifically, because your reasoning, by inference I think, from organizational effectiveness to the training program effectiveness.

For example, you use the term uncorrectable, I think or unworkable, and irreversible, synonyms for fundamental flaw, and my question is: To which concept, or which conclusion were you referring to when you used those

terms? Were you referring to organizational effectiveness in general, or were you referring to the training program, and if so, could you explain?

A (Witness Mileti) As I recall it, when I was talking about fundamental flaws, I was talking about fundamental flaws in the training program, and as I recall, I was making a judgment regarding how effective I thought LERO would be in response to a future real emergency, and I thought that from a sociological point of view, enough cohesiveness was revealed by the FEMA assessment, that LERO would be effective in response to a future real emergency.

And from that I infer that the training program has to be successful to have gotten up to that level of organizational performance.

Q Let me focus on irreversible. It seems to me it would be pretty difficult to find some flaw in a training program that was irreversible. Are you referring to a performance indicator during the exercise that would indicate an irreversibility in performance during an accident, and what that means in terms of the training program?

A I hope I understand your question. I am not sure I do.

Q Let me try again. Let me draw a distinction between what happens during the course of an accident, for

example -- in your testimony you refer to patterns of behavior, patterns of errors, and redundant and diverse systems to prevent them from having major consequences.

Now, let me draw analogy to quality assurance. Quality assurance, for example, in construction you have redundant systems, ways of checking. You have diverse systems, you have defense in depth.

But there is an elaborate procedure that takes a fair amount of time with design engineers as well as with quality assurance, quality control people. There is a difference between that kind of a system and what happens during an emergency, in the sense that you don't have the time to employ elaborate systems to review over time. You have to get to develop some kind of corrective action if you are going to have corrective action during the emergency, and I was wondering when you said, `irreversible,' were you referring to evidence of irreversible errors in performance that you saw during the exercise, in terms of developing a standard that indicated performance that during an exercise the plan defects were irreversible, or were you talking about the plan itself for training, which is incorrigible.

MR. ZAHNLEUTER: I object to the form of the question.

JUDGE FRYE: I am lost.

(Laughter.)

JUDGE FRYE: Take it one at a time. You had a number of elements in there.

BY MR. JOHNSON: (Continuing)

Q Okay. When you talk about irreversibility, what are you referring to?

A (Witness Mileti) Can't be fixed.

Q What can't be fixed?

A The flaw, the fundamental flaw.

Q In what?

A The training program.

Q Give me an example of something that could not be fixed?

A Well, in reference to training for emergencies, I think emergency planning works. The evidence I have seen suggests that that is the proper conclusion. I don't think there is something that couldn't be fixed in reference to planning for an emergency at a nuclear power plant.

However, I can't imagine some emergencies for which planning may not work.

A (Witness Lindall) This may be -- and I don't want this to sound flip -- but I think it is a little bit -- the only example I could come up with is that if the training program was that in order to respond effectively to the emergency people needed enough intelligence, and we are talking about literally IQ here, to be able to grasp certain

kinds of concepts, and the people that were available, the only people that were available, were at the level of maybe below the educateably mentally retarded, or something like that.

It is a very strained example, but I think it is the kind of illustration -- that the people who were available simply could not grasp the material that they needed to learn. That would be an example, but it is awfully -- like I said, it is awfully far fetched, and it sounds kind of silly.

Q So, I gather from both of your answers that when you are talking about unworkable and irreversible, you are talking about the training program and not about performance during the exercise, is that correct?

A (Witness Mileti) That is correct, yes.

MR. JOHNSON: Thank you.

MR. CHIMING: Just a couple of questions.

JUDGE FRYE: Okay.

CROSS EXAMINATION

BY MR. CUMMING:

Q I would like to ask the panel, and any of you may answer.

JUDGE FRYE: You understand we are just doing redirect (sic) for Dr. Mileti and Dr. Lindell.

MS. MONAGHAN: I think it is cross.

JUDGE FRYE: It is cross, I am sorry, Ms. Monaghan.

BY MR. CUMMING: (Continuing)

Q Dr. Mileti in particular may wish to answer this. In your judgment, does not FEMA use a host of problems analyzed as training; under training for corrective action?

A Well --

Q In other words, doesn't the recommendation for enhanced training, refresher training, et cetera, typically get used by FEMA to cover a host of the items that you have been discussing here this afternoon?

A (Witness Mileti) I would have to say I don't know, but perhaps Dr. Lindell does.

A (Witness Lindell) I haven't seen that many FEMA post exercise assessment. I have seen one post exercise assessment.

All I can say is it is my experience as an evaluator, I know at emergency exercises for the Nuclear Regulatory Commission that in general performance errors tend to be depersonalized.

That is, rather than saying Joe Schmoe blew it, and somebody needs to work him over in a back room, that they just say there is a training error, and something needs to be fixed in training.

So, to that degree I can answer -- I think that addresses the question.

Q To follow on with one of Judge Frye's earlier points, is there any possibility that a training program could ever ensure or assure a hundred percent statistical success as a result? Would that ever be an appropriate objective for a training program?

A (Witness Mileti) I couldn't say that that is possible. I don't think one could ever talk with certainty.

A (Witness Lindell) It would have to be a very elaborate training program for a very simple task.

As the training program became more elaborate, and the task became more simple, then I think you can approach that, but it is hard to guarantee anything with a hundred percent certainty.

A (Witness Mileti) Especially when human beings are involved.

Q This seems like a gross oversimplification, but with respect to the exact working from a portion of Contention Ex. 50, the statement appears: Virtually every error made by a LILCO player during the exercise involved to some degree a failure of the LILCO training program to prepare personnel adequately to perform necessary actions.

Would you agree or disagree with that statement?

A (Witness Lindell) Absolutely disagree.

Q With respect to actual emergency situations, in the expert opinion of the panel, or Dr. Mileti specifically, would you believe or do you have the opinion that the present LILCO Plan with respect to training adequately prepares the individual to, in fact, be flexible enough to deal with the situation beyond that which anticipated preparation is expected to cover?

A (Witness Mileti) Yes.

Q To the extent possible it does so.

A Yes.

Q With respect to an actual emergency situation, is it your judgment that in some cases an individual should, in fact, be trained so as to refer back to specifically his written procedures, or to check those procedures, and does the LILCO plan now make that proper definition of that situation?

A In general, I would answer the first part of your question as, yes.

A (Witness Lindell) I would say the performance in the exercise suggests to me that that is the case, but as far as exactly how the plan covers that, I am not sufficiently familiar with the procedures, specifically with the procedures, to address that.

A (Witness Behr) We do enforce in training, and continue to reinforce, where practical, to referenced

procedures, and in fact, if you look at the attachment, the job performance aids refer the field workers where they need more information, to take a look at their packets, and in their packets they generally have procedures.

Q So, in your judgment the current plan does, in fact, require referencing procedures where appropriate, rather than reliance on the individual responder's memory?

A Yes.

MR. CUMMING: I have no further questions.

JUDGE FRYE: Redirect?

MS. MONAGHAN: Very limited.

REDIRECT EXAMINATION

BY MS. MONAGHAN:

Q Dr. Mileti, you and Mr. Miller discussed some limiting factors in your analysis, which I believe appear in your testimony on Pages 19 and 20.

Given the limiting factors that you described, what confidence do you have in the results of the analysis you performed?

A (Witness Mileti) Enough confidence to come here and make my conclusion.

Q Given those factors, what confidence do you have if the results of the analysis demonstrates that the LERO training program has produced an organization with high potential for effectiveness?

A A great deal of confidence.

MS. MONAGHAN: Judge Frye, there has been an awful lot of discussion about these performance aids, and there are xerox copies of them in the back of the LILCO testimony as Attachment I.

We have sufficient copies of the actual things for everyone to have one, and I would like to use them as an exhibit.

MR. MILLER: I really don't quite understand --

JUDGE FRYE: What is the matter with the attachment to the testimony?

MS. MONAGHAN: They are xeroxed copies, and they don't show what the actual thing looks like quite as well as this does.

(Laminated clip-on tags are distributed to all parties.)

JUDGE FRYE: Do you have any objection?

MR. MILLER: Procedurally, it seems a little strange to me that they are entering exhibits on redirect examination.

JUDGE FRYE: You don't have any problem with -- it is the real thing.

MR. MILLER: It is not important enough for me to have a problem with it.

MS. MONAGHAN: Okay.

JUDGE FRYE: These are all evacuation route spotters Job Code No. 24?

MR. MILLER: Mine is Bus Drivers Job Code No. 23.

MS. MONAGHAN: The complete set of them is in Attachment I. What I have done is given each of you one.

JUDGE FRYE: Is this going to be an exhibit now, or is this just for our information.

MS. MONAGHAN: Just for your information. I don't think we need to put an exhibit number on it and enter it into the record.

Actually, all of them are included in Attachment I, but this is just to let you take a look and see what they look like.

JUDGE FRYE: Fine.

MR. MILLER: We can keep these for our very own, though?

MS. MONAGHAN: Yes, you can wear them whenever you like.

(Laughter.)

A (Witness Lindell) Except in an emergency.

BY MS. MONAGHAN: (Continuing)

Q Dr. Lindell, is this the type of performance aid that you were discussing in your testimony?

A (Witness Lindell) Yes, it is.

Q Why do you consider this to be an effective response to the dosimetry problem noted by FEMA in the post exercise assessment?

A Well, it is an effective response because it lists the kinds of numbers that are typically difficult for people to remember, especially if they don't normally use dosimetry in their everyday jobs, and it contains a sequence of steps to follow.

Q Do you consider this to be an effective job performance aid?

A Yes, I do consider this to be an effective job performance aid, because it lists the sorts of things that were noted in the FEMA post exercise assessment.

MS. MONAGHAN: That is all.

MR. MILLER: Judge Frye, I think I have only one recross question.

RECROSS EXAMINATION

BY MR. MILLER:

Q Dr. Mileti, the LERO badges that we have been handed out, can you tell me why, in your opinion, these badges would be looked at by LERO personnel, if such personnel forgot to even look at their own personnel dosimeters during the exercise?

A (Witness Mileti) Because they have instructions on them. And I think people might recollect that they can

gain information about how to do what they are supposed to do.

Q If personnel during the exercise -- well, let me ask. Let's do this one step at a time. Is it your understanding that during the exercise, LERO personnel dispatched into the field wore personnel dosimeters?

A Yes.

Q And is it your understanding, Dr. Mileti, that those LERO personnel were under LERO procedures to look at those dosimeters approximately every fifteen minutes?

A Yes.

Q And there are a number of examples identified by FEMA in its report where personnel did not look at their dosimeters in a timely fashion, is that correct?

A Some did not, that is correct.

Q Now, is it your opinion that those personnel who forgot to look at their dosimeters would not forget to look at these LERO badges?

A I think getting handed these LERO badges, putting these LERO badges on, may be cause for someone to having a look at it and recollecting procedures.

Q Dr. Mileti, LERO personnel at the exercise were handed their dosimeters, they were briefed on the use of those dosimeters, and they attached them to their garments to wear.

So, do you have any other basis for believing that LERO personnel would pay any attention whatsoever to these badges?

A In a real emergency, I think people would pay keen attention to their dosimeters and their badges and their jobs.

I suspect that there may not be as much incentive to look at a dosimeter when you know there is no radiation, perhaps. Recollecting for people procedures, just before they engage in a job, I think would enhance the probability that they would follow those procedures.

Q Do you believe, Dr. Mileti, that during a FEMA-graded exercise that received the kind of publicity that this exercise received, when LERO personnel knew they were being observed by FEMA evaluators, that those LERO personnel had no incentive to look at their dosimeters?

A I think many did.

Q And some did not?

A That is true.

MR. MILLER: Thank you.

MR. ZAHNLEUTER: I have one question.

RECROSS EXAMINATION

BY MR. ZAHNLEUTER:

Q Dr. Mileti, the LERO personnel who participated in the exercise were supposedly taught the information on the back of this aid, correct?

A That's correct, yes.

MR. ZAHNLEUTER: I have no other questions.

MS. MONAGHAN: No re-redirect.

JUDGE FRYE: Are we now through with both Dr. Mileti and Dr. Lindell?

MR. MILLER: Judge Frye, as far as Suffolk County is concerned, we are finished with both Dr. Mileti and Dr. Lindell.

MS. MONAGHAN: Dr. Lindell will be here tomorrow again, but Dr. Mileti will not.

JUDGE FRYE: Dr. Mileti, thank you very much for your patience and your testimony. We appreciate it.

WITNESS MILETI: Thank you.

(Dr. Mileti is excused.)

MR. MILLER: I tried, Dr. Lindell. I tried.

(Laughter.)

JUDGE FRYE: We had, as I recall, only a few questions left for Mr. Pursell from Mr. Miller.

MR. MILLER: I think, Judge Frye, that certainly

my questioning of Mr. Pursell would be finished within an hour of tomorrow morning. I am going to go through the second analysis.

I don't anticipate resistance from Mr. Pursell, and I think it can be done within about an hour. I will have a couple of exhibits I will be using in that cross-examination.

JUDGE FRYE: Do you have much redirect for --

MS. MONAGHAN: No, minimum redirect for Mr. Pursell. I don't suspect that it would taken even -- maybe 15 minutes at the most.

JUDGE FRYE: 15 minutes?

MR. MILLER: I would think that by the mid-morning break tomorrow we would be with Ms. Goodkind and Mr. Behr on the other exercises.

JUDGE FRYE: Any chance we can get through with Ms. Goodkind tomorrow?

MR. MILLER: Mr. Sutko is going to handle that part of the testimony, but I would suspect the answer is probably not.

JUDGE FRYE: Is he here?

MR. MILLER: Yes, sir. He is here. I know enough to tell the Board that the answer is probably that we would not finish Ms. Goodkind tomorrow. Well -- and, I don't mean to exclude Mr. Behr. He is also sponsoring --

JUDGE FRYE: Well, Mr. Behr is going to have to hang around after tomorrow in any event, because he is on other testimony.

MS. MONAGHAN: That's correct, Judge Frye.

JUDGE FRYE: It would be nice to be able to get rid of Ms. Goodkind tomorrow.

MS. MONAGHAN: I'm sure she would prefer not to have to come back next week.

MR. MILLER: We would all prefer that. And, I'm sorry that she will have to come back. I'm sorry that yesterday we lost some time . But, I don't think, given the fact that we have some wrap-up with Mr. Pursell and given the fact that tomorrow is our shortened day, that we are going to finish with Ms. Goodkind and Mr. Behr tomorrow.

JUDGE FRYE: I think we had better continue with Mr. Pursell this afternoon, then.

MR. MILLER: Judge Frye, I have some commitments this evening. I'm not sure what the Board anticipates this evening, but as I understand things, as of now already, at five to 5 the Board wanted to hear something about fundamental flaws, the Board wanted to hear --

JUDGE FRYE: Well, that can be deferred. We will easily defer that.

MR. MILLER: Fine. If the Board wanted to hear some kind of schedule, I'm more than happy to defer that as

well.

But, I have got to be -- I can go a little bit this evening. I probably would not finish Mr. Pursell this evening, and no later than -- 5:30 is going to push me in a couple of other matters that I have to do. But, if the Board wants to go until 5:30 --

JUDGE FRYE: Let's go on and make every effort to try to get rid of both -- well, not get rid of but get through the testimony of both of these witnesses tomorrow.

Why don't you bring Mr. Pursell in?

MS. MONAGHAN: He's coming.

MR. MILLER: I will have to go get some documents from the other room.

JUDGE FRYE: All right.

MR. MILLER: Judge Frye, I do have to be out of here no later than 5:30 today.

JUDGE FRYE: Okay. We may want to start early tomorrow, then.

MS. MONAGHAN: Yes. We would like to finish with Ms. Goodkind if at all possible so that she doesn't have to return from Chicago on Monday.

MS. MC CLESKEY: And, as always, I would very much like to address the scheduling issue before we get away tomorrow at 4 o'clock.

(Mr. Miller leaves the courtroom to obtain

documents.)

MR. MILLER: Judge Frye, Mr. Sutko's estimate for Ms. Goodkind and Mr. Behr on their testimony is a day and a half. If you want to talk to Mr. Sutko directly, I will bring him into the room. I just talked to him.

JUDGE FRYE: Well, let's go on with Mr. Pursell, and we will talk to Mr. Sutko afterwards.

Whereupon,

DENNIS M. BEHR,

CHARLES A. DAVERIO,

and

MICHAEL K. LINDELL

were joined at the witness table by ELLIOTT D. PURSELL and, having previously been duly sworn, were further examined and testified as follows:

CROSS EXAMINATION

BY MR. MILLER: (Continuing)

Q Mr. Pursell, would you turn to Page 26 of the testimony, please?

(The witness is complying.)

Now, Mr. Pursell, at the top of Page 26 it references the second analysis that you performed with respect to the Shoreham report; is that correct?

A (Witness Pursell) That's correct.

Q Now, can you tell me, Mr. Pursell, what

percentage of the FEMA objectives you looked at that had no deficiencies or ARCAs associated with them?

A Okay. Based on my calculations, the percentage came out to 74.4 percent.

Q Now, your testimony states that 74.4 percent of the objectives were either completely or partially met. I'm asking what percentage had no deficiencies or ARCAs as identified by FEMA associated with them?

A No deficiencies or ARCAs associated with them? Is that the question?

Q Yes, sir.

A I don't believe I have calculated the precise percentage that you are asking. The percentage rather that I did calculate was the number of objectives which were completely met by LERO.

But, if I'm understanding the percentage that you are asking for -- and I think I do have an understanding of it -- I have not calculated that exact percentage.

Q And, I take it then also, Mr. Pursell, you would not be able to tell me what percentage of the FEMA objectives had no deficiency or ARCAs or areas recommended for improvement associated with them?

A No. I have not calculated that percentage.

Q Did you perform the same sort of calculation that you discuss on Page 26 with respect to any other FEMA

post-exercise assessment report, including the Indian Point compensating exercise?

A No, I have not.

Q Can you tell me why you did not do this?

A Well, for one reason, the Indian Point report is not written in the exact same format as the Shoreham report. So, it would be -- it would not be possible to take the Indian Point report and make the exact same type of calculations that are presented in response to Question 26 in my testimony.

Q But, Mr. Pursell, you did compare the Shoreham report to the compensating exercise at Indian Point under your content analysis approach, did you not?

A Yes, that's correct.

Q So, are you telling me that it was possible to make a comparison with respect to the critical incident technique but not with respect to determining which objectives had been met or not met or only partially met?

A Certainly, there could be some percentage calculations done for the Indian Point report. Whether those calculations would be precisely the same as these or not, I would have to go back to the Indian Point report and look.

But, from what I recall the calculations would probably be slightly different at the Indian Point report.

Certainly, the deficiencies are laid out. So, I'm certain some sort of counting process could be done, but I have not done that for that report.

Q Now, my initial question, Mr. Pursell, was why you did not perform the same kind of analysis with respect to any other FEMA post-exercise assessment report?

A Because our purpose in looking at these numbers for the Shoreham report was simply to look at the positive favorability of the Shoreham report. We, at no time, intended to compare this type of analysis to another exercise report.

(The witnesses, Pursell and Lindell, are conferring.)

Q Mr. Pursell, do you have anything you want to add after that consultation with Dr. Lindell?

A No.

Q Now, Mr. Pursell, earlier today while you were not in the room, we discussed with Dr. Mileti and Dr. Lindell the various sub-organizational units, if you will, of the LERO organization. For example, the EOC, the ENC, the staging areas.

Are you familiar with those various sub-organizational units?

A Yes. I'm aware that they are broken out separately in the report, in the FEMA report.

Q From your review of the FEMA report for Shoreham, Mr. Pursell, would you agree with Dr. Mileti, who told me earlier today, that he would consider the EOC to be the most significant --

A I'm sorry, what was the last part of that?

Q Let me just start again. I wasn't through.

From your review of the FEMA report for Shoreham, would you agree with Dr. Mileti's statement to me earlier today that the LERO EOC is probably the most important subunit within the LERO organization?

A I would have to say I am not knowledgeable enough about emergency organizations -- and do not consider myself an expert in that field -- to give an answer to that.

Q Okay. I'm not asking you to discuss with me any matter that calls on expertise within organizational theory. I'm asking with respect to the LERO organization and your review of the FEMA report, would you be able to agree with me that the LERO EOC is the most important subunit within the LERO organization?

MS. MONAGHAN: Objection. The witness has just indicated he is not competent to answer the question.

JUDGE FRYE: Overruled. As a matter of your own personal opinion, would you hold that opinion or not?

Maybe you don't know in which --

WITNESS PURSELL: I really don't have an opinion

on that subject.

JUDGE FRYE: Okay. Now, let's move on.

WITNESS PURSELL: I mean, I don't know.

MR. MILLER: Judge Frye, I'm having handed out a multi-page document, the first page of which is entitled "Summary of Objectives," and in the bottom right-hand corner is typed "Privileged and Confidential Attorney Work Product."

And, I might just state that this was one of the documents that was provided to Suffolk County, not during discovery but following the County's filing of the motion to strike LILCO's testimony.

BY MR. MILLER: (Continuing)

Q Mr. Pursell --

JUDGE PARIS: Are you going to --

JUDGE FRYE: Is this marked as Number 59?

MR. MILLER: I'm sorry. We have marked this as Suffolk County Exercise Exhibit 59.

JUDGE FRYE: All right.

(The document referred to is marked as Suffolk County Exercise Exhibit Number 59 for identification.)

BY MR. MILLER: (Continuing)

Q Now, Mr. Pursell, are you familiar with what we have identified as Suffolk County Exhibit 59?

A Yes, I am.

Q Could you tell me what this document is or consists of?

A Well, it basically consists of the counting that I did initially to come up with some percentages to look at, the number of percentage of objectives that were completely met, objectives not met and objectives partially met, just specifically as defined in the FEMA report.

And, basically this is simply going -- consisted of the counting, as you can see here.

Q Is it fair to say, Mr. -- first of all, Exhibit 59 was prepared by you; is that correct?

A Yes, that's correct.

Q And, I assume, Mr. Pursell, that Exhibit 59 were essentially your work papers that led to the conclusions stated at Page 26 of the LILCO testimony; is that correct?

A The attached pages in the back? Is that what you are referring to?

Q No. I'm referring to the entire exhibit. Are these essentially your work papers that led you to tabulate the percentages that appear on Page 26 of the testimony?

A That's correct.

Q And, I gather, Mr. Pursell, from looking at the first page of Exhibit 59 that you counted 121 exercise objectives in part because some of those objectives appear

more than once in the FEMA report?

A That's correct.

Q And, if I recall correctly, Mr. Pursell, those objectives that were not observed by FEMA, of which there appear to be five under your count, were not included in calculating your percentages that appear on Page 26; is that right?

A That's correct.

Q Mr. Pursell, how did you determine which objectives had been met or not met or only partially met?

A Simply using the language set forth in the FEMA report as written by FEMA where they stated typically -- it was at the beginning of a paragraph -- the exercise objective of determining thus and so was, and then they would state either met, not met or partially met; and, then in parentheses after that, it would be the specific exercise objective.

For example, SA-1 or Field 1, EOC-1 and so forth.

Q And, Mr. Pursell, part of -- in fact, a large part of Exhibit 59 consists of xerox pages, xerox pages from the FEMA report with handwriting next to the numbers and the handwriting says met, partially met, not met.

I take it that's your handwriting?

A That's correct.

Q And, you simply xeroxed the pages that set forth the overall objectives of the report and then went through the report and determined whether objectives had been met or not met or partially met and then noted that on your copy of the work papers; is that correct?

A That's correct.

Q Did you do anything to verify whether your analysis of whether objectives had been met, not met or partially met is, in fact, correct or not?

A Yes. In fact, there was a summary -- I believe at one point, there was a summary tally sheet that was a verification process that was a step between the attachments that we have here and the actual numbers that we see on the first three pages.

I don't know where that summary tally sheet is. It was just a -- it was a verification sheet that I used to go through and see if, in fact, everything was recorded correctly. I just went back through and double-checked on that sheet.

And, if there was a mistake it was recorded on that sheet. And, that's not here. I don't know where -- I don't have it.

Q Is it the last two pages of the exhibit, Mr. Pursell? Is that what you are referring to?

A No. It's not those two pages. I know what

those are. Those were just some work sheets that we started out with, and when the request was made of me for these documents the request was to provide the working documents that I had generated in generating this analysis.

And, these are all of the working documents that, you know, are available except for the -- there was a verification sheet that I used to go back in and see if, in fact, what had been recorded was correct or not. And, that sheet is not here.

Q I don't know where it is either, Mr. Pursell, because I have handed out as Exhibit 59 the exact document that was provided to me by counsel for LILCO.

A That's correct. That's all I have. I don't --

Q Well, you are telling me there was a summary verification sheet which does not appear in Exhibit 59?

A That's correct.

Q And, I'm just telling you I don't have it, because I was never given that sheet.

JUDGE FRYE: I don't think he is accusing of having --

WITNESS PURSELL: No, no. I don't have it either. I have not seen it for quite awhile. It was not given to my counsel.

MS. MONAGHAN: Judge Frye, at the time that I asked Mr. Pursell for the documents I told him to send me

everything he had, which he said he did.

I think what he is indicating now is that while there may have existed a tally sheet at some time, it was either destroyed or thrown away or just wasn't part of the documents that he has anymore. That's why it wasn't --

JUDGE FRYE: So, when you forwarded the documents you no longer had it?

WITNESS PURSELL: Right. When I forwarded the documents I no longer had it.

JUDGE FRYE: I see.

WITNESS PURSELL: I certainly never assumed that it was an important document at the time that I generated it, since the final percentages appeared to be important.

BY MR. MILLER:

Q Mr. Pursell, can I assume from the verification process that you did at some time that the numbers reflected on the first page of Exhibit 59 are correct based upon your review of the FEMA report?

A (Witness Pursell) To the best of my knowledge, they are, the numbers on the first three pages are.

Q Would you look at -- these pages aren't numbered, but I want you to look, if you would, please at, for example, field objective 5 for the Port Jefferson staging area, and the only way I can describe that for you is that at the top of a page about a third of the way into the document in handwriting it says "Port Jefferson" and then the third page in from that typewritten at the top on page 14 appears "Field Objective 5."

That is an objective which states "Demonstrate the ability to provide backup public alerting if necessary in the event of partial siren system failure."

A (Witness Lindell) We've found Port Jefferson. Then where is it from there?

Q Go three pages in from Port Jefferson. At the page typed in, 14, objective 5 is the objective I just read.

Do you see that, Mr. Pursell?

A Yes, I do.

Q You have noted, Mr. Pursell, that from your

review of the FEMA report that field objective five for Port Jefferson was met; is that correct?

A Based on this document, yes, that's correct, but as I've stated earlier, I'm not a hundred percent sure that this document is correct because this was prior to being proofed or checked or being verified.

Q I'm just wondering if I can rely on the numbers which appear in the first page of Exhibit 59?

A Well, I said yes, to the best of my knowledge, we can.

Q Would you look at the FEMA report now, Mr. Pursell, which we have identified as Exhibit 55. That one will do. Field objective five for Port Jefferson appears on page 57. In fact, the first sentence under the heading "Implementation of Field Activities," do you see that, sir?

A Yes, I do.

Q Can I assume, Mr. Pursell, that that was the sentence you relied upon to draw the conclusion that this objective had been met?

A I don't recall. I would have to go back and redo the numbers again. I mean I'm not sure. I mean I realize it says "met" on page 14 in these attached documents, but I would have to go back and regenerate all of the numbers to see which category that was included in.

MR. MILLER: Judge Frye, I will hand out at this

time a two-page document that we can identify as Suffolk County Exercise Exhibit 60, the first page of which is entitled "Exercise Evaluation Critique Form." In the upper-left-hand corner it states "Port Jefferson Staging Area," and in the upper-right-hand corner the evaluator's name is listed as K. Bertram.

(The document referred to was marked Suffolk County Exercise Exhibit No. 60 for identification.)

BY MR. MILLER:

Q Mr. Pursell, have you ever seen this document before that we have marked as Exhibit 60?

A (Witness Pursell) I've seen quite a few exercise evaluation critique forms. It is certainly not possible for me to say whether I have or have not seen this specific one.

Q Mr. Pursell, did you attempt to by use of the FEMA Exercise Evaluation Critique forms to verify the accuracy of your notations on Exhibit 59 of objectives having been met, not met or partially met?

A No, I did not.

Q Would you agree with me, Mr. Pursell, by looking at what we have marked as Suffolk County Exhibit 60 that in fact Port Jefferson staging area objective field five was

partially met according to FEMA?

MS. MONAGHAN: I'm going to object to that. It's unclear as to what FEMA's official opinion is on that. I think FEMA's official opinion is contained in the report itself.

JUDGE FRYE: Well, let's rephrase the question. If you look at the form, Mr. Pursell, in the center at the bottom, it appears that it has been checked objective partially met; is that correct?

WITNESS PURSELL: That's correct.

BY MR. MILLER:

Q And, Mr. Pursell, if you look at the FEMA report itself, which is what you used as your database ---

A Yes, it's my assumption that the FEMA report is the summary report of all of the observers and is not a report of individual observers.

Q Well, that's fine, Mr. Pursell, but let me ask my question. If you look at page 57 of the FEMA report for Shoreham, which is Exhibit 55, which is where field objective five for Port Jefferson is stated, can you show me where, if anywhere, there is a statement that that objective was met according to FEMA's report?

(Pause while the witness reviews his document.)

A No, I cannot, except to say that it says that it was the first one demonstrated is the only comment that I

see regarding field five here.

Q Did you conclude, Mr. Pursell, when you saw words to the effect that an activity had been demonstrated, that that activity had been met?

A As I have said earlier, I do not recall right now which category I placed that in in the analysis. I don't know whether that would have fallen under looking back at the different categories under either met or partially met. As I've noted, there were some objectives as a note at the bottom of Exhibit 59, that there was some minimal amount of confusion with respect to a few of the objectives.

In other words, there were a handful of objectives that were difficult to classify. In other words, that there was no clear-cut way to make a determination as to whether the objective was met or partially met because in some cases FEMA did not specifically say on an overall basis whether the objective was met or was partially met. And I noted a specific example on page 44 in my footnote to Exhibit 59.

Q Mr. Pursell, I don't want to take the Board's time to perform a counting operation, but I'll represent to you that if you take your attachments to Exhibit 59 and count all the Port Jefferson objectives that you've listed as met, you in fact have listed field objective five for Port Jefferson as an objective which was met. But if you

would like to count that yourself over the evening, that's fine and you can tell me that tomorrow morning.

MS. MONAGHAN: Judge Frye, Mr. Pursell, has already stated that there was a sheet that he went through to cross-check against the notations listed on these pages that are copied and attached to Exhibit 59 and that his total numbers and his final count are the ones that appear on the first page. He has not made any representation that there is a complete correlation between the numbers on the first pages and the ones that come behind that.

MR. MILLER: I've asked, Judge Frye, if I can rely on the numbers on the first page, and I submit that you cannot rely on the numbers given the backup documentation and the numbers that appear on the first page.

If Mr. Pursell would like to make any kind of a count and tell me tomorrow morning I'm wrong, I would be more than happy to hear that.

BY MR. MILLER:

Q Let me go on, Mr. Pursell. Looking at the LERO EOC, if I understand Exhibit 59, you're telling me there were under your count 18 objectives that were met, two objectives not observed, three objectives not met and seven objectives partially met; is that correct?

A (Witness Pursell) No, that's not quite correct. In parenthesis next to the 18 you'll see a one.

In other words, one objective appeared to be completely met, but I was not certain because of some of the wording provided by FEMA. And as I've said just a minute ago, in this analysis there are literally a handful of objectives that we could go through the report and find where it is not 100 percent clear whether FEMA judged the objectives to be completely met or partially met. And where I noted that I specifically put something in parenthesis, and that's the one in parenthesis next to the 18.

I don't recall what page that's on in the FEMA report, but that's why I added the footnote to the bottom of Exhibit 59 so that I'm acknowledging that in fact there are a very few objectives that are difficult to classify into these categories.

But by far the majority of them, nearly all of them in fact, FEMA specifically states in the report, and I think you can see it throughout the report, that the objective was met or the objective was partially met or not met.

Q Now, Mr. Pursell, if we look at the LERO EOC objectives, if I exclude the objectives not observed, which you say you did, there are approximately 28 total objectives for the EOC in the FEMA report; is that correct? I'm just simply tabulating now.

A It's somewhere in that ball park figure not

counting the ones that I have in parenthesis there.

Q Now of the 28 objectives, Mr. Pursell, 18 were met under your analysis, and if I do the kind of percentage calculation you did in your second analysis, I calculate that comes out to 64.28 percent of the objectives were completely met for the EOC. Does that sound about right to you?

A Well, I don't know. I don't have a calculator with me. I don't know what ---

JUDGE FRYE: Do we dare?

(Laughter.)

MR. MILLER: Does that sound right, Judge Paris?

JUDGE PARIS: 64.28.

MR. MILLER: Thank you, sir.

BY MR. MILLER:

Q And, Mr. Pursell, if I look at the ENC where I see three objectives that were met according to your analysis, one not observed, two that were not met and one that was partially met, and if I exclude the objectives not observed, I would have six total objectives, three of which were completely met for a 50 percent percentage calculation of those that were completely met at the ENC.

Now you can agree with that, can't you?

A Yes, that's true. That's correct.

Q And if I look at the Patchogue staging area, Mr.

Pursell, I for Patchogue find that there are a total of 21 objectives under your analysis, nine of which were completely met, so that I find that there is a 42.85 percent percentage calculation for those objectives completely met at Patchogue. Would you agree with that?

A Well, I'll just -- yes, assuming your calculation is correct.

Q And if I look at the Riverhead staging area, Mr. Pursell, I see that there are 18 total objectives, 12 of which were completely met under your analysis which means we have a 66.66 percent percentage calculation of those objectives completely met for Riverhead. Does that sound about right?

A That sounds about right.

Q So if I look, Mr. Pursell, at your total listing of these figures for the subunits of LERO listed on page 1 of Exhibit 59, I would determine from my review that four of the ten subunits, the EOC, the ENC, the Patchogue staging area and Riverhead staging area have less than a 70 percent percentage calculation rate for those objectives completely met, correct?

A Yes, based on the numbers we just reviewed that's correct.

Q And if I look at the numbers a little bit more carefully, I guess then I could say that of the 10 subunits

of LERO since only six exceeded a 70 percent pass rate or 70 percentage calculation rate, if you will, that that comes out to about a 60 percent calculation for those that would have exceeded 70 percent as a pass/fail criterion. Does that sound about right?

JUDGE PARIS: Would you run through that again?

MR. MILLER: I'm simply, Judge Paris, taking the ten subunits of LERO that are listed on page 159 and noting that four of those ten had some percentage calculation of objectives met of less than 70 percent and I'm ---

JUDGE FRYE: How many percent?

MR. MILLER: Seventy percent.

JUDGE FRYE: Seventy.

MR. MILLER: And I'm then observing that therefore on a gross organizational scheme, if you will, that comes out to be about a 60 percent pass rate for the entire organization broken down by subunits, then total subunits, six of which exceeded 70 percent.

JUDGE SHON: Mr. Miller, where did you get your value of 70 percent as passing? Have we established that?

MR. MILLER: I believe, Judge Shon, that was established with this witness during a deposition that was taken some time ago. I think the Board will recall that Mr. Pursell offered a 50 percent rate last week to the Board his basis being police shooting in the dark at a target as the

only other time that he has encountered such a low pass rate.

So 70 percent I think is something that was established in a deposition, but I'll use it arbitrarily today as to what I consider a common place pass/fail rate of 70 percent.

MS. MONAGHAN: Judge Shon, if I might for a moment, I think Mr. Miller is somewhat misrepresenting what Mr. Pursell said in his deposition, and I think Mr. Pursell has made clear his testimony here.

What he has stated is that he is aware that 70 percent is frequently used as a cut-off score for other organizations, but he has not in any way attempted to say that that is what ought to be applied here.

JUDGE SHON: That's what I thought. We don't have his deposition before us immediately as far as I know, and out of context I'm a little bit reluctant to necessarily accept that a 70 percent pass/fail rate for this is a valid one.

Do you think it is, Mr. Pursell?

WITNESS PURSELL: Absolutely not, and in my deposition I merely indicated, not that I necessarily would endorse the 70 percent pass rate for any particular application. I merely indicated that it was generally accepted, particularly in educational institutions, and I

think that's a fact that is well known. For example, university settings was specifically what I had in mind.

MR. MILLER: Judge Frye, perhaps we can Mr. Pursell to take a look at his deposition tonight and I'll certainly do so, and if we need to revisit this tomorrow morning, we can do that. It's 5:30 and I ---

JUDGE FRYE: I realize it's 5:30. My recollection of his testimony here was that he refused to assign a pass/fail rate.

JUDGE SHON: Yes, but that was in totally a different connection, too. That was with respect to your critical incidence, wasn't it?

WITNESS PURSELL: That's correct, but I do not think that any of these numbers should be viewed as grades or pass/fail, and I certainly do not think I'm an appropriate person to suggest a pass/fail for any of these figures.

JUDGE FRYE: That's not say that of course the County can't advocate that 70 percent should be the pass fail mark if the County so chooses.

MR. MILLER: I think that's right, Judge Frye, and all I'm attempting to do through this witness is to demonstrate that looked at in certain ways, even the way Mr. Pursell looked at the numbers, at least for various subunits of LERO the rate of objectives met appears at least to me to

be rather low, and that's what I've tried to demonstrate.

I consider a rate of 42.85 percent for the Patchogue staging area, for example, not to even meet the rate that Mr. Pursell suggests is something that can be compared to when you look at shooting in the dark.

JUDGE FRYE: Well, let me ask, you're going to want to introduce this I take it?

MR. MILLER: Yes, sir.

JUDGE FRYE: Do you have any objection? Does anyone have any objection to it coming in?

MS. MONAGHAN: Judge Frye, I don't think we have clearly established with this witness exactly what the relevance of the backup papers are to the front papers. So until we have managed to do that, I think I would object to entering it into evidence at this point in time without that being clearly understood on the record.

JUDGE FRYE: How about the front page?

MS. MONAGHAN: I have no objection to entry of the first three pages which in my copy are stapled together.

JUDGE FRYE: The first three pages with the numbers on them, right?

MR. MILLER: Yes, sir.

JUDGE FRYE: So we can, you know, look at the numbers and compute various statistics based on those numbers.

MR. MILLER: Yes, sir. I am not quite through with this document.

JUDGE FRYE: I understand that.

MR. MILLER: Okay.

JUDGE FRYE: I am just trying to shortcut this business about seventy percent pass/fail and what is here. I think if there is no objection to the first three pages coming in, the first three pages have the numbers that you are interested in right now. You can certainly argue, you know, that 9 is a certain percentage of a total figure.

It is quite obvious.

MR. MILLER: Judge Frye, can I just ask one other question, and then I have got to go.

BY MR. MILLER: (Continuing)

Q Mr. Pursell, would you look at Page 2 of Exhibit 59? Page 2, you left out the total number of deficiencies and ARCAs and areas recommended for improvement by your accounting, from your review of the Shoreham report, is that correct?

A (Witness Pursell) That is correct.

Q And I can dispute numbers with you, Mr. Pursell, such as four deficiencies versus five deficiencies, but using your numbers, I take it that if you total all the deficiencies, ARCAs and areas recommended for improvement together you get 68, is that correct?

A Yes, that would be correct.

Q And there is 121 total objectives, and just to end the day on a note of yet another percentage calculation, if you divided 68 by 121, I would come out with 58.67 percent of the objectives listed by FEMA required some correction under FEMA's analysis of LERO's performance at the exercise?

A No, that is not correct. Areas recommended for improvement do not require correction.

Q All right. Let me state it a different way, Mr. Pursell. Would you agree with me that 58.67 percent of the objectives noted by FEMA for the exercise, for those objectives, FEMA identified some problem or at least -- well, identified some problem?

A No, I would not say that necessarily even related to the areas recommended for improvement that they identified a problem.

Q Do you believe, Mr. Pursell, that FEMA identified areas recommended for improvement when there were no problems noted by FEMA from it's review of the exercise?

A They certainly have not spelled out in the report problems related to the areas recommended for improvement.

Q I will let the FEMA report speak for itself, Judge Frye, and --

JUDGE FRYE: You can ask him whether the percentage applies to areas recommended for improvement, ARCAs and deficiencies, I suppose.

BY MR. MILLER: (Continuing)

Q I suppose you don't dispute my calculation, Mr. Pursell, given the figures you have on your page here, 58.67 percent is the math -- if you divide the 58 by the 121 objectives?

A (Witness Pursell) Again, I don't have a calculator, but I am assuming that percentage.

JUDGE SHON: I am not at all sure that the 68 represent things that stand in one-to-one correspondence with the 121 which would be required for any kind of percentage.

I mean, the areas recommended for improvement and deficiencies and such are not necessarily tied one-to-one to the summary of objectives. Isn't this true, Mr. Pursell? You know, you can't take percentages of apples that are pears.

WITNESS PURSELL: That is correct, sir.

MR. MILLER: Judge Shon, that is another problem, and the problem comes in the fact that there are times when there is more than one problem identified by FEMA, but it only results in one ARCA or one area recommended for improvement, or for that matter, one

deficiency.

So, it is a difficult calculation to make. I guess we should break for the day.

MS. MONAGHAN: Judge Frye, would it be possible to start at 8:00 tomorrow morning?

JUDGE FRYE: Let us confer for one moment.

(The Board members confer.)

JUDGE FRYE: 8:30.

MS. McCLESKEY: Judge Frye, could we convene a little bit earlier to talk about the schedule without the witnesses?

JUDGE FRYE: No. We will do that during the break.

MR. MILLER: Judge Frye, we will be here at 8:30 tomorrow morning, but I want it understood that from our standpoint Ms. Goodkind is not going to be finished tomorrow, regardless of whether we start at 8:30, 8:00, or 6:00 a.m. We will be here at 8:30, but we have gone late this evening.

I have got commitments this evening, and it seems to me a half hour here, a half hour there, it is a long day as it is.

JUDGE FRYE: It is going to be a short day, because we have to stop at 4:00.

We are adjourned until 8:30.

(Whereupon, the hearing adjourned at 5:40 p.m., to reconvene at 8:30 a.m., Thursday, May 7, 1987.)

CERTIFICATE OF OFFICIAL REPORTER

This is to certify that the attached proceedings before the UNITED STATES NUCLEAR REGULATORY COMMISSION in the matter of:

NAME OF PROCEEDING: LONG ISLAND LIGHTING COMPANY
(Shoreham Nuclear Power
Station, Unit 1)

DOCKET NO.: 50-322-OL-5 (EP Exercise)

PLACE: HAUPPAUGE, NEW YORK

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were held as herein appears, and that this is the original transcript thereof for the file of the United States Nuclear Regulatory Commission.

(sign) Garrett J. Walsh Jr.

(TYPED)
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