UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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In the matter of:

METROPOLITAN EDISON COMPANY : Docket No. 50-289 (Restart)

(Three Mile Island Unit 1)

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25 North Court Street,
Harrisburg, Pennsylvania

Thursday, March 12, 1981

Evidentiary hearing in the above-entitled matter was resumed, pursuant to adjournment, at 9:15 a.m.

BEFORE:

IVAN W. SMITH, Esq., Chairman,
Atomic Safety and Licensing Board

DR. WALTER H. JORDAN, Member

DR. LINDA W. LITTLE, Member

Also present on behalf of the Board:

MS. DORIS MORAN,
Clerk to the Board

LAWRENCE BRENNER, Esq.
Legal Advisor to the Board

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APPEARANCES:

On behalf of the Licensee, Metropolitan Edison Company:

GEORGE F. TROWBRIDGE, Esq.
ROBERT ZAHLER, Esq.
DELISSA A. RIDGEWAY, Esq.
Shaw, Pittman, Potts and Trowbridge,
1800 M Street, N.W.,
Washington, D. C.

On behalf of the Commonwealth of Pennsylvania:

ROBERT ADLER, Esq.
Assistant Attorney General,
505 Executive House,
Harrisburg, Pennsylvania
WILLIAM DORNSIFE,
Nuclear Engineer

On behalf of the Environmental Coalition on Nuclear Power:

DR. JUDITH JOHNSRUD,
433 Orlando Avenue,
State College, Pennsylvania

On behalf of Anti-Nuclear Group Representing York:

GAIL BRADFORD

On behalf of Three Mile Island Alert:

JOHN MURDOCH, Esq.,
LOUISE BRADFORD, Esq.
Widoff, Reager, Selkowitz & Adler,
P.O. Box 1547,
Harrisburg, Pennsylvania

APPEARANCES: (Continued)

On behalf of the Regulatory Staff:

JAMES TOURTELLOTTE, Esq.
JOSEPH R. GRAY, Esq.
Office of Executive Legal Director,
United States Nuclear Regulatory Commission,
Washington, D. C.

Petitioners for leave to intervene pro se:

MARJORIE AAMODT,
R.D. 5,
Coatesville, Pennsylvania

C O N T E N T S

P R O C E E D I N G S

CHAIRMAN SMITH: Good morning.

I want to apologize for the delay in beginning the hearing. The Board had hoped we could issue a ruling on ANGRY Contention 7 and to treat it fully is rather difficult to do quickly. The best we can do is just give general guidance on how we are going to approach it and approach the scope of the hearing.

We think that the new rule has almost entirely superseded -- not superseded, but almost entirely explained the Commission's notice, hearing notice of August 9, with one possible exception, and I do not have the order before me, and that is the short-term item of the relationship between the Licensee and the State and local agencies might be more site-specific and case-specific than the general rule.

But other than that, the new emergency planning rules establish the standards for necessary, sufficiency, and reasonable process. To the extent that there is a federal involvement, we believe that we have already given a great deal of guidance. Certainly to the extent that the Licensee and the state and local plants depend upon federal involvement, the sufficiency of the federal response will be in issue.

We also noted that in the amendment to 10.47

rules, the guidelines for the choice of protective action during an emergency is to be consistent with federal guidance. And to that extent the adequacy of the federal guidance will, by this rule, be an issue in this proceeding. We see that that has been very thoroughly addressed in NUREG-0654.

So with that help, let's proceed with the hearing, if that is any help.

Are there any questions?

(No response.)

The Board has pretty well thought out the rationale for ruling on ANGRY 7 and we can answer specific questions perhaps all right. It is just that we are not prepared to dispose of all of the issues raised by ANGRY in its motion.

MR. GRAY: Mr. Chairman, will the Board be memorializing its ruling in a written order?

CHAIRMAN SMITH: We may draft it and then read it, and that would be -- in the meantime, if you have anything of any particular concern, we have arrived at pretty much of a decision on every aspect of the issues. It is just that we have not put it all together. Mr. Brenner is working on it.

So if there are any questions, we would be glad to answer them if we can.

MR. GRAY: I have no questions at this time. It just occurred to me that a written order setting it out would be helpful.

CHAIRMAN SMITH: Yes, it will either be a written order or a detailed oral report on it.

MR. ADLER: Mr. Chairman, I have one question. To what extent will the degree of coordination between the federal plan and site-specific coordination between the federal plan and the Licensee's plan and the state and local plans be an issue in the proceeding?

CHAIRMAN SMITH: I think we are going to have to wait for advice from the parties on that.

MR. ADLER: Have you read -- I presume you have not read the Commonwealth's reply brief?

CHAIRMAN SMITH: Yes, and we thought that that rather well stated -- I mean, it was well stated. We have read it and only read it. We have not analyzed and studied it. But we think that you very well stated, in your middle paragraph on your second page -- I am sorry, I do not have it here.

The discussion is a bit premature, but I thought that you -- here it is. "It is appropriate" -- you state: "It is appropriate, however, to litigate the coordination of NRC and other federal agency response times with the emergency plans of Licensee and the state and local response

organizations as applicable to TMI-1."

That seems to be appropriate. That seems to be consistent with the rule and consistent with what we said before, to the extent that the local emergency plans, the emergency plans of the Licensee and the state and local response organizations depend upon federal coordination.

Don't forget, you know more about this than we do. I mean, we are still looking down the path as the evidence unfolds. But that is what we think is appropriate.

Is that helpful?

MR. ADLER: Thank you. That is helpful.

CHAIRMAN SMITH: Then of course, there is this other specific requirement in the rule, and that is that protective actions during an emergency be consistent with federal guidance. There is a standard that there be federal guidance on protective actions, which I think is being, as far as I can see, thoroughly addressed in this proceeding by the standards and the appendices to NUREG-0654.

I mean, whether it is adequate or not it is, assuming timeliness, it is, I think, well within the scope of the proceeding.

MR. ADLER: My only comment at this point is, given this ruling, whether our opportunity to question Mr. Grimes today will be the last opportunity to litigate this

type of issue. Not having a ruling on ANGRY 7, we were not fully prepared with this type of question and we tried to pull together as best as we could last night and this morning a number of questions and areas of questioning.

I am not sure that -- which are directly applicable to coordination.

CHAIRMAN SMITH: I think, as you pointed out, the Commonwealth is here in a very unusual position. You can come in wearing a different hat every day if you elect.

I have not seen any reluctance on the part of the staff to provide information to the Commonwealth and I think you should appropriately be able to explore your concerns in this hearing.

I think it is premature for the Board to rule now that we will call back witnesses. But I also think we should observe that Mr. Grimes' appearance here was not billed as a federal response appearance. It is just an opportunity we happen to have. And we will consider appropriate motions for relief as you need it.

MR. GRAY: Mr. Chairman, I was -- oh, I'm sorry.

(Board conferring.)

MR. GRAY: I was going to point out that we really did not expect, I do not believe, that this panel would be completed today. And I think we anticipat[illegible] Mr. Grimes may be back for some additional questioning. As I say, I do

not believe this is going to be completed today in any event.

So we are going to try to provide him, consistent with scheduling and how we can work it in.

CHAIRMAN SMITH: Good.

MR. ZAHLER: Mr. Smith. Mr. Smith, I have two preliminary matters.

First, I would like to note for the record that I have handed out to each of the Board members and to the parties present, those being ECNP, TMIA, Mrs. Aamodt, the staff, the State of Pennsylvania, and the Public Utility Commission, a copy of evacuation time estimates for the plume exposure pathway EPZ at Three Mile Island Nuclear Generating Facilities dated March 3, 1981.

If any other parties arrive during the course of the proceeding, I will give them a copy also. On Monday I will serve a copy of this on all those who have not received hand delivery today.

DR. LITTLE: Is the map part of that document?

MR. ZAHLER: Yes, Dr. Little. The map that is folded up is figure 2 to that study and goes with -- it is very large, it does not fit in easy and needs to be run off on a blueprint machine.

The second item I just bring to the Board's attention and the parties' attention is that there was a

news report this morning and I believe also last night relating to the siren systems that are being installed both at Peach Bottom and TMI. It was on Channel 8 and there was an interview with Randy Curry, the County Emergency Management Director, describing the system and what residents should do when they hear the siren.

In addition, a cover of NUREG-0654 was featured in a closeup picture, for what it is worth.

CHAIRMAN SMITH: You are very attentive. I caught the interview, but I did not catch the 0654 in there. I should be conditioned to recognize it.

(Laughter.)

CHAIRMAN SMITH: Anything else preliminarily?

MR. TOURTELLOTTE: Mr. Chairman, I would like to make one general announcement that has application actually to the entire proceedings, and that deals with NUREG's, both criteria and guidance NUREG's. I simply wanted to make it clear for the record that, although the witnesses from time to time may use the term "requirements of the NUREG," that it in fact is not the position of the staff that NUREG's are legal requirements.

NUREG's are simply criteria documents or guidance documents, and do not have the effect of imposing legal requirements. And I would simply suggest that it is very difficult for witnesses to talk about what is in the NUREG's

and what guidance the NUREG's give without sometimes using that word. But when that word is used, it is used in a generic sense rather than in the sense of saying that, on the part of the staff, that we believe these are legal requirements, because they are not.

CHAIRMAN SMITH: Do you agree with Mr. Ahler that the footnote references in the rule, in the emergency planning rule, do not give any special status to th NUREG-0654?

MR. TOURTELLOTTE: Yes. Yes, I would say that it does, of course, point to the fact that the Commission believes that to be a proper guidance, 0654. That is not to say the same thing as it is a legal requirement, but they do believe it is appropriate guidance.

CHAIRMAN SMITH: Mr. Adler?

Whereupon,

BRIAN GRIMES

STEPHEN M. CHESNUT

the witnesses on the stand at the time of recess, resumed the stand and, having previously been duly sworn by the Chairman, were examined and testified further as follows:

CROSS-EXAMINATION -- RESUMED

BY MR. ADLER:

Q Mr. Chesnut, please turn to page 76 of Licensee's testimony.

(Pause.)

Q In responding to question 65 in that testimony, there are tech spec limits in microcuries per milliliter. And in the middle of the first incomplete paragraph on that page, it says that, quote: "When coolant activity exceeds 300 microcuries per milliliter, the technical specification limit has been exceeded and a site emergency is declared."

Now, in oral testimony last week Licensee's witnesses testified that they were going to downgrade that classification to an alert. Do you agree with that decision?

A (WITNESS CHESNUT) Yes.

Q On what basis?

A (WITNESS CHESNUT) In Appendix I to NUREG-0654, we classified types of accidents and types of indicators. The 300 microcuries per milliliter equivalent iodine is referred to in the alert category of Appendix I to NUREG-0654.

Q On page 29 of your testimony, you say that the time necessary to take a reactor coolant sample is up to three hours.

A (WITNESS CHESNUT) Yes.

Q Is there any relationship between that sampling time and the technical specification?

(Panel of witnesses conferring.)

A (WITNESS CHESNUT) Would you -- would you further

explain that? You stated a relationship between the time requirement and the technical specification. Are you asking, is there a time required by the tech specs to conduct a sample?

Q No. Is the relationship between the activity level and the declaration of an emergency related to the time necessary to take the sample and to make that determination?

A (WITNESS CHESNUT) In this guidance, we are not trying to point out that one should wait for approximately two to three hours, whatever it may take, before they declare an emergency. There may be other indicators of some -- of a fuel damage which is roughly equivalent to that in the 300 microcuries per milliliter eqivalent iodine range.

It could also be, for instance, that one in the course of his normal everyday sampling would notice a 10 microcuries per milliliter sample and not -- and if it were no other indicators, that in itself would be enough to declare an emergency.

Q Do you feel that the 300 microcurie tech spec is realistic in light of the fact that you would need to declare an alert when it is reached?

A (WITNESS CHESNUT) I did not write the tech specs.

A (WITNESS GRIMES) Could I get a clarification on what technical specification you are referring to?

BY MR. DORNSIFE:

Q The technical specification limit concerning reactor coolant activity, which is -- which is approximately equal to the 300 microcurie per cc total gross beta activity. It is a formula that is used in the tech spec.

The question is related there to the fact that the tech spec limit is the limit for operation to have the reactor critical. Is it realistic that when that limit is reached you immediately declare a site emergency? Is it more realistic to have a lower limit for operation?

A (WITNESS GRIMES) I do not believe we are suggesting a site area emergency for this level, but rather an alert.

Q I believe I said "alert." But is it still realistic to declare any emergency when you just reach a limit for operation?

A (WITNESS GRIMES) It depends on the limit. I think that particular limit you are referring to is an iodine spike limit. The normal average limit is far, far lower than that level.

I am not familiar with the TMI-1 technical specifications at this time. At one time I was involved in writing the basis for that type of specification.

Q Let me just try to clarify the question, then. If indeed the limit is based on not a spike, but an actual gross beta-gamma activity level, do you think it is realistic to have that level be a limit for operations when it indeed is a limit -- is a number that is sufficient to declare an alert?

A (WITNESS GRIMES) Well, I guess I have a hard time mixing it, the two things, the specific 300 microcurie per cc number with a hypothesis that it is a normal operating limit. I believe the normal operating limit is far lower. And certainly, if something were to be exceeded on a regular basis, that is not an appropriate limit for an alert or even an unusual event condition.

I think our experience is that this is a high enough level that it is an extremely unusual level, probably higher than we would expect to see in even an iodine spike. And the worst iodine spikes have gone above 100, perhaps above 200 microcuries per cc.

The normal level, of course, is down below one microcurie per cc of equivalent I-131 in the primary coolant. So 300 is clearly an indication that something unusual is present.

MR. ADLER: We are going to defer question 13 until the second portion. And I am skipping questions 14 and 15.

BY MR. ADLER: (Resuming)

Q Mr. Chesnut, on page 53 of your testimony, about midway through the page you say, about two-thirds of the way through that paragraph, that the design objective is to notify the public within about 15 minutes. Why did you say "about"? Isn't that a firm 15-minute limit?

A (WITNESS CHESNUT) That is referring to the 15 minutes, the appendix in NUREG-0654. Let me get that page to it before I refer to it.

(Panel of witnesses conferring.)

Q I had a reference on page 3-3.

(Pause.)

A (WITNESS CHESNUT) I was not attempting to make that wishy-washy.

A (WITNESS GRIMES) If I could note, it is the same language as is used in Appendix E, Part D, Item 3 of 10 CFR Part 50, which reads, with reference to the time for and means for alerting and providing prompt instructions to the public within the plume exposure pathway EPZ, quote:

"The design objective shall be to have the capability to essentially complete the initial notification of the public within the plume exposure pathway EPZ within about 15 minutes."

And I think that is put in there to indicate that we are not requiring a showing of 100 percent of the people

within precisely 15 minutes; it is a design objective for the notification system and that 16 minutes or 17 minutes is not going to be automatically ruled out as contrary to the regulations.

MR. ADLER: Those are the only questions I am going to ask based on the cross-examination plan. I am also going to defer question 17, and numbers 18 and 19 have been covered.

I do have a few questions based on the NUREG-0696.

BY MR. ADLER: (Resuming)

Q Mr. Chesnut, have you at this point reviewed Met Ed's plan against the criteria in NUREG-0696?

A (WITNESS CHESNUT) I have reviewed the plan against the criteria in the draft revision, the draft copy 0696 previous revision, and have been aware that for the coming changes it would be in the new 0696. And we have discussed some of these with the Licensee in the context of their emergency plan.

Q Were there any changes in the new document that you did not expect?

A (WITNESS CHESNUT) There were several items that were pending until the last minute, one of which being the placement of the emergency operations facility and things like that, the timing for the emergency operations

facility. I kept the Licensee informed on the progress for that with respect to their plan.

Q Do you expect any more deficiencies in Licensee's plan other than those noted in your testimony as a result of the new document?

A (WITNESS CHESNUT) The Licensee will submit to us -- I do not recall the exact date called for in 0655 -- the methods which they will use to comply with 0696 in the design of the permanent facilities, and the staff will review that to determine how they comply.

Q So you don't know at the moment?

A (WITNESS CHESNUT) That is correct

MR. GRAY: Mr. Chairman, you had asked if we could provide the latest versions of NUREG-0696. Unfortunately, our copying machine is not working very well, and what I would propose is to try to get the bound copies over the weekend and provide those next week.

CHAIRMAN SMITH: All right.

BY MR. ADLER: (Resuming)

Q I would just like to go back to the EOF question for a moment. Mr. Chesnut, when the NRC regional personnel arrive on site, where will they go? Will they go to the EOF?

A (WITNESS CHESNUT) Yes, they will.

Q So you would prefer that they arrive to an

operating facility, I presume?

A (WITNESS CHESNUT) Yes.

Q Approximately how long do you think it will take them, for TMI, to arrive at the site?

A (WITNESS CHESNUT) If the emergency is declared during the working day, it will take approximately two and one-half hours. If it is during non-work hours three and one-half hours.

Q Is that one of the reasons for your position that the Licensee should have the EOF operational before the six-hour time frame that they intended?

A (WITNESS CHESNUT) Yes.

A (WITNESS GRIMES) I could add a clarification to that. Not to the main thrust of your question, but as a footnote. Not all the NRC personnel would go to the emergency operations facility. The regional director would and most of his staff. But there would be individuals on the staff serving an information collection or information function, that would be in the plant.

Also, I think Mr. Chesnut answered your question with an unequivocal yes, but I think he had in mind the regional director.

(Counsel for the Commonwealth conferring.)

Q Can you explain the major basis for your position in NUREG-0696 that the senior Licensee management personnel

on site should not go to the control room, but to the technical support center?

A (WITNESS GRIMES) Yes. I think it is -- has to do with the function of, as we visualize, of the emergency operations facility and the types of individuals that would be the senior representatives of both the NRC and the Licensee. We believe that a near-site location is preferable to an in-plant location for several reasons.

Q Excuse me. I think you misunderstood the question. It was senior management representative on-site going to the TSC rather than the control room.

A (WITNESS GRIMES) The senior management representative of the Licensee or NRC?

Q Of Licensee on site.

I misunderstood your question.

The senior in-plant representative will need to have access, certainly, to the control room as well as the technical support center. We believe that his main function will be involved in receiving analysis and prospective analyses of the condition of the plant in determining what tactics should be used to cope with the particular situation.

He will very likely, in our view, find it best to be in the tech support center, with frequent physical access to the control room to speak face to face with the shift

supervisors.

Q Face to face access, you mean he should walk back and forth?

A (WITNESS GRIMES) Yes, he should be able to without -- without expending a great amount of time, get back and forth between the two locations in plant. However, it is likely that the analysis portion and the decisions on what should be attempted next will likely come out of the tech support center rather than from the individuals who are actually manipulating the controls in the control room.

Q Where would you expect him to spend most of his time?

A (WITNESS GRIMES) I would expect most of his time would be in the technical support center. However, as I said, it is very important that he also have frequent access to the senior personnel in the control room. And this bears on the location of the technical support center.

(Counsel for the Commonwealth conferring.)

Q Are there any criteria in NUREG-0696 as to where dose assessment should be performed on site prior to the operation of the EOF?

A (WITNESS GRIMES) Yes. I think there is a table in NUREG-0696 which indicates how these functions would be shifted as the accident progresses. Initially, of course, initial assessments will be performed in the control room.

These would then, as the technical support center is staffed, would move to the technical support center.

And then when the emergency operations facility is finally staffed, it is our view that the best place for those is the emergency operations facility.

Now, for lower classes of accidents the emergency operations facility may never be staffed, so that that function would stop at either the control room or the tech support center.

Q I am not sure I understood your answer. You said it would begin in the control room, then shift to the technical support center, then shift to the emergency operations facility?

A (WITNESS GRIMES) Yes, as a function of time or as a function of severity of accident. For the lower classes of accident, it would never shift outside the plant.

This is indicated in the in the table on page 6, I believe.

Q Mr. Chesnut, in Licensee's plan that is not the case, is it? Isn't it true that dose assessment shifts directly, without going to the TSC?

A (WITNESS CHESNUT) Yes. The Licensee's plan has it start in the control room. Then once the environmental assessment comman' center is manned, that function is controlled from the environmental assessment command

center.

The Licensee's plan calls for the initial dose assessment to be performed in the control room and directed by the radiological assessment coordinator. After about six hours, when the environmental assessment command center is manned, that function is shifted to the environmental assessment command center.

The dose projections are arrived at in the environmental assessment command center and are communicated to the control room and to the emergency operations facility.

A (WITNESS GRIMES) When we refer to this function, it does not necessarily mean that all individuals performing the calculations which would support that decision function would be in those particular places. What we refer to is the senior person having responsibility for making those recommendations, as we discussed yesterday, would shift from the control room, and that responsibility follows the command structure of the organization.

At different -- for different types of accidents, that individual may be located either in the tech support center or the EOF after additional staffing is obtained.

DR. LITTLE: Excuse me just a moment. Mr. Grimes, I am having very much difficulty in understanding you.

WITNESS GRIMES: I am sorry.

DR. LITTLE: I am having a lot of difficulty in hearing you. I do not know whether you can get closer to the microphone or put it in front of you or what.

WITNESS GRIMES: All right. I will try to speak directly into the microphone.

DR. LITTLE: That is much better.

BY MR. ADLER: (Resuming)

Q In the table you referred to in NUREG-0696, Table 1 on page 6, you seem to envision that radiological effluent and environment monitoring assessment and dose projections, as well as the functions in the protective action recommendations, will all be performed in the EOF during a site or general emergency.

Was there a particular reason that you wanted all those functions coordinated at one site?

A (WITNESS GRIMES) Yes. We believe it is highly desirable for the dose assessment function to have close coordination with offsite authority dose assessment. And we would encourage, although we do not absolutely require, that this dose assessment, if possible, be carried out at the same location, preferably the EOF.

If the Licensee conducts this operation at the EOF, it is more likely that that close coordination between offsite and onsite dose assessors through at least a liaison, but even preferably a joint calculational team or

perhaps two teams that could check the results at the EOF, would be very desirable.

Q So what is your personal assessment of Licensee's environmental assessment command center concept?

A (WITNESS GRIMES) It is a location which could fit into the scheme of things in its present location. It may -- it may be desirable to consider moving that to the emergency operations facility with the command structure. It would also provide easy access of that team to the location, rather than having them have to go onsite through perhaps local high-radiation areas.

DR. JORDAN: Could I ask Mr. Chesnut one question. The operations that you envision from the technical support center and the EOF presumes the safety parameter display system, which is also described in NUREG-0696. Does that safety parameter display system operate -- is it in operation relayed to the EOF and the technical support center? Do you know that that is the situation?

WITNESS CHESNUT: The SPDS when installed will display those locations.

MR. GRAY: Mr. Chesnut, please indicate what the SPDS is.

WITNESS CHESNUT: Safety parameter display system.

WITNESS GRIMES: Was your question, is it in place at this time or --

DR. JORDAN: Is it in place and will it be in place, or will it be in place before restart?

WITNESS GRIMES: It is not required to be in place until a date which escapes me right now. We have specified that date in a recent letter from Mr. Eisenhut with regard to NUREG-0727, and --

DR. JORDAN: All right.

WITNESS GRIMES: I do not recall the date. If they restart before that date, it would not be required.

DR. JORDAN: Does that not mean, however, if it is not in place that you are envisioning the operations of the technical support center and the EOF will not be able to in fact come about until the SPDS is in place?

WITNESS GRIMES: It is true that in the interim, the concept of operations may have to be adjusted somewhat to the available data. However, we believe that the objective should be to set up the structure and then make adjustments to -- to limit or condition the transfer of authority, depending on the particular circumstance and the information available.

MR. ZAHLER: If I might just interject here. Mr. Grimes, do you know whether October 1, 1982, is the date for the safety parameter display system in the other

facilities?

WITNESS GRIMES: I believe that is the correct date.

DR. JOHNSRUD: Mr. Grimes -- excuse me, Mr. Chairman. Could I ask this witness if he could please keep his voice level up at the conclusion of a sentence. I am losing the last few words almost every time.

WITNESS GRIMES: I will dry.

DR. JOHNSRUD: Thank you.

BY MR. DORNSIFE: (Resuming)

Q Mr. Grimes, would you envision in a plan that would directly comply with all the provisions of the 0696 that the in-plant manager who arrives on site, would he assume the responsibilities of emergency director as envisioned in the TMI-1 plan? Is that the intent, or is he something other than the emergency director, as TMI-1 calls him?

A (WITNESS GRIMES) What we have in mind is that there be a senior manager as emergency director, but that the overall operations within about an hour would be supervised from the EOF.

Now, if that is the individual that you referred to as the senior plant manager, then I guess our concept would differ from the current proposal. I am not familiar with all the titles for the TMI facilities.

Q Well, specifically I was talking about the person who comes into the -- the management person who comes to the tech support center. In the TMI plan a manager -- there are three people designated as on-duty superintendents who take over the role of emergency director from the shift supervisor.

Now, is this person who goes to the TSC envisioned in 0696 the same person as envisioned as the duty superintendent in the Met Ed plan?

(Panel of witnesses conferring.)

A (WITNESS CHESNUT) Yes. The senior manager who reports to TMI initially to assume emergency director, I believe it is called emergency coordinator in the criteria in NUREG-0654, that emergency coordinator would, as Mr. Grimes explained, be stationed in the TSC with frequent face-to-face visits with the control room personnel.

Q Do you feel that this emergency director or emergency coordinator, whatever he is called, could perform his function equally well from the control room or the TSC?

A (WITNESS GRIMES) He would probably start out in the control room, until he was familiar with the plant status as communicated to him by the on-shift individuals. But it is our view that once he gets up to speed on that, that his primary function will be not directing the manipulation of controls, as is the control room function,

but rather determining the course of action.

Now, his support team would likely be in the tech support center rather than the control room.

(Counsel for the Commonwealth conferring.)

BY MR. ADLER: (Resuming)

Q Would the NRC's position be that it would be desirable for the control room to have access, early access to data from the real time offsite monitoring system?

A (WITNESS GRIMES) Yes. In fact, Appendix 2 of NUREG-0654 states that by, I believe it is, the summer of 1982, there should be this real time information available to the individuals making decisions; and that in the early phases of the accident would include the control room.

A (WITNESS CHESNUT) I believe also -- were you referring to the real time ion chamber 16 arrays?

A (WITNESS GRIMES) Oh, I am sorry. I was referring to -- thank you.

I was referring to a dose, a near real time dose assessment capability, as referred to in Appendix 2. Now, there is -- there is no requirement at this time for a pressurized ion chamber system. If I can -- now that I am thinking about the right system, could you restate your question?

Q Well, there is no requirement for the system altogether. I think that has been established on the

record. However, in light of the fact that Licensee is installing it, in your opinion would it be desirable to have that information available in the control room?

A (WITNESS GRIMES) The use of the system is likely to be not an initiator of an emergency action level, but rather a confirmation of things once things are occurring. So it would not be needed in the sense that it is needed to initiate an emergency action.

However, from an access to data standpoint, availability in or near the control room would be desirable. However, you have to recognize that putting something in the control room does not necessarily mean that the operators have instantaneous access to it. There are many things on back panel or in corners of the control room which the operators must travel to or send somebody to to get data from.

So a nearby location, not specifically in the control room, might be reasonably effective, but certainly something which the operators had reasonable access to would be desirable.

DR. JORDAN: Could I ask a question, a matter of clarification at this point, since we are talking about this topic? NUREG-1.97 on page 24, Table 2, has under "environs radiation and radioactivity" this item: "Radiation exposure meters, continuous indication at fixed locations." This is

at the top of the page --

MR. GRAY: Is that Regulatory Guide 1.97?.

DR. JORDAN: I am sorry, Regulatory Guide 1.97, Revision 2, December 1980.

WITNESS GRIMES: Would you give me the page reference?

DR. JORDAN: Table 2 on page 24. The top of that page, the left-hand column, under "Environs Radiation and Radioactivity," refers to radiation exposure meters, continuous indication at fixed locations. What do you have in mind there? What are those meters?

WITNESS GRIMES: What we have in mind is determining whether a system of that nature -- of the nature described yesterday is required for all power plants, and if so at what distance from the plant and directions and numbers are desirable.

And that is the type of system which is under consideration, as indicated in the note under the range, which says that criteria are to be developed, but we have not yet made it an absolute requirement that these systems exist or put a time schedule on them.

DR. JORDAN: Thank you. That is all for now. I will have other questions concerning that later.

BY MR. ADLER: (Resuming)

Q Perhaps I can focus a little bit more precisely on

our concern, Mr. Chesnut. Where are your radiological monitoring teams dispatched from initially?

A (WITNESS CHESNUT) Initially, the radiation monitoring team personnel report to the operational support center and are dispatched from there. They are controlled and directed by the radiological assessment coordinator in that corner of the control room. They are directed by radio.

When the environmental assessment coordinator is transferred to that function, after approximately six hours, he then takes up that function of dispatching and controlling the radiation monitoring teams.

Q I think we have it established on the record that it might take 45 minutes to an hour for a team to get to the West Shore. In light of that fact, in light of the fact that, as you have just testified, the teams are dispatched by the RAC in the control room, wouldn't it be useful, highly useful, for the RAC to have access to direct information from the real time monitoring system?

A (WITNESS CHESNUT) I think it could perhaps be deemed useful. But the program for making protective action recommendations really relies on the in-plant parameters initially, and it is important to realize that those teams being dispatched are for verification in nature.

A (WITNESS GRIMES) Let me give you a personal

opinion also. Into the accident, at the time when substantial numbers of personnel are available for this type of thing, I think it would probably be, in the ideal case under the 0696 concept, be reasonable to locate that information at the emergency operations facility with this central coordination function of the dose assessment and monitoring coordination.

(Counsel for the Commonwealth conferring.)

A (WITNESS GRIMES) So a co-location of that information with the people doing the dose assessment, or accessible to the people doing the dose assessment, is important.

Q Mr. Chesnut, you have been here throughout the testimony when we have established the error bans on the source terms and the degree of conservatism in assumptions used in offsite dose projections. And isn't it true that the very purpose of offsite monitoring is to verify projections in light of the fact that offsite dose projections are made using many assumptions and many elements of uncertainty?

A (WITNESS CHESNUT) Offsite monitoring teams are confirmatory in nature. They are also to help further identify and track the plume, define its boundaries. However, this information -- however, the people making the recommendations for protective actions should not rely on

this information, or should not especially wait for this information before they make protective action recommendations.

A delay while awaiting confirmatory measurements by monitoring teams or other measurement method might delay the activation of the emergency response organizations in taking protective actions.

Q But aren't the offsite confirmatory measurements used in refining or modifying protective action recommendations, if the dose projection in, say direction, was wrong?

A (WITNESS CHESNUT) Yes. The assessment continues. As more information arrives at the control room,, the operators, the decisionmakers, should attempt to always make it more accurate and to refine it.

I do not know if I answered all your question, but --

Q Can you see any disadvantages to having this information available in the control room?

A (WITNESS CHESNUT) I see no disadvantage to having it in the control room. If it is relied upon before the protective action recommendation is disseminated to the offsite authorities, that indeed could be a disadvantage. The method in which it is used is important.

MR. ADLER: We have no more questions.

CHAIRMAN SMITH: How do the Intervenors want to proceed?

MS. GAIL BRADFORD: As the Board knows, we have two cross plans, one from ECNP -- can you hear me? Can you hear me?

CHAIRMAN SMITH: Yes.

MS. GAIL BRADFORD: One from ECNP and one from ANGRY. And we would like to take a short break and cross of questions and coordinate the questions.

CHAIRMAN SMITH: Okay.

Then, Mrs. Aamodt, are you going to participate in that?

MS. AAMODT: Yes.

CHAIRMAN SMITH: Good.

We will take a ten-minute break.

MR. ZAHLER: Mr. Chairman, could the record just indicate I will hand out a copy of the evacuation time study to ANGRY.

(Recess.)

CHAIRMAN SMITH: Are the Intervenors ready to proceed?

(Pause.)

CHAIRMAN SMITH: Ms. Bradford?

(Pause.)

BY MS. GAIL BRADFORD: (Resuming)

Q Mr. Chesnut, on page 6 of your testimony --

A Yes.

Q You were here for the Licensee's testimony in which they said that -- that they thought it would take ten minutes for them to classify an accident situation?

A (WITNESS CHESNUT) Yes.

Q This is that period of time that your answer to question 7 refers to?

A (WITNESS CHESNUT) That is correct.

Q How did you understand their answer -- their answer of ten minutes? What beginning period did you understand their ten minutes would start from?

I mean, I understand from your answer to question 7 that you have a hard time setting the minimum amount of time because it is hard to figure out when the time begins. How did you understand the beginning of their ten minutes?

A (WITNESS CHESNUT) From what they described, I thought some initiation of some event in the plant. I cannot put a definite start time on their ten minutes. The way I viewed their ten minutes was more of a view of their philosophy of classification of an accident, that they felt that their use of the emergency action levels and the parameters in the plant would enable their shift supervisor or emergency director to do that within ten minutes.

I am not saying that they definitely or cannot do

that. It just seemed to me that was more of a -- the way they felt their procedures were with regard to classification.

Q What did you understand as zero time in their ten minutes?

A (WITNESS CHESNUT) I do not know what the zero time would be. That was -- that is one reason why there is no minimum requirement for accident classifications. Some of these things may occur resulting from a minor flaw or engineering problem in the plant, that may not be immediately obvious in the control room.

Q Would you agree that since the zero time of the ten minutes is difficult to pin down, that the statement that they can assess an accident within ten minutes might be very hard to verify?

A (WITNESS CHESNUT) The ten minutes may be hard to verify. I think the important thing is the method they will use to declare an accident. There is no light that goes off that says, this is zero time.

They should have some good procedures and some well-trained operators trained to recognize that plant parameters -- they should know what the key plant parameters are and, based on their knowledge and the establishment of emergency action levels and accident classification procedures, they should be able to promptly recognize and

declare an emergency.

Q I guess we are all agreed that they should be. Is it your testimony that they are? I mean, I am not trying to --

A (WITNESS CHESNUT) My testimony is that they have adopted an emergency accident -- action classification scheme which is consistent with NUREG-0654 and, with the few exceptions discussed as far as the particular emergency action levels being modified, their philosophy of emergency classification and accident declaration follows that guidance.

Q Turn to page 7. The testimony at page 7 dealing with protective action guidelines states, "PAG's do not imply an acceptable dose. If PAG's represent a triggerpoint for taking protective actions, that does not imply acceptability of the dose already accumulated by the public prior to reaching the trigger point for taking a protective action."

If the PAG's do not constitute an acceptable dose for the public, is the acceptable dose lower or higher than the PAG's?

A (WITNESS GRIMES) Perhaps I can respond on the general philosophy of the PAG's. The PAG's, as we indicated, are a trigger point, which you do not necessarily have to reach them, but if you project that doses of that

magnitude would result, that is a trigger.

The EPA guidelines are based on their judgment on when it is reasonable to take protective actions to avoid doses. I think they indicate in their guidance, in their manual which sets these numbers for us, that if you can reasonably and easily avoid radiation, you should do so. But they are trying to give the decisionmaker a guide when he should seriously consider taking actions.

I do not think that they would characterize doses lower than PAG's as acceptable, but they would say that doses lower than that may not warrant taking the protective actions, particularly evacuation. I think their judgment is formed partially on that there might be some minor risks associated with those protective actions, such as evacuation in terms of disruption or possibly even injury to people.

So that they have tried to give these decision guidelines in terms of trigger levels, but as I say, do not imply any particular dose is acceptable.

Q Is the acceptable dose lower or higher than the PAG's?

A (WITNESS GRIMES) I just said they -- I do not believe they would agree that any particular dose is acceptable, but they would -- the way it is stated, I think, indicates that if one incurs that dose or a projection of say a few tenths of a rem dose may not warrant protective

action.

Now, in a particular circumstance, if that can be characterized as acceptable in the circumstances, I think that is -- maybe you could say that. But in these particular circumstances, the decision is to accept the exposure rather than to initiate the evacuation. In that sense, I guess you would say it is acceptable. But I do not think you could say any particular dose is acceptable in a prescriptive manner.

In other words, if one could very easily reduce the dose from .5 rem to .1 rem by telling people to stay inside, I think that is a reasonable thing to do. And I do not think those protective action guidelines prevent that at all. So I cannot say that .5 rem is acceptable, but in a particular situation the decisionmaker may decide I will not evacuate, because I do not expect the exposures to be above .5 rem. In that particular situation, he has determined that he will accept that dose.

Q I would like to follow that just a little bit farther. The decisionmaker, you said he would accept that dose. Obviously, it is the people who live near the plant or wherever, the situation, who are accepting the dose or not accepting the dose. But he would accept the situation.

A (WITNESS GRIMES) He accepts responsibility for

that decision.

Q Right, right.

I am not sure how to phrase this, and it does not so much relate to the exact testimony as to the assumptions. I guess we have become aware that in this area -- you know, I do not know whether it is true in other areas. But in this area people are -- well, you might say even, I might even say oversensitive to the idea of getting radiation doses.

And what I would like to see come out of all of this is a way by which people who just do not want to take whatever risk it is, no matter how that they are told the risk is, are able to have the information in a timely way so that they can evacuate or whatever they choose to do.

Is it your understanding that these levels will allow the public, or that they -- that the whole scheme of the plan will allow the public the information to take voluntary actions?

A (WITNESS GRIMES) Yes. The public should be informed very closely as to the progress and offsite consequences of any accident by the offsite authorities. The Licensee would transmit that information to the offsite authorities, and the offsite authorities would independently get some monitoring information, and whatever information the Federal Government had, the Department of Energy, in

support of the state, for example, would be available.

That information should be digested and made available in an understandable form to the public in some understandable context, with recommendations for action by the public. There is nothin, that will prevent spontaneous evacuation, for example, from a certain area.

But I think the plans have to provide for very strong recommendations as to what the actions should be and why they are -- why they are recommended. For example, if sheltering is recommended, it must be understood by the population that either a situation pertains where sheltering is helping to reduce dose, but if they spontaneously evacuated they would not get substantially harmed. They might get more exposure than they would if they sheltered, for example, and that has to be made clear.

Or the other situation that has to be made clear is, if there would be, for example, life-threatening doses if people evacuated instead of sheltering.

So this information has to be communicated to the public on a periodic basis from the offsite authorities. And that information is made more credible if specific radiation information, radiation readings, can also substantiate their statements.

But in general, things like evacuation would be recommended in a prospective way, rather than waiting for

radiation doses. So the public may indeed get initial information that there is no information doses -- there are no radiation exposures in the area at present and probably will not be for several hours. The plant is in an alert condition or a site area emergency condition, or even perhaps a general emergency where there is a substantial degradation of the plant.

And there would be nothing that would prevent people in that situation from relocating if they so desired. And depending on the particular area, the authorities would have to be aware of the sensitivity to that attitude and would have to provide -- be aware so they could respond to any spontaneous evacuation and not allow something to get into a state of panic or something like this.

That partially involves the educational programs, which have to assure people that they will be informed when something is happening at the plant.

Q Then I guess that is my question. You say nothing will prevent a spontaneous evacuation, except of course if there is no information given about the plant.

A (WITNESS GRIMES) Yes. And we are trying to assure that offsite authorities are notified and kept informed, so that they can communicate that information to the public.

Q Well, what I heard you saying earlier was that -- well, you implied that the decisionmaker looks at the relative risk to the general population, of social disruption or whatever the risk of evacuation is, versus what he considers a small dose potential, and he says, well, I guess it is better to tell people to stay home.

Now, that may be true of the whole population you are talking about, whether it is the ten-mile EPZ or two-mile, whatever. But it may be that for certain individuals it will, within that class -- it would have been less risky for them to leave than to accept the dose.

A (WITNESS GRIMES) Could you specify further what individuals you have in mind?

Q Well, there are some people that are more sensitive, and also there may be some people who are closer to the plant in that group.

CHAIRMAN SMITH: Well, take the whole spectrum. Take the people who would prefer to evacuate before it is necessary. Take the people who would prefer perhaps not to evacuate, when it has been advised, based on their own particular problem.

I think the thing that is important here is what is the nature of the information which the staff would hope would be made available to allow persons to make their own individual judgment and to accept or reject the advice that

the state and the local people give.

WITNESS GRIMES: As I tried to indicate, it is preferable that the recommendations for action be backed up by specific information on radiation readings near the site, in particular locations or particular distances or in particular directions, and an indication of what the likely change will be in this in the future as best as people can judge.

For example, if the wind is going in a particular direction or if it is generally meandering all around the site, that situation should be characterized in that -- not in terms of necessarily telling people which way the wind is blowing as much as indicating that within about a mile of the site these -- this type of radiation level could be expected in any direction, or that the predominant areas that will be affected are south or north of the site, and this type of radiation reading could be expected at various locations.

And usually these would not be given in terms of miles, but in terms of communities, identifiable things that people can understand. Telling somebody that a certain dose will occur five miles south of the plant does not mean much. If it is identified with a particular community, then that is meaningful to people. They can identify, understand what that indicates.

BY MS. GAIL BRADFORD: (Resuming)

Q I understand you to say that the information should be presented in that way. And I would like to just pursue a little bit more, so that we can see whether we agree or how we disagree about how -- what kind of information should be available. And then my question will go to whether not that -- the NRC or FEMA regulations require that that kind of information is available.

So first I would like to -- to just ask you whether you think that information should or even can -- whether it is possible to convey information to the public that would allow the most sensitive or, shall we say, the most easily panicked people to take whatever action they need to take, even if it is just to get out of the area because it will cause them less anxiety, whatever the risk is that they feel, whether that information should be made available?

Because I can see that the other point of view is, if you stress making that kind of information available, it might -- it might cause people to be more panicked than they might otherwise be..

Is that a clear question at all? Can you answer that?

MR. GRAY: There were at least two questions, is it possible and should it. Maybe if you can clarify what it

is you would like to know.

BY MS. GAIL BRADFORD: (Resuming)

Q Let's go for whether you think information about what the NRC regs would consider very low dose potentials or very low risks should be made available to people through a rather prominent means of announcing on the radio or not just available in the state library or something? I know it is available now, but it is not really available, made really available to people.

A (WITNESS GRIMES) If we are dealing with the levels of unusual events, for example, or alert conditions, what we require is that it be communicated to offsite authorities and that they then must make a judgment on the way in which they distribute the information. In general -- in addition, the things like notifications of unusual events or alerts, the utility may follow up with a press release or something after the event.

But for these low-level events, it is essentially a judgment by the state and local authorities as to the need to alert the public. And if those local officials -- I presume they would be sensitive to the particular local situation. It would be my expectation that they would in turn communicate -- communicate this to the news media. They might not set off sirens, for example, for very low levels of emergency, but they might indeed put -- make that

available to the news media, who would carry the information that there was an unusual event or an alert at the plant.

Now, that, through a public information program, should begin to mean something to people, that they can callibrate what kind of thing that is. And if they feel that they should leave the area for a notification of unusual event after information is available to let them understand what that is, there is nothing to prevent them from doing that, although we do not believe there is any need for that at all.

And similarly for the alert class. Once you get up to the higher level of emergency, we specifically say that people, at least nearby the plant, should be immediately notified of a potential hazard. So we have tried to grade the required notifications of the public. But we expected that the state and local governments will be very sensitive to particular local sensitivities, because they are elected officials, and that they will communicate information on events to the public in a fairly rapid manner.

Q I guess I have the opposite expectation of state and local officials, because the other thing they might weight, for instance, is if the local industry has to shut down for a day because people get frightened and leave. And that is a very strong reason for them not to tell people

information.

MR. GRAY: Is there a question?

MS. GAIL BRADFORD: Yes, I am getting to it, thank you.

BY MS. GAIL BRADFORD: (Resuming)

Q Do you feel that the Licensee's plan for information to the public will include significant information to the public that will allow them to make informed decisions?

A (WITNESS GRIMES) That is our objective, that the overall public information and education program will do that. We do not specify exactly who distributes the information, but ultimately, of course, the Licensee is responsible to see that it is done. It may be a state distribution or a local distribution. But the content of the plan or the content of the information and educational material should, over a period of time, especially if people are interested in the subject, give them access to information which will allow them to understand what kind of actions the government believes is warranted for different types of emergencies and what hazards might be involved with different levels of radiation.

Q Do you feel that the Licensee's plan does do that? I mean, you answered that question in terms of what should happen.

A (WITNESS GRIMES) We have stated that we have not yet formally received all the information we need on the education and information programs. And we will be, and FEMA will also be reviewing that, and we will have to be satisfied with at least the draft material before we would authorize restart.

A (WITNESS CHESNUT) Also, the emergency plan as it stands now does provide the kinds of information to the state and local officials -- does provide for the emergency director and the staff, the emergency staff at the site, to provide the types of information that we are calling for in our criteria in NUREG-0654.

Details about the nature of the release, expected dose levels, areas affected, will all be promulgated to the decisionmakers, the people who are responsible in the state and local governments. At least according to the plan it will be.

So in that regard, if that information is provided to the state it would -- it would rest upon the state or the local officials to put out some of that information at the time, the precise time of the accident.

(Panel of witnesses conferring.)

Q I guess I am not that clear what -- since it seems to me that when the Licensee's information about public information becomes available the hearing will have come and

gone and I will probably never know what it is until I get it in my electric bill.

A (WITNESS CHESNUT) I might have missed part of the point. I thought you were asking about information provided at the time of the accident, as well as -- as well as the public information --

Q Yes.

A (WITNESS CHESNUT) -- distributed prior to the accident.

Q Yes. There is two, well really three, areas. There is preparation of the public, what -- what information they have ahead of time that allows them some kind of informed basis to decide whether or not they are going to panic when there is an unusual event declared or what their personal reaction is going to be.

I mean, that is a silly example, but it just -- pre-information to the public.

The second thing is what kinds of information and at what levels are given to PEMA and the counties.

And then the third thing, which I understand you to say that is not your jurisdiction, is what information PEMA decides to give out at that point.

A (WITNESS GRIMES) We do require that the plans for the higher levels of emergency be consistent with NUREG-0654, which requires notification of the public for

those higher levels of emergency.

Q Yes. So my question is, what will you be checking the Licensee's prepared information to the public, given out in advance, you know, with the utility bills or through phone books or whatever, what will you be comparing that against?

A (WITNESS GRIMES) We do not have a standard yet against which to compare it. We have reviewed several other information packages and have given comments, and they all tend to be a little bit different. I expect as more of these get developed there will be improvements. The best of these will be combined, and we will be alert to the other points of the various brochures.

In addition to that, FEMA has a program under way for developing a government-sponsored information and education package. And this will involve two types of information: a fairly detailed information package for people in the community who want more detailed information, for example, emergency planners who have not had previous experience in this area; and then there will be a shorter summarized package for distribution to the general public in terms of brochures.

And also, I believe their eventual plans would include perhaps a slide presentation on the nature of radiation, and perhaps even a film presentation to -- and

FEMA's objective in this is to collect existing information and try to present in a very factual and neutral manner what radiation hazards are and what the considerations are for emergency preparedness around nuclear power plants.

Q When do you expect to have that guidance ready?

A (WITNESS GRIMES) FEMA has a task force now working on that, and I do not expect that it will be ready until at least next fall and perhaps some longer time.

In the meantime, we are reviewing the information packages on a case by case basis.

Q I guess I would like to know whether -- whether you plan to or whether you are willing to have public input into the development of information packages for this area?

A (WITNESS GRIMES) Well, we would be pleased to receive comments from the public that would assist in our review. Once that information is presented to the NRC, it will be generally available, at least to the parties. And if the parties wish to get some further input, we hadn't -- we do not plan to go out with special mailings or anything of this sort, but once the first set of information goes out, I expect we would get feedback from the general public.

And we have called for a periodic distribution of this information. I think it is kind of an iterative process. The first issuance will not be perfect, and we

will get a number of comments on either the slant of the material or the content of the material. And within two or three issuances we will have a pretty fair and acceptable to the public document.

Q I guess I, from my understanding of the process you described, over two or three issuances, that sounds like about a five-year period to me.

A (WITNESS GRIMES) It could be a several year period. What we would do in the meantime on the first issuance is to use our information based on review of other documents and our own personal knowledge, staff knowledge of radiation effects and emergency plans, to critique the draft material.

Q You said earlier that public information or the form of public information that the Licensee supplies to you will be submitted to parties in this hearing, and I am not clear that that is true. Do you know that it will be?

A (WITNESS GRIMES) Well --

MR. GRAY: I believe -- Mr. Zahler can correct me on this -- I believe that the Licensee has indicated it is in the process of developing public education and information materials, and that it would be submitted at least to the staff by some particular date in the coming month or so.

MR. ZAHLER: There are two separate things here

and we should keep them clear. One is that the information itself -- and I think that is is what Ms. Bradford is talking about -- Licensee has submitted that to the staff. Ms. Bradford, for example, has what we submitted to the staff with respect to educational information about radiation. Mr. Sholly used it during his cross-examination.

The other material we submitted to the staff was the county brochures prepared for use by the five counties in that area. It is my understanding that some of those brochures have been distributed already to the population by some of the counties, and some of those brochures have not been distributed yet by the counties.

The other thing that Mr. Gray referred to is that we are preparing a program that will describe our process of disseminating information, that is, the methods the Licensee will use beyond the methods or in coordination with the methods that the state and county will be using for distributing this information to the public. When that program is prepared, we will submit it to the staff.

I do not have a problem filing that on all the parties to this proceeding. But Ms. Bradford already has, for example, the pamphlet that we are talking about with respect to public information about radiation. I would not propose to distribute that again.

MS. GAIL BRADFORD: Wait a minute. If we already have all the information, how come the staff is not complete?

MR. ZAHLER: I cannot answer for the staff.

WITNESS GRIMES: I do not believe the staff has received a letter indicating that that is the brochure to be used. And I think my recollection is we have, in a previous meeting, got an indication that by mid-March we would get a letter transmitting that brochure. And it was that that I had envisioned being made available to everybody.

MR. ZAHLER: Mr. Grimes is correct. Licensee has not yet formally put on the docket the information to the NRC staff, in that sense.

MS. GAIL BRADFORD: Licensee did not even recognize the pamphlet when we presented it as an exhibit.

MR. ZAHLER: That is not true. It was a question of comparing it to the actual pamphlet, and that is all the witnesses wanted to do. It is not that they did not recognize it.

MS. GAIL BRADFORD: All right.

CHAIRMAN SMITH: We were present.

MS. GAIL BRADFORD: All right.

Is that the extent of the Licensee's public information program? No, I just need to know.

MR. GRAY: Mr. Chesnut, if you could describe the

status of the review of all this at this time, would you please.

WITNESS CHESNUT: We have received six pamphlets through the Licensee that have been developed, apparently in coordination with the state, counties and the Licensee. There is one pamphlet on general radiation, which I believe is a pamphlet which was shown earlier in the hearings. And there were five pamphlets, one for each county in the plume exposure EPZ, which discussed some of the county-peculiar procedures and recommendations what to do in the event of an emergency.

The staff has those and is reviewing them. The staff has forwarded copies of those to the Federal Emergency Management Agency for their review.

As I stated earlier in my supplementary testimony, that is not what the staff considers enough to make a decision on the adequacy of the public education information program. We need information which the Licensee will provide in mid-March, which will include the methods of distribution, future commitments for distribution to the public.

BY MS. GAIL BRADFORD: (Resuming)

Q So you are looking not only at the pamphlets, but also the methods of distribution?

A (WITNESS CHESNUT) The staff wants to be assured

that the information is going to get to the people in the plume exposure emergency planning zone. We will be checking to see how that is going.

DR. LITTLE: Just a moment. But you do have all of the information that is going to go out? You just do not know how it is going to be distributed yet and to whom; is that correct?

WITNESS GRIMES: We have some brochures, but I am reluctant to say that until the Licensee gives me a letter saying exactly what brochures they are relying on and it is reviewed, I am reluctant to say we have all the information we need.

WITNESS CHESNUT: We have discussed some informal comments on that, too. There are some methods to assure that there is information in the household or on hand. The Licensee discussed other potential methods in its testimony, in its discussion with us, such as potential for having information in telephone books or in public places for transient people, information of the sort which is being developed between the Licensee and the State.

We would like to have information on that type of public education information as well.

BY MS. GAIL BRADFORD: (Resuming)

Q Having just found out that this pamphlet is what they intend to send out again or is the pamphlet I -- I

would like to -- it would have been very helpful to know that, and I would like to have drafts of the other pamphlets, or whatever stage they are in, available to the parties so that we can comment on them.

You know, I feel that the staff and the Licensee are sitting on this information and then one day we will get it in the bill and that will be it. And I -- I do not think that is helpful or productive, that attitude.

MR. GRAY: Let me comment, Mr. Chairman. I think I really have to say that we do not know at this point that those particular pamphlets which we have -- were given to the staff informally, which we have asked FEMA to review and to assure that the information in the county pamphlets, for example, are consistent with the county plans.

We do not know at this point that they are the formal, final proposals on what the Licensee is going to be submitting. We have gotten these, as I say, informally and we are to understand that the full program will be submitted in mid-March.

We are not trying to withhold these from anyone. I guess we look at these pamphlets as advanced copies which we could start a review evaluation of. Now we can make available to all the parties the pamphlets, or copies of the pamphlets, which we have gotten.

Apparently they have already been made available,

one way or the other, because I know Mr. Sholly had copies of them.

MS. GAIL BRADFORD: I got one of those in my bill a year ago. But what I did not know was that -- I think there are a lot of problems with that pamphlet. I think there are a lot of problems with that pamphlet. And I did not know that that was something that they regard as still a good pamphlet, and that they were not intending to improve that pamphlet.

I thought they were talking about their developing some kind of better piece of public information.

CHAIRMAN SMITH: So you don't like it. Well, what is your specific request right now?

MS. GAIL BRADFORD: I would like to have copies -- and I understand they may be draft copies or they may be copies of something that will never be sent out or whatever -- but I would like to have parties in this proceeding receive copies of the information so that we can comment on it.

MS. AAMODT: Mr. Smith, could I -- I share this concern very deeply with Ms. Bradford and I wonder if Mr. Chesnut or Mr. Grimes or Mr. Zahler have reviewed these pamphlets, whether they could perhaps answer whether these pamphlets discuss routine releases.

Yesterday Mr. Zahler said, in answer to your

question, that he did not understand there were routine releases from the plant.

CHAIRMAN SMITH: Wouldn't it be better --

MS. AAMODT: Could we go to some of the things that would possibly of concern to us to see whether they are included in the pamphlets?

CHAIRMAN SMITH: Not in the context of the way you are doing it. Rather than listing all of the things that you hope are in the pamphlets or think should be in the pamphlets, let's get the drafts and look at them.

MS. AAMODT: I think the question is not the individual things, but it is the philosophy that is behind how the pamphlet was constructed. If it is constructed on the philosophy that routine releases are --

CHAIRMAN SMITH: We are not going to talk about the contents of the pamphlets until we get the pamphlets. Then we will -- there is no use speculating on all the ways that they could be inadequate until you see if they are inadequate.

DR. JOHNSRUD: Mr. Chairman --

CHAIRMAN SMITH: Are those --

MR. ZAHLER: We will distribute copies of this information provided to the staff right after lunch.

CHAIRMAN SMITH: Okay. Would you proceed.

(Pause.)

BY MS. GAIL BRADFORD: (Resuming)

Q Page 11 of your testimony, Mr. Chesnut. The testimony at page 11 gives a range of protective action options available in the case of an airborne plume. Is the staff aware of any plans for the TMI-1 EPZ's which provide for respiratory protection?

A (WITNESS CHESNUT) The Licensee will make his recommendation in the criteria that it follows -- it is primarily dealing with the possibility of an evacuation or a sheltering.

My understanding of the state and local plans, as well as the Licensee's plan, is there is no general respiratory protection for the public which is being contemplated.

Q Could you tell me what "respiratory protection" means in your testimony?

(Panel of witnesses conferring.)

A (WITNESS CHESNUT) That was primarily dealing with protective actions for -- for emergency workers who might be involved. That is also discussed in the EPA manual for protective action guide, and that was respiratory protection in the form of a type of a gas mask or air breathing apparatus or some sort of filter or something like this, whic would be used by an emergency worker.

I do not believe that that would be a very easily

achievable option for the general public.

Q So respiratory protection is not a viable option for the EPZ?

A (WITNESS GRIMES) I would say that it is not to be ruled out. There are several things which can be considered. They are ad hoc measures that the state could consider recommending that the Licensee could consider recommending, in terms of if there is a particular release and there is a need for people to shelter.

But in addition to that, there are certain things which could be done. We have some studies in our research office that are -- is exploring various options. Of course, for particulate material the thing that might be effective is a layer of glass, for example.

If one looks at the very narrow area of iodines and thyroid, there has been much discussion of whether potassium iodide is useful, and that is not required by our criteria.

Q I guess I see in the testimony, it says, "protective action options would include sheltering, evacuation, controlling access to the area of the plume, thyroid protection and respiratory protection." And yet, what I hear is that the respiratory protection is not a viable option.

A (WITNESS GRIMES) No, I do not think we testified

to that.

Q For the EPZ?

A (WITNESS GRIMES) No.

Q Just a --

A (WITNESS GRIMES) What I said was I did not agree with your characterization that it was not a viable option. I said there were certain ad hoc things which could be recommended in the particular event, depending on the nature of the hazard and the specific circumstances, and that those included: for particulate material, sheltering was indicated; a cloth over the mouth for respiratory protection; or, for the narrow area of iodine problems with the thyroid, it could be that -- potassium iodide has been discussed as a possibility.

However, that is not a requirement as an option for the general public.

DR. LITTLE: When you say "ad hoc," you mean at the time the event is occurring a special task group gets together and decides what some of these options might be at that time?

WITNESS GRIMES: No, I did not mean to imply that. But there are ad hoc actions which can be thought about in advance, but only recommended as needed, such as the breathing through a cloth, if that is obviously an improved way or a way to improve the protection.

And I mentioned that we have some studies going on to determine what kinds of ad hoc actions might be useful and which could be considered in advance. We have some work with the Harvard Air Cleaning School for example.

DR. JOHNSRUD: Mr. Chairman, we cannot hear this witness at all.

WITNESS GRIMES: I am sorry.

We have some work at the Harvard Air Cleaning School looking at such things as a surgical mask and what protective measures that might give you.

DR. JORDAN: Suppose it turns out that the iodine content is indeed very low in the containment shell, but the major hazard is indeed due to particulate. Do you have guides, or are there guides, protective action guides for particulates, as there are for the case of the thyroid and the whole body?

You specified the PAG's for thyroid and the whole body, but I have seen no evidence of a PAG for particulates. And how do you plan to handle particulates?

WITNESS GRIMES: I think those would be treated as an organ dose similar to the thyroid.

(Pause.)

WITNESS GRIMES: The -- in an actual event, of course, you would try to reduce the exposure the best you could. However, with these ad hoc measures, however, the

decision on whether to evacuate would be controlled by the total body dose, not by the organ doses.

So that if you rest your decision to shelter or evacuate on the total body dose calculated, including the material, all the material that will be transported, you have made a judgment on what you need to do in that regard, and then the additional protection is what is available from breathing through a cloth or something like this.

DR. JORDAN: Are you saying, then, that once you eliminate iodine in the thyroid, that the critical organ will in every case be the whole body, for exposure to particulates?

WITNESS GRIMES: That the critical organ will be the whole body, yes.

DR. JORDAN: That is what you believe is the case?

WITNESS GRIMES: Yes.

DR. JORDAN: All right.

MR. ZAHLER: Dr. Little, if I could add, at Annex 14-A of Appendix A to the state plan, appendix -- I am sorry, Appendix 8 to the state plan, Annex 14-A to that plan, on page 2 includes a discussion of the ad hoc measures that Mr. Grimes was talking about for particulates and respiratory protection.

(Pause.)

BY MS. GAIL BRADFORD: (Resuming)

Q Mr. Grimes, what information do you have as to how effective holding a cloth for respiratory protection would be?

A (WITNESS GRIMES) Well, I think I can give a reference --

Q That would be helpful.

A -- if you like. And I will get that over lunch.

(Pause.)

Q Is the staff aware of any plans in the TMI-1 EPZ's for controlling access to the area of the plume?

(Pause.)

A (WITNESS CHESNUT) In the event of an emergency -- on an evacuation or where recommended, access would be controlled. I believe there are procedures in some of the local plans for that.

Licensee's plan does not specifically call for controlling access to areas which are offsite.

Q I guess there are two things: there is a plan for evacuating people; and then the idea we are talking about here is keeping people from going into an area. That is different from trying to get them to go out of an area.

Do -- are you aware of plans for controlling access to an area?

MR. ADLER: Mr. Chairman, I am having a bit of

difficulty in determining what questions are most appropriately asked of the offsite witnesses and which areas are most appropriately addressed by these witnesses. And it was not my understanding that these staff witnesses were prepared to analyze protective actions that are essentially carried out by state and local organizations.

MS. GAIL BRADFORD: All right. Then we would ask them to strike this part of their testimony if they are not prepared to talk about it.

MR. GRAY: Mr. Chairman, if I could point out the purpose of this particular piece of testimony that Ms. Bradford is referring to, this testimony here was explaining how protective action guides are geared toward a particular pathway from which dose can be received, because fo the fact that for a particular pathway there are certain particular protective measures that can be taken.

This is not claiming here that all of these protective measures are available and planned for for TMI or by the state and county plans. It was merely an explanation of why there were different protective action guidelines for different pathways.

And to that extent I think this testimony here is wholly appriopriate. There is no claim anywhere here that all these protective actions that are mentioned as examples of actions for particular pathways are in fact available or

planned for for TMI.

(Pause.)

CHAIRMAN SMITH: So does that help you any?

(Counsel for ANGRY conferring.)

DR.JOHNSRUD: Mr. Chairman, with respect to Mr. Gray's comment just now in defending the presence of this information, it would appear that it is responsive since it is in the answer to question 14, do the EPA PAG's account for total accumulated dose, in which the witness is addressing ECNP Contention EP-7, which does indeed refer to TMI.

Now, I see nothing in here that leads us to an understanding that all of this information with respect to the various pathways and the protective action options do not apply to TMI, and therefore it would appear --

CHAIRMAN SMITH: What was the question? There was no objection to begin with. What was the question?

MS. GAIL BRADFORD: Yes, there is an objection.

CHAIRMAN SMITH: Who made the objection?

DR. JOHNSRUD: Ms. Bradford re Mr. Adler.

CHAIRMAN SMITH: He did not object. We have gone through this many times in this hearing. He pointed out that you are not getting -- you are not asking the right questions of the right panel.

If you are trying to get information, if you are

trying to get information, that could be a helpful observation. If you are trying to test their knowledge or test their testimony, that's another matter. It depends in part on what your purpose is.

MS. GAIL BRADFORD: Yes, sir. They have a statement here, protective action options would include sheltering, evacuation, controlling access to the area of te plume, thyroid protection and respiratory protection.

CHAIRMAN SMITH: All right, what is your question? Repeat your question about excluding access.

MS. GAIL BRADFORD: Yes, sir. If they cannot answer questions about these --

CHAIRMAN SMITH: Would you repeat your question.

MS. GAIL BRADFORD: All right.

BY MS. GAIL BRADFORD: (Resuming)

Q Is the staff aware of any plans for the TMI-1 EPZ for controlling access to the area of the plume?

A (WITNESS CHESNUT) For details of that, I would have to refer to FEMA. Offhand, I see no reason why it could not be performed..

CHAIRMAN SMITH: Try to answer the question, too. Are you aware of?

WITNESS CHESNUT: I do not know of specific plans in the emergency plans for the TMI area which call for restricting or controlling access.

WITNESS GRIMES: Except during an evacuation.

BY MS. GAIL BRADFORD: (Resuming)

Q I cannot hear you.

A (WITNESS GRIMES) I am sorry.

Except during an evacuation. I think you were talking about at the unit itself. I think Mr. Chesnut already stated that during an evcacuation there would be need to control access or reentry to the area, as called for in the criteria.

Q Do you know that that is included in the specific plans?

A (WITNESS GRIMES) I do not have personal knowledge of that.

Q And Mr. Chesnut --

MR. ADLER: Mr. Chairman, I am very concerned about the reliability of the record. These witnesses have not evaluated the offsite plans. They are not here to testify as to what specific protective action measures are contained in the offsite plans.

PEMA witnesses will be -- Pennsylvania Emergency Management Agency witnesses will be available and Federal Emergency Management Agency witnesses who have evaluated these protective actions envisioned for TMI will be available. These witnesses can testify as to the generic nature of PAG's and what might be appropriate under various

circumstances.

CHAIRMAN SMITH: Well, Mr. Chesnut is also being offered as a person who is familiar with the Licensee's plan, and I guess to some extent in addition to that. But we have not in the past made it a basis for -- I mean, in the first place, I still do not understand you to be objecting.

But we have not in the past made it a basis for objection that better people are available to answer the information. Now what we will do is we will limit the time, perhaps, made available of asking unproductive questions. But I think that the record so far has not been distorted. I think that these witnesses are clearly indicating the limitation of their knowledge.

They are not, I do not see, purporting to give information they do not have. At least it has not happened yet. This has happened on many issues. We will have one panel whose knowledge stops, to be picked up by another. And we have handled it the same way. They make it clear where they start in their knowledge and that produces a record in itself, that information.

MR. GRAY: Yes, Mr. Chairman. I have not objected because, to the extent that these witnesses are able to answer based on their knowledge of the offsite planning, I consider it to be adequate and appropriate for them to

answer.

CHAIRMAN SMITH: I do think, gentlemen, you should be sensitive to the Commonwealth's concerns that the information be sharply delineated, where you know and where you stop knowing and how well you do know an answer. I think you should be sensitive to that observation.

WITNESS CHESNUT: Yes, sir.

MS. GAIL BRADFORD: Mr. Smith, we have a general problem which this is an example of. The Licensee -- Licensee's panel presented a number of statements which they personally were not qualified to back up. You know, just -- it might be something that they knew or had heard in their job, but they did not know anything personally about it.

And here I am concerned that such testimony is getting into the record, that some means of protecting the public is adequate or will work, even though the person who is making that testimony is not qualified to talk about it.

CHAIRMAN SMITH: That is exactly --

MS. GAIL BRADFORD: Here we have an example.

CHAIRMAN SMITH: That is exactly what cross-examination is about. That is why you are here, presumably, to show the limit of the knowledge of the witnesses as to what they are testifying to. It is probably the most important part of cross-examination.

If you come to the point where you feel you have

-- need particular assistance from the Board as to a particular question and answer, request it. But we cannot make witnesses say things they do not know.

MR. GRAY: Mr. Chairman, if this might help, maybe I can ask the question as to page 11 of this testimony.

MS. GAIL BRADFORD: Sir, I would like to continue with my line.

MR. GRAY: I could put on the record that these -- Mr. Chesnut was not claiming here that all of these protective actions that he has listed are available for TMI. If that would satisfy Ms. Bradford, it might permit us to move on.

MS. GAIL BRADFORD: Are you willing to state that not all of these are viable options for the TMI EPZs?

MR. GRAY: I am not willing to state that. I am willing to have Mr. Chestnut state here that his listing of these protective actions was not to indicate that all of these were necessarily available or planned for for TMI.

MS. GAIL BRADFORD: I guess I would like to know which of these listed protective actions the staff is willing to testify that they know from their experience are viable options for TMI EPZs.

CHAIRMAN SMITH: Do you know, Mr. Chestnut?

WITNESS CHESNUT: Well, first of all, I would just like to explain -- I do not know specifically which ones are being planned for.

CHAIRMAN SMITH: Do you know on any other basis, generally, any other basis that you know?

WITNESS GRIMES: In my experience, those are all viable options in one form or another. There is a statement referring, I believe, to thyroid protection. I would not say that it has been shown that thyroid blocking by potassium iodide for the general public is a viable option.

BY MS. BRADFORD: (Resuming)

Q Excuse me, sir, would you clarify that?

A (WITNESS GRIMES) Yes.

Q You said that they are viable options, except the

final one is not?

A (WITNESS GRIMES) I said in one form or another they are one specific means of thyroid blocking, and that is potassium iodide has not been shown. However, thyroid protection would also be obtained by breathing through a cloth, for example.

Q Can you --

A (WITNESS GRIMES) So I wanted to clarify that in some form those were all viable options. But I did not want to leave the misimpression that -- that I was saying that potassium iodide used for thyroid blocking for the general public was necessarily a viable option.

DR. LITTLE: One second. The information to which Mr. Zahler referred us just a moment ago, it takes a while to get there when you start out. I will tell you when you finally arrive at the page which says -- Roman numeral XIV, then A-2, and it talks about breathing through various types of material, cloth, and paper. It includes a rayon slip, although those are almost unavailable at this time. So this was obviously written by a man.

But at any rate, the end of this section says these methods are probably not effective against vapors and gases such as airborne iodine-131.

WITNESS GRIMES: I guess my experience would indicate that a dampened cloth would indeed have some

effectiveness against even the iodines in gaseous form.

BY MS. BRADFORD: (Resuming)

Q Can you cite the basis for that experience or get us a reference?

A (WITNESS GRIMES) Yes. It is my experience in reviewing iodine removal in various forms by containment spray systems.

Q How does that relate to breathing through a damp cloth?

A (WITNESS GRIMES) That water has a great -- or iodine has a great affinity for water, and even -- that depending on the form of the iodide, one gets different effectiveness, but that there is some effectiveness even for the gaseous forms of iodine, for iodine brought into contact with water.

Q Do you have any knowledge, for instance, if a person were using a handkerchief or a rayon slip or something that had been dampened and you were breathing through it, how long would that piece of cloth stay adequately damp?

A (WITNESS GRIMES) I think that would be something that could be determined by the individual using it. I do not have a measure for dampness.

Q Do you have a --

CHAIRMAN SMITH: Is the question now how long a

rayon slip will stay damp? If it is, we are going into too much detail.

MS. GAIL BRADFORD: He is testifying that he thinks that there is some way which has not yet been identified of respiratory protection and thyroid protection, and that he has some experience in this. And yet I do not see that his experience relates to breathing through a cloth, and I think that he is not able to say -- maybe he is able to say -- how much protection, whether it just mitigates 1 percent or what.

CHAIRMAN SMITH: Is it your plan to go through each of those materials? Would you indicate the limitation -- would you indicate the limitation of your information on that?

WITNESS GRIMES: Yes. It was only to respond to the Board's question in a qualitative manner but I did not think the statement referred to on probably not being effective was an absolute statement; that from my experience there might well be effectiveness even for the gaseous forms of iodine. Those limitations on my statement are that I have done no work to quantify what percentages -- might -- reductions might be obtained by degree of dampness in any particular material. It was only to indicate that the statement there, in my experience, would not be an absolute.

WITNESS CHESNUT: I also think that part of the point of my testimony was missed. And that was that there are various protective action guides for various pathways, and because there are various potential protective actions for each pathway, it is desirable to sort of quantify the different pathways and the protective actions associated with each pathway.

In listing some of the protective action options, those are but some means available for protective action. They may not be used by all segments of the general population. They may be recommended for just particular segments, depending on the resources or actual conditions at the time of the accident.

And I was not saying that all those were in fact in place in the area around Three Mile Island.

BY MS. BRADFORD: (Resuming)

Q I guess in my previous question, which Mr. Grimes answered, I think we got a little crossed about what a viable option means. And let me just rephrase that, and then we can go on to something else; that does the staff know from your own experience and not just from what you may have heard from FEMA or something but just from your own review of plants, do you know whether any of these -- and if so, please specify -- have -- have planning bases now to the point that they know they can be implemented?

A (WITNESS GRIMES) Are you speaking of the general public or Licensee personnel or everyone?

Q For the total EPZ.

A (WITNESS GRIMES) Total EPZ. Are you excluding the site?

Q For the general public. You can answer that separately for the site and then for the off-site.

A (WITNESS GRIMES) We certainly have knowledge of the site plans.

Q For the protection of workers on site.

A (WITNESS CHESNUT) For the site there are protective actions described in the emergency plan or described in some of the testimony already provided.

The first option of sheltering, I think that is described in the emergency plan. In the event there is a radiation release, there is an announcement made on site, and they direct people to go to various shelters or various assembly points.

Evacuation, Licensee also discusses the need for evacuation -- evacuating nonemergency or nonessential personnel. As a means of controlling access, likewise there are procedures for controlling access to the site in the event of an emergency.

Regarding thyroid protection, the Licensee described in his testimony that there is potassium iodide

stocked on site, and the procedures are being developed for the distribution of potassium iodide.

With regard to respiratory protection, there are procedures and equipment for respiratory protection in place on site. The exact amount of respiratory protection, I cannot testify to.

With regard to the on-site plans, to the extent that I have read them, I know that there are procedures, provisions for recommending and implementing protective action of sheltering and evacuation. I do not recall any specific provisions for controlling access other than that which would accompany an evacuation.

With regard to thyroid protection, my discussions with FEMA and review of some state emergency plans has indicated that thyroid protection will be used for various emergency workers and various institutional personnel.

With regard to respiratory protection, I recall reading that there is some respiratory protection for emergency workers in the state. I do not recall what the local respiratory protection is being used for their emergency workers, only because I have not reviewed those plans in detail.

We have discussed the ad hoc respiratory protection which could be used. And I do recall reading an answer from the State of Pennsylvania on some positions on

Contentions with regard to respiratory protection for the National Guard personnel, stating that they have gas masks. But that is the extent of my knowledge on the protective actions capability, and further analysis would have to defer to the FEMA testimony.

Q Did you wish to add anything, Mr. Grimes?

A (WITNESS GRIMES) No.

(Pause.)

Q On page 16 --

A (WITNESS CHESNUT) Would you repeat the page, please?

Q 16. Referring to the testimony on page 16, is the witness familiar with the experience during the TMI-2 accident where an off-site dose for Goldsboro was calculated at 10 rem per hour where no protective action recommendation was made, where PEMA was told that an evacuation of Goldsboro might be necessary?

A (WITNESS CHESNUT) I am aware that there was a high dose projection at Goldsboro resulting from the accident. I think Mr. Grimes could probably best answer the specific.

Q Are you --

A (WITNESS GRIMES) I am familiar with the fact that there was a high dose projection and that there was no evacuation. I do not recall whether one was recommended or

not at that point.

Q Is the witness aware of any changes to the Licensee's emergency plan or to the Commonwealth plans, if the witness is familiar with that, or any other plans which will prevent a recurrence of such a situation?

(Panel of witnesses conferring.)

A (WITNESS CHESNUT) The Three Mile Island Unit 1 emergency plan has emergency action levels which will, one, classify an emergency, and they have provisions for the emergency director directing him to make protective action recommendations.

Some of the criteria which was jointly arrived at by the Licensee and the State of Pennsylvania are included in the emergency plan.

Q Was there at the time of the accident a procedure by which a reading at Goldsboro of 10 rem per hour should have resulted in evacuation?

A (WITNESS GRIMES) Could you repeat that?

Q Was there at the time of the accident a procedure by which a reading, had it been accurate, at Goldsboro of 10 rems per hour should have resulted in an evacuation or some action?

A (WITNESS GRIMES) Had there been an actual reading in Goldsboro of 10 rem per hour, it would clearly have exceeded the EPA protective action guides. And if that

condition had occurred, I believe the TMI-2 plan was of such a date as would have incorporated that federal guidance. But I am not familiar with the TMI-2 plan at that time.

(Counsel for ANGRY conferring.)

A (WITNESS CHESNUT) Also, as we described, the current emergency plan provides for making protective action recommendations based on some plant conditions and dose projections, not just merely relying or waiting on a verification.

Q Thank you. Referring to the testimony on page 29, this has been covered somewhat. Does there exist no interim measure which can be taken while the reactor core -- reactor coolant system sample is being analyzed, in order to provide input to a possible decision to implement the emergency plan based on RCS activity levels?

A (WITNESS CHESNUT) There are various indicators of a possibility of an RCS or a degraded core condition, one of which would be a primary coolant sample. But there are many other indicators that would lead to an expectation of having fuel damage.

There is also RML-1, which is a letdown monitor, which would have some indicator -- indication of a coolant activity.

(Panel of witnesses conferring.)

A (WITNESS CHESNUT) There are emergency action

levels listed in the emergency plan, and I could refer to that plan to point to some other indicators.

Q I am not sure I understand the intent of your last statement.

A (WITNESS CHESNUT) You asked for some alternate methods, I believe, to determine if there was some reactor coolant or some high reactor coolant activity. One of the causes of high reactor coolant activity would be some degraded core -- fuel damage. And there are more than one way to determine if you have coolant or core damage or potential for core damage.

Q As I recall the testimony on the PCS sample, it was that it would take about two or 2-1/2 hours to obtain a reading on it.

A (WITNESS CHESNUT) That is correct.

Q Is there anything that could be done which would provide useful information which would take less time?

A (WITNESS GRIMES) I think that is what Mr. Chestnut was referring to with the letdown monitor action levels, which would indicate a high activity in the primary system.

Q At how much?

A (WITNESS GRIMES) Without taking a sample?

Q How much time would that take?

A (WITNESS GRIMES) Mr. Chestnut will have to find

the reference here, and then perhaps he can indicate. I believe it is a direct reading monitor.

(Witness reviewing document.)

CHAIRMAN SMITH: After you receive the answer to this, we will break. I have to make a telephone call.

MR. ZAHLER: Mr. Chairman, might I speed up the testimony by giving Mr. Chestnut the reference of the table he is looking for?

CHAIRMAN SMITH: All right.

WITNESS CHESNUT: I found it.

CHAIRMAN SMITH: I would sure appreciate that.

So long as it is what he is looking for and not what you want him to be looking for.

MS. GAIL BRADFORD: This is just training for Mr. Chestnut so he becomes really familiar with this.

WITNESS CHESNUT: All right, this is in the site emergency category. The emergency action level I am referring to is Number 15 of Table 23. The emergency action level is total reactor coolant activity greater than or equal to 300 microcuries per milliliter. We have already discussed -- I think the staff position is that it be made more consistent; in other words, placed in the lower category of alert.

But at any rate, the indicator is about 300 microcuries per milliliter, or as indicated by any of the

following: (a) RML-1 (high) reading greater than 6.66 times 10 to the 3 pounds per minute; or (b) RML-1 low channel reading greater than or equal to 3.81 times 10 to the 5 pounds per minute; or (c) as determined by sample and analysis.

So those are two readings which could be used and are available in the control room rapidly. There are other pressure-temperature relationships which would lead a good engineer to make an expectation of a potential fuel damage and high coolant activity levels.

MS. GAIL BRADFORD: Thank you.

MR. ZAHLER: Mr. Chairman, just so the record is complete, there are similar parallel emergency action levels at the unusual-event level. That is, action level number 3, Table 21. And at the alert level, action level number 1, Table 22.

MR. ADLER: Mr. Chairman, before we break, I am having a little bit of trouble determining how far we are going to get this afternoon. If we are going to get to the section on questions on the NRC plan then --

CHAIRMAN SMITH: I would predict that we do not.

MR. ADLER: That we do not.

CHAIRMAN SMITH: Yes.

MR. ADLER: Okay, then, I have no problem. Otherwise, I was going to request an extra half-hour or so

for lunch.

CHAIRMAN SMITH: Oh, I see. In that event, you would want time for preparation. I see.

MR. ADLER: That is correct.

CHAIRMAN SMITH: What do you think, ladies? I would think that we would not, from looking at your -- well, look, if you need -- if we come to it, we have the opportunity, then we can take the break. We can all use the time.

MR. ADLER: That is fine. Thank you.

CHAIRMAN SMITH: Yes. I forgot the Licensee has a cross-examination plan. And so I would predict that we do not get to it.

All right, we will adjourn until 1:00.

(Whereupon, at 11:59 a.m., the hearing was recessed, to reconvene at 1:00 p.m. the same day.)

AFTERNOON SESSION

(1:06 p.m.)

CHAIRMAN SMITH: Dr. Johnsrud, did you have an understanding with Ms. Bradford?

DR. JOHNSRUD: I had anticipated Ms. Bradford would be back by now. If the Board would prefer, I would proceed with my cross examination questions in her absence. In view of my uncertainty of being here this coming week, if this testimony runs over -- as it appears it will -- I certainly would appreciate the opportunity to have my cross-examination questions on our Contentions on the record.

CHAIRMAN SMITH: If there are no objections, let's let Dr. Johnsrud proceed.

MR. ZAHLER: Mr. Chairman, if I could just put on the record, we are at this time handing out the materials on public information that were provided to the NRC staff. It consists of a general pamphlet on radiation, and five pamphlets, one each for the copies. This information is technically in a draft status. I understand it is being reviewed by the counties a last time to check for accuracy. But it is the most recent and up-to-date information we have.

CHAIRMAN SMITH: You may proceed, Dr. Johnsrud.

DR. JOHNSRUDE: Thank you, Mr. Chairman.

Whereupon,

STEPHEN H. CHESNUT AND BRIAN GRIMES,

the witnesses on the stand at the time of the recess, having previously been duly sworn by the Chairman, were further examined and testified as follows:

CROSS EXAMINATION - Resumed

BY DR. JOHNSRUD:

Q Mr. Chesnut, at page 5 of your testimony, you have described ways "in which accident recognition and classification is" -- I believe that should be "are" -- "enhanced." Do these ways that you have described contribute to either halting or to mitigating the accident and its consequences?

A (WITNESS CHESNUT) I did not hear the last half of your question.

Q Let's put it this way: Do these methods that you have described contribute to halting or mitigating an accident?

A (WITNESS CHESNUT) Could you refer me to an approximate section on the page that you are --

Q Surely. It is in fact the first sentence starting at the end of line 1: "By classifying each potential accident into one of four categories," et cetera, you conclude the sentence: "accident recognition and classification is enhanced."

A (WITNESS CHESNUT) Yes.

Q And I am asking if these ways of recognizing and classifying accidents in any way contribute to halting or mitigating an accident?

(Panel of witnesses conferring.)

A (WITNESS CHESNUT) Yes, they do, because they call for the establishment of additional emergency centers and the agumentation of the emergency staffs to assist in mitigating these accidents.

Q In mitigating the accident or mitigating its consequences for persons on site and the public?

A (WITNESS CHESNUT) They would do both. Having more people, more capability in an accident situation will assist in both mitigating and recognizing the consequences.

Q Okay. Thank you. Thank you.

CHAIRMAN SMITH: I think Ms. Bradford has returned. I think I observed a meeting of the minds between you two that Dr. Johnsrud should continue. Is that what I observed?

MS. GAIL BRADFORD: Yes, sir.

CHAIRMAN SMITH: Okay.

BY DR. JOHNSRUD: (Resuming)

Q Also on page 5, Mr. Chesnut, does the Licensee have no option to design and carry out emer[illegible] response plans more conservatively than the NRC guidelines provide

for?

A (WITNESS CHESNUT) That is what -- that is not what was said in my testimony. What I did say was that there ought to be a consistent accident-classification scheme and also the Licensee may recommend protective actions more conservative than that established in 0654 or the EPA protective action guide. It should be a consistent recommendation reached between the Licensee and the authorities responsible -- responsible for implementing those protective actions.

Q I think you have said two or three different things there. I wonder if we could split them apart.

A (WITNESS CHESNUT) First, it should be consistent in classification --

Q Yes, being --

A (WITNESS CHESNUT) -- and the terminology so that the relative severity of the accident is recognized by the various parties or the various agencies, groups that may respond.

Q All right. That refers strictly to accident classification and identification of EAL. All right. But secondly, I believe you then indicated that the Licensee would be free to -- on the one hand, you said that the Licensee would be free to recommend protective actions more conservatively than the NRC guideline, if I understood you.

A (WITNESS CHESNUT) Yes.

Q But then you followed through also with a subsequent comment that those recommendations should also be consistent with NRC guidelines. And I think I am confused there.

A (WITNESS CHESNUT) I was meaning consistent with the people who would be implementing the basis for recommending what protective actions should b understood both by the Licensee and by the off-site agency to whom he is making the recommendations.

Q Then you are further saying that the Commonwealth and agencies of the local governments would be empowered, with no federal preemption, to set emergency action implementation substantially more conservatively than does the NRC; is that correct?

A (WITNESS CHESNUT) That is correct. The State could implement more conservative protective actions.

Q So the NRC's guidance, which you do not recognize to have regulatory power, if I am correct, is in a sense a minimum -- well, not legal standard, but minimum guidance to these other agencies of government and the Licensee. Is that also correct?

A (WITNESS GRIMES) Perhaps I could speak to the guidance. We do view it not only as a minimum but as a generally recommended practice. But we also recognize that

in specific circumstances Licensee and State may decide on more conservative response actions in particular situations.

Q There is nowhere that the NRC mandates that the Licensee is disallowed greater conservatism than these recommendations; is that true?

A (WITNESS GRIMES) That is correct.

Q Yes. The witness has styled the EALs of Appendix 1 in NUREG-0654 as simply "recommendations." Is that an accurate characterization of the NRC staff's view then, or would you give a greater force to these recommendations with respect to ultimate approval of the NRC -- of the Licensee's emergency response plans?

A (WITNESS GRIMES) As we discussed, we are very interested in obtaining a consistent methodology for characterizing the severity of the accident, and we will be reviewing those and have provided those -- that guidance as an acceptable way of doing things.

We will accept equivalent ways of achieving the same objective in this context. But we want to hold fairly close to those action levels as they relate to classifying events. So they have a little, in our view -- we view that it is more important to be consistent with that level -- levels, more consistent with the action levels than with the recommended actions which might follow on declaration of a

particular class of emergency.

Q Well, now, Mr. Grimes, consistency being well known to be the hobgoblin of small minds, might it not be given the fact that the TMI experience is unique among commercial operating reactors that a consistency consonant with the more conservative approach of Licensee might form a better regulatory guidance throughout the industry, in that we have in the case of TMI's history the occurrence of events more severe than the regulatory agency had previously anticipated would occur?

That was a dreadfully long question, and I apologize. Do you follow the gist of it?

A (WITNESS GRIMES) Yes. We did keep the TMI experience in mind when we wrote the guidance, and I believe we came out with a fairly good consensus judgment nationwide on what the appropriate action levels should be.

Q I am puzzled then. Was the NRC not surprised that this Licensee chose so far more conservative an approach to EAL declaration?

A (WITNESS GRIMES) I am sorry, I did not quite follow the question. Was the NRC --

Q Was not the NRC staff somewhat surprised that this Licensee should have chosen so much more conservative an approach to the fraction of the protective action guidelines -- guides -- at which they would declare the various

emergency action levels?

MR. GRAY: I object to that, Mr. Chairman. I do not believe the surprise of the NRC staff one way or the other has any relevance here.

BY DR. JOHNSRUD: (Resuming)

Q I would follow it with a question concerning the thrust of discussions that took place when this has taken place and the approach or -- well, the approach toward a rapprochement between Licensee and staff to date on this matter?

CHAIRMAN SMITH: You withdrew the earlier question, is that it?

DR. JOHNSRUDE: If he does not care to respond to whether or not they were surprised, I am curious to know what they have done in the follow-through and this difference between the NRC's approach to declaration of EAL and the Licensee's approach has clearly emerged as a problem. Perhaps this has been said and I have not heard it adequately. But I do not recall its having been addressed clearly.

MR. GRAY: Well, I am not sure that your characterization as something clearly emerging as a problem here is appropriate at all. And I do not believe these witnesses should answer on that premise.

First of all, the only bone of contention in all,

I believe, of this area is the levels at which particular accident classifications are declared. I think Mr. Chesnut just testified as to the conservatism, and when the Licensee recommends a protective action and when the State may decide to implement a protective action.

DR. JOHNSRUDE: Excuse me, Mr. Gray. I think you are mischaracterizing. You are speaking of protective action, and I was speaking of EAL, emergency action level.

MR. GRAY: Emergency action levels for classifying an accident, is that it?

DR. JOHNSRUDE: That is correct, yes.

MR. GRAY: Maybe you can ask your question again, and we will see if we have any problem with it.

BY DR. JOHNSRUD: (Resuming)

Q It would appear from the testimony we have before us from Mr. Chesnut, for example, on page 9, at the conclusion of the first full paragraph of the page, the staff states very clearly that its position is that the TMI-1 EALs for general emergency categories should be modified to be more consistent with the NRC guidance in this regard.

We have been hearing testimony from the Licensee that they have chosen a more conservative fraction of the PAG as the basis for their declarations of EALs. And what I am asking here is if the -- what the staff and Licensee have

explored together or are in the process of reaching with respect to an agreement on this apparent area of rather substantial disagreement.

Is that clear enough?

A (WITNESS CHESNUT) Yes. The Licensee submitted its emergency action levels in early December of 1980. In the review of that -- correction: in November of 1980. In the review of that and in the preparation of my evaluation of the emergency plan, I identified that to the Licensee. At that point, they indicated that they desired to be more conservative.

Q Can you tell us why? What explanation or reasoning was given to the staff?

A (WITNESS CHESNUT) I think they just wanted to be more conservative and to -- they thought that perhaps by declaring a higher level of emergency, the only disadvantage might be that you might be just too ready. They felt that was not a disadvantage, not taking into consideration the response of the other -- of the other responsible organizations.

So we have explained that to them, and in the testimony earlier this week the Licensee indicated that they would modify those emergency action levels.

Q Was that the first knowledge that licensee intended to conform with the staff's position? Or did they in fact --?

A (WITNESS CHESNUT) I have had phone conversations who indicated perhaps they would do that.

Q But I take it that was after you had completed the testimony??

A (WITNESS CHESNUT) Yes.

Q Okay.

Does the NRC staff view that there is any realm of federal preemption with respect to the setting of criteria and standards pertaining to either emergency response or evacuation planning? I am not certain that that really was cl ed up -- that you really give carte blanche to state and al agencies to set their own criteria and standa .

HAIRMAN SMITH: I think that the question should be, if you d not mind, should be clarified to determine which way pree tion you are talking about. If it follows your previous line, the argument would be that the state and local governments cannot be more conservative. Is that where you are going?

MS. JOHNSRUD: No. I believe my previous line indicated from -- received from the staff indication that the state and local governments could be more conservative.

CHAIRMAN SMITH: Yes. So unless you are going that way I do not understand how preemption could apply.

MS. JOHNSRUD: With respect to the application or the setting of criteria that the NRC would must be met. Perhaps that is not clear.

CHAIRMAN SMITH: If the witnesses understand, that is fine. But I do not.

MR. GRAY: We are not talking about legal preemption in the same way we have preemption for federal government preemption of states in regulating nuclear power plants.

MS. JOHNSRUD: Radiation -- I really had in the back of my mind, I think, the possible comparable situation in the eyes of the staff with respect to the federal preemption over the setting of radiation standards that had been established in the Minnesota Pollution Control Board case, I believe.

MR. GRAY: I do not know that these witnesses are qualified to render a legal opinion.

MS. JOHNSRUD: Perhaps they could indicate to me if the staff's view of its role is within this context, whether or not they can give us a legal opinion.?

WITNESS GRIMES: I definitely cannot give a legal opinion on the question. We have stated as a practical matter what our conclusion is in this case, in this

particular set of circumstances, and I cannot extrapolate that to any general legal theory, partly because I am not a lawyer.

BY MS. JOHNSRUD: (Resuming)

Q So it would be essentially within the limitations of the pertinent parts of 10 CFR that you feel that you have full regulatory control. Is that correct?

A (WITNESS GRIMES) Whatever --

Q 10 CFR, Part -- A.?

A (WITNESS GRIMES) Whatever control we have is clearly through our licensing process and our decision on whether or not to grant a license that we are applying in this case. That is the practical application of the regulations. Whether or not states might want to do something different that might cause a court challenge I cannot speak to.

Q Do I take it, then, that the NRC's requirements for a license -- let me reword that.

The NRC's requirements for emergency response and evacuation planning for an operating reactor would be substantially different from those for a reactor under license to possess solely?

A (WITNESS GRIMES) No.

Q Would they be the same?

A (WITNESS GRIMES) The authority or the approach --

Q The approach -- the criteria that are applied.

A (WITNESS GRIMES) The regulations?

Q And the regulations.

A (WITNESS GRIMES) Certainly apply. The regulations have in themselves gradations between different situations and different degrees of hazard, so --

Q Okay, fine.

At page six of Mr. Chestnut's testimony, I do not want to repeat Ms. Bradford's questioning this morning, nor any of Mr. Adler's. Am I correct in my conclusion from your comments this morning, Mr. Chestnut, that the NRC does not really set a time for recognition of an accident as some condition of then moving ahead with notifications and such by the licensee?

A (WITNESS CHESNUT) The NRC has not set a minimum time. The NRC has set some standard methods.

Q Thank you.

How does the NRC expect to determine that the licensee has responded as promptly as possible to a reactor malfunction in order to initiate that clock for off-site emergency response notification and notification of the public, in order that the most advantageous protective actions can be taken for the well-being of individual members of the public?

A (WITNESS GRIMES) Are you referring to looking

back to a particular event to see if the licensee did as well as he could have done?

Q I seem to recall a fairly thick document issuing from I&E fairly recently that pertains to questions somewhat related to this matter.

A (WITNESS GRIMES) I am not clear as to your --

Q Yes. I presume that this would have to be in a retrospective examination to ascertain whether or not the licensee has responded as promptly as possible to indications of reactor malfunction.

A (WITNESS GRIMES) Well, in any particular case there could certainly -- of any severe accident there would certainly be an examination of the circumstances and a determination of whether the licensee acted in a proper manner.

A (WITNESS CHESNUT) One method to check this would be looking at when an emergency action level was reached or exceeded. If --

Q How could that help, Mr. Chestnut, in view of the fact that there could be so wide a range of events that can escalate an accident, as I think we have had testimony, almost instantaneously from one class to another?

A (WITNESS CHESNUT) Well, that can. As soon as an emergency action level is exceeded, the operators in the control room should have the ability to recognize the

accident.

Q They should have the ability.

A (WITNESS CHESNUT) That accident may actually have been developing over some period -- undefined period, you know -- before that. It could be an instantaneous problem, or it could be a slowly-building-up problem until an EAL was reached.

Upon reaching an emergency action level, the control room operators should be directed to declare an emergency and to carry out the notification functions and the emergency actions required by that emergency cause.

Q Okay. I am really trying to deal, I think, with the issues here. Perhaps we can separate them constructively.

First, it still remains somewhat unclear to me as to how the NRC will know that those procedures are producing the most prompt accident assessment possible. That is one point.

And the second is how the assessment is then made with respect to providing the most beneficial protective actions to the public. Are these distinctions clear?

A (WITNESS GRIMES) Yes. The last should be fairly straightforward in that once the accident severity level is recognized, certain initial procedures are to be carried out, including the notifications of the off-site

authorities. If those are not carried out promptly, that would be a cause to find that the licensee had not properly responded.

Q Okay. Could we stop right there for a moment?

Let me see if I can give you an example that might clarify the trouble that I think I am having here. Let's say that the operator detected a condition in which he thought there might be a coolant activity problem and, for some reason, would chose the longer procedure of sample and analysis, rather than the, let's say, short-cut procedure for the purpose of other instrumentation readings that would be indicative of coolant activity.

Now, he has taken this longer procedure and he may have lost time in terms of coming to an accident declaration, which in turn will have delayed the notification, both to the state and then of the off-site public of the situation requiring protective action, which in turn may alter and condition the protective action recommendation that is made.

A (WITNESS GRIMES) The example you have given he does not have a choice. He -- and -- and any of these circumstances, one generally specifies this or this, or -- or a third way of identifying, and when any one of those is exceeded -- in this case high activity in the let-down line -- above a certain level, that has caused the action level

to be exceeded.

The operator does not have choice of not exceeding the action level because he wishes to use one of the ways to determine that -- one particular way to determine that action level. If his procedures call for any three parameters to cause, or three instruments -- any one of three instruments -- to cause a certain class of emergency, then he must declare it when any one of those instruments indicates that.

In other cases there may be an analysis which says that two or three instruments must have certain readings before he arrives at a decision that this is a particular severity accident. In that case, all two or three of those events would have to occur simultaneously for that declaration to be made. But I do not see that your example really applies, and I am not sure I can think of another example that would cause that kind of delay just by operator choice in the way he analyzes the thing.

Q Okay. I think that then takes us back to the original of those two points I was trying to get clarified, which dealt with the way in which the NRC staff has been able to assure that these procedures do produce the most prompt accident assessment. I do not know exactly how, frankly, to frame a question here that gets a sufficiently responsive --

CHAIRMAN SMITH: Instead of shopping around for examples, just take a hypothetical. We would be interested in knowing where your view of it and where your expertise begins. Does it begin with the accident assessment process, or does it begin with the accident assessment itself?

WITNESS GRIMES: I think my expertise will cover both the initiating events and the assessment of the accident. And if I could try to give an example of what we do to assure ourselves that these are adequate, perhaps it would help.

One thing we do to reach a degree of assurance is to review the actual action levels themselves. We have tried to identify a number of initiating conditions and then we have asked the licensee to come forward with specific parameter values for specific instruments which would indicate those conditions. And those parameter values and instruments will vary from time to time and from reactor type to reactor type. So it has to be looked at on an individual basis.

We do review those and once we are -- if we identify other instruments or simpler combinations of instruments which could indicate particular severity levels, then we ask that those be put into the plant.

The second thing we do is, in our implementation inspection, is that we actually ask the plant personnel if

they -- what they would do if, on an audit basis -- we do not ask them about every one -- on an audit basis ask them what they would do if particular parameters were exceeded.

We also, as a third item, check that these values appear in the casualty procedures or I am not sure what they are called -- operator emergency procedures -- to respond to particular events should have incorporated in them that if during this event sequence that the operator is using a certain parameter value is exceeded, he has just exceeded the alert level and he should then --

BY MS. JOHNSRUD: (Resuming)

Q Automatically?

A (WITNESS GRIMES) Yes. And then he should then institute the other procedures indicated by the alert level.

Q Okay. I appreciate your full explanation of this and it takes me on to wonder if, in the process of attempting to reduce the time to accident declaration, which obviously will have subsequent repercussions for the protection of the public, if the NRC is attempting to attach minimum time to recognition to each of these steps and procedures involved in accident identification?

A (WITNESS GRIMES) No.

Q Do you believe that it would be at least partially possible to do so and thereby to develop guidelines to licensees that would reduce the time necessary for the

operator to identify an accident situation and make that declaration?

A (WITNESS GRIMES) I do not know whether that would be productive or not.

Q Why not?

A (WITNESS GRIMES) My feeling is that when an operator is questioned whether he recognizes what to do in a certain situation that he either does or he does not, letting him think for two minutes or five minutes or ten minutes, usually, does not make the difference. Ordinarily, the biggest factor causing a delay in recognition might be, for example, an overabundance of signals.

Q Yes.

A (WITNESS GRIMES) That the operator would have to sort through.

Q Yes.

A (WITNESS GRIMES) That -- that is why we have tried to lay out in these procedures that if sufficient conditions to activate the emergency in a situation where the operator has no guidance and must start figuring out what has happened when his board lights up, that may take a substantial amount of time. We think we can cut down that time substantially by giving him guidance as to if he gets one or two or three parameters of a certain kind out of all this, other information or alarms that may have gone off,

then that is enough to initiate that particular conditions.

Q Would that be within a particular set time frame? That is, within, let's say, one minute, X number of indicators of a particular set of times were to light up, that that would be the time limit that triggers telling the operator that there is a problem sufficient that he may proceed with an accident declaration?

A (WITNESS GRIMES) Usually it is either the existence or non-existence of a value. There might occasionally be a procedure which says if you have a fire that is going on for longer than a certain number of minutes, then it is not just something that happened in a wastepaper basket and you had better declare a certain level of emergency.

But for most cases that the operator has to deal with, it is not a matter of parameters appearing over long periods of time. It is either the existence or non-existence of certain conditions.

Q Okay. Thank you very much.

Also at page six, toward the bottom, does the NRC consider fuel damage of any sort to be a minor event?

A (WITNESS CHESNUT) We have placed some various levels of fuel damage guidelines in Appendix 1 to NUREG-0654. Those levels are significant enough to declare that particular level of emergency.

A (WITNESS GRIMES) I would add that there are various -- I would endorse that there are various gradations of fuel damage. There is some -- often some fuel failure of damage existing during normal plant operation in the form of pin hole leaks, for example.

Q And up to what percent fuel is that? Can you refresh us?

A (WITNESS GRIMES) Well, it would depend on the fuel condition and the rapidity of the failures. If failures occurred very rapidly, one might get a burst of activity into the primary coolant system which exceeded the action levels.

However, if the failures occurred very slowly, you might get a very slow buildup of activity, so that your normal operating limits would not be exceeded, even though perhaps a fraction of one percent of the fuel had suffered failure.

Q So fuel -- the classification or the significance attached to fuel failure is in part a time-dependent relationship to the amount of fuel failure? Is that a correct conclusion?

A (WITNESS GRIMES) Yes, as reflected in immediate -- in the existing immediate coolant activity levels. In other words, we try not to have to calculate how much fuel has failed, but rather predetermine at what coolant activity

levels reached by whatever means we would take action at.

Q Okay. Thank you.

At page seven -- it seems to me we have had a fair amount of discussion of this whole issue of what constitutes acceptable dose and unacceptable dose and that this discussion has not really led us yet to a full certainty on the part of at least this Intervenor and, I suspect, some others as to what does constitute an acceptable dose to the public in the eyes of the NRC.

If protective actions are taken at the earliest possible time, will they not tend to reduce the dose received by members of the public off-site?

A (WITNESS GRIMES) Usually that is the case. That is not always the case. An inappropriate protective action might be taken, for example initiating an evacuation which, if followed immediately by a major release from the reactor, may prove to have not minimized but to have maximized the exposure.

Q Is that not always a possibility in the course of an accident sequence?

A (WITNESS GRIMES) No.

Q That unanticipated major release may take place after any protective action has been implemented?

A (WITNESS GRIMES) No. It would depend on the particular accident sequence and that is the reason we try

to rely on plant parameters which indicate that potential. If there is a very large potential based on a large amount of fission products in the containment atmosphere, then one has to be sensitive to the action one takes and that would have to factor in whether the containment pressure was high or low, which might give an indication of whether a failure was likely, whether the containment pressure was increasing or decreasing. If the amount of the fission products in the containment was high, the pressure was increasing, or very high concentration of hydrogen existed, one might be reluctant to put people on the road if you thought a failure might be imminent.

So the wrong action could be taken early.

Q And to what extent does the NRC spell out in its guidance to the licensee these multitudinous possible combinations for effective operator training with respect to accident level declaration and protective action recommendation?

A (WITNESS GRIMES) Well, we have tried to give the example, initiating conditions. And the one I spoke of in particular is treated, and variations of that are treated, under the general emergency examples in the core melt sequences. And there are several primary sequences which operators must be aware of in terms of what plant parameters would indicate what sequence.

Q And you are referring here specifically to the guidance in --

A (WITNESS GRIMES) In Appendix 1 of NUREG-0654.

Q Are these matters spelled out in greater detail i other documents or made available to the licensee?

A (WITNESS GRIMES) Well, the basic guidance is in NUREG-0654. If one wanted to look at a particular core melt sequence, I suppose one could refer to the reference document WASH-1400 or something like this. But the basic information that one needs to be aware of is in NUREG-0654.

Q Can you tell us, in your requirements for operator training -- perhaps I should know this, but I'm afraid I do not -- to what extent do you expect reactor operators to be fully acquainted with WASH-1400?

A (WITNESS GRIMES) We do not expect them to be fully acquainted with WASH-1400.

Q Portions of it?

A (WITNESS GRIMES) With those aspects that are discussed in NUREG-0654, we do.

Q But not to any greater depth?

A (WITNESS GRIMES) No.

Q Do you believe that those aspects that are discussed in 0654 fully cover the possible range of combinations of events that could lead to an untoward situation of the kind that we have described in which an

evacuation might prove to be less desirable after an accident was well under way?

A (WITNESS GRIMES) Yes.

Q I believe you said earlier in response to my question about whether early protective actions will not tend to reduce the dose received by members of the public that that was true.

Does this fact not, in turn, make of the Protective Action Guides effective, if not actually declared, acceptable dose levels for members of the public?

A (WITNESS GRIMES) I'm sorry. Does not this action?

Q Does not this -- this fact that you agreed to earlier that early protective action will tend to reduce the doses to members of the public -- does it not make of the Protective Action Guide levels effective if not actually declared acceptable dose levels?

A (WITNESS GRIMES) I think I conditioned my earlier statement in that regard, but I -- and I think I discussed earlier that in any particular situation that the decisionmaker has, in effect, decided that that exposure is acceptable under those circumstances. But I do not think it sets down in advance that certain doses are always acceptable.

Q Does the term "acceptable dose" in any way imply a regulatory as opposed to a guidance term in the minds of the

NRC -- in the view of the NRC?

(Panel of witnesses conferring.)

A (WITNESS GRIMES) I am not sure I -- could you repeat that?

Q Okay. Does the term "acceptable dose" imply a regulatory rather than a guidance stance in the view of the NRC?

CHAIRMAN SMITH: He is given his choice.

MS. JOHNSRUD: I am asking if he views -- if NRC views the term "acceptable dose" or the concept of an acceptable dose as a regulatory matter as opposed to a mere guidance matter.

WITNESS CHESNUT: Dr. Johnsrud, I think part of the testimony we are talking about -- protective action guides -- to not constitute an acceptable dose, and we went on to say that protective action guide is a trigger level in which you compare a dose projection, not an actual dose received. So you take a protective action based on a projected dose, not on an actual received dose.

BY MS. JOHNSRUD: (Resuming)

Q All right, but that action is taken in the expectation that such a dose may be received by members of the public unless something is done to prevent it. Is that not correct?

A (WITNESS GRIMES) That is correct. And I said in

that context the decisionmaker was accepting that exposure of the public, but I wanted to distinguish that from saying as a general matter any particular dose is acceptable.

If, for example, the EPA protective action guides give a fairly wide range of doses within which you should consider protective actions and even below that, I think if there were simple actions available that had no impact to reduce dose, they would very likely be taken. So I do not -- I certainly do not want to say that any particular dose level is an acceptable dose level in general.

Q One gets the feeling of dealing with a substance that is fairly slippery.

CHAIRMAN SMITH: Dr. Johnsrud, I think the problem rested on the question. Now I have heard these witnesses, I think, state several times that they do not approach the concept, regulatory or guidance or any other way of an accepted dose, but the question you put to them would require that they accept the premise that it is either regulatory or guidance. And I have heard them clearly state that it is neither.

BY MS. JOHNSRUD: (Resuming)

Q Is is neither?

CHAIRMAN SMITH: Is that correct?

WITNESS GRIMES: That is correct.

BY MS. JOHNSRUD: (Resuming)

Q Then if it is not really either, perhaps I want to ask if there is any dose that the NRC considers to be unacceptable?

A (WITNESS CHESNUT) Dr. Johnsrud --

CHAIRMAN SMITH: Unacceptable? Is that not the other side of acceptable? Answer the question if you can.

BY MS. JOHNSRUD: (Resuming)

Q Yes, please do.

A (WITNESS CHESNUT) Dr. Johnsrud, the Protective Action Guides and what we have said is a means of minimizing a dose in -- after the accident has occurred, based on dose projections just to minimize the effects of an accident that has occurred.

We are not implying that any particular dose level is acceptable. The goal is to minimize the doses and these protective action guidelines are just used as a -- as we said -- as a trigger point to compare dose projections with.

Q Would it not, then, be more conservative to use a trigger point, as you use the term, at the fraction of a PAG and use it across the board, the fraction being, in this instance, that which the licensee has already proposed?

A (WITNESS GRIMES) It may or may not be. The Environmental Protection Agency has given us guidance on how to make that judgment and we have adopted that for use.

Q All right, then, you are saying that the NRC has

no dose number -- X-rem or millirem -- per unit of time that it considers the boundary between that which is acceptable for members of the public and that which is unacceptable for members of the public. Is that a correct conclusion to draw from what has been discussed here? Just, really, this time I would love to have a yes or no.

A (WITNESS GRIMES) I did not say that.

Q Would you say yes or no to that question?

A (WITNESS GRIMES) In the context that we have regulations which limit the amount of material that may be released during normal operation, we made a judgment -- a general judgment -- and also have regulations which say that even below that number you must keep to as low as practical levels, because any amount of radiation is damaging.

So I would say that there -- the NRC has adopted certain effluent limits and has gone beyond that to try to minimize those limits within the context of both recognizing that any amount of radiation is damaging and, on the other hand, recognizing that -- recognizing that, for example, the normal effluents from a plant are small fraction of background radiation.

Q Mr. Grimes, I was not asking about normal effluents. We have had a long discussion --

A (WITNESS GRIMES) Let me try -- let me try --

Q Excuse me, I am trying to get to a simple yes or

no.

CHAIRMAN SMITH: And I think --

MS. JOHNSRUD: Is this not fair to ask this of him, Mr. Chairman?

CHAIRMAN SMITH: Yes. I think it is necessary and appropriate for Mr. Grimes to put the context surrounding his yes or no answer, and I think he is headed that way.

BY MS. JOHNSRUD: (Resuming)

Q Fine. Now I would like the yes or no.

CHAIRMAN SMITH: You can explain the limitations in the context of your answer.

WITNESS GRIMES: Fine. Let's get the question -- the last question -- again, or we can have the reporter read that back. Unacceptable, acceptable.

MS. JOHNSRUD: Can you go back to that, Mr. Reporter?

(The pending question was read by the reporter.)

MS. JOHNSRUD: Having stated, I would really like Mr. Grimes to answer the question as I asked it. I will endeavor to do so.

CHAIRMAN SMITH: Was that a magic question that is lost forever and can never be recreated?

MS. JOHNSRUD: Mr. Chairman, we have not been able to hear from NRC witnesses, to my knowledge, where that cutoff between that which is considered acceptable and that

which is considered unacceptable lies.

CHAIRMAN SMITH: I understand that. Ask your question. Allow me to interrupt. Ask your question.

MS. JOHNSRUD: Was responding to your's, sir.

CHAIRMAN SMITH: Without any further ado, ask your question immediately.

BY MS. JOHNSRUD: (Resuming)

Q Mr. Grimes, is it reasonable for Intervenors to conclude that the NRC staff draws no firm numerical line between that which is an acceptable dose under accident conditions and that which is an unacceptable dose? That is not the wording of my prior question, but I would appreciate a yes or no answer to this one.

A (WITNESS GRIMES) --

Q At page eight, the sentence at the top of the page, which actually begins on the previous page with the word "if" reads, "If the projected dose from the accident meets or exceeds the PAG's protective actions specified for the particular PAG should be implemented to ameliorate the impact of the accident on the population at risk."

Mr. Chestnut, do you mean by that sentence that the projected dose meets or exceeds the upper limit of the PAGs, or the lower limit of the PAGs before the accident -- before the protective actions specified are undertaken?

A (WITNESS CHESNUT) There may be different

protective actions depending on whether the lower limit PAG is reached or t e upper limit Protective Action Guide is reached.

Q All right.

By the term "implemented" does this witness mean recommended by the licensee or undertaken by state and local emergency response agencies or that carried out by the affected members of the public?

(Panel of witnesses conferring.)

A (WITNESS CHESTNUT) The licensee should recommend, and the state should implement, protective actions.

Q Which of these triggers are you referring to -- licensee's, state, local?

A (WITNESS CHESNUT) I would have to go to the state and licensee's plan to discuss the trigger points exactly as they use them.

Q All right. So you are really speaking here of actions being taken by state and local officials, rather than the triggering of licensee's recommendation as a form of implementation. Is that correct?

A (WITNESS CHESNUT) I did not catch the entire question. Would you please repeat it?

Q Okay. You are referring here to actions that will be taken by the state or local government agencies rather than the recommendations by licensee as a trigger to those

subsequent actions. Is that what you mean by the term "implemented" here?

A (WITNESS CHESNUT) Both the licensee and the state have adopted some criteria for protective action recommendations and for implementing protective actions. Now, that will include a comparison of the projected dose with the Protective Action Guide. It will also include a feeling for the plant parameters. It will also take into consideration the environment, such as the evacuation times and the times of the release.

So the Protective Action Guides are not written in such a manner to say at a certain dose you will evacuate this particular sector in this particular manner or take another particular action. You have to weigh more than just the projected dose.

Q Yes, I understand that. And I think that that is quite -- that part of it is quite explicit when you say protective actions specified for the particular PAG should be implemented.

What I am asking is, which of these actors in the events are doing the implementing in the context of this sentence? Okay, are you with me now?

A (WITNESS CHESNUT) I'm with you now. The implementor is -- is the state and local.

Q Okay. Thank you. Sorry it took us so far around

the barn to get to that end.

CHAIRMAN SMITH: May I take just a moment here?

MS. JOHNSRUD: Sure.

CHAIRMAN SMITH: We have a written motion by Ms. Weiss on behalf of the Union of Concerned Scientists with respect to the scheduling for the following two weeks that has been sent to the Board with a request that we distribute copies to the Licensee and the staff.

Since the schedule to which UCS objects is the one that was to have begun next week, this might be the last opportunity to timely address it. Today might, so I would like to give it to you so that you can pass it on to your people who are interested in it.

(Pause.)

CHAIRMAN SMITH: Pass one to Mr. Adler and I will ask the Intervenors present if you would share one.

MS. BRADFORD: Yes, sir. We can share one.

CHAIRMAN SMITH: Ms. Weiss did not send enough. She has already served it on the parties, but I guess she did not anticipate that the Intervenors here will have a direct interest in their motion.

MS JOHNSRUD: Thank you.

(Pause.)

CHAIRMAN SMITH: I did not mean to stop the hearing for that purpose now. I just wanted to get the

copies out so that the cognizant people can be reading them.

MS. JOHNSRUD: Surely, Mr. Chairman. If you want to discuss this, I am happy to --

CHAIRMAN SMITH: We are not prepared to discuss it either. I just wanted to get the copies out so there would be the maximum amount of time to consider it.

BY MS. JOHNSRUD: (Resuming)

Q My next question, gentlemen, may have been answered sufficiently, but I am just not quite clear that I am satisfied with it.

Is it the NRC's position that protective actions should be carried out only when the projected dose meets or exceeds the PAG levels rather than earlier, at some lower fraction of PAG?

A (WITNESS GRIMES) No.

Q Under what conditions will the staff view this approach as insufficiently conservative -- that is, the approach of going all the way to PAG limits?

A (WITNESS GRIMES) We view that as an acceptable approach. I think we stated that it is not the only acceptable approach.

Q The upper, then, would relate to peculiarities of circumstances in a given accident sequence or weather, meteorological conditions or the nature of the population especially at risk? Would that be the kind of particular

circumstance that might alter your judgment?

A (WITNESS GRIMES) As we indicated, we would accept a prearranged agreement between the licensee and the state to make recommendations at certain fractions of the Protective Action Guides, if that is the wishes of the state.

You mentioned special populations. Those are already taken into account in the Protective Action Guides. So that I do not think that is a -- would usually be a reason for using a fraction of the guides.

Q In taking account of special populations with special conditions of a population at risk, have you in the TMI considerations evaluated the impact upon the thinking of the residents of the EPZ and of the area beyond the EPZ with respect to the likelihood of their taking the evacuation option in the event of any emergency declaration?

A (WITNESS GRIMES) No.

Q The development, then, of the TMI responses based upon your standard approach.

A (WITNESS GRIMES) Our judgment of the acceptability of the TMI approach is judged upon our standard guidance.

Q Does the NRC intend to consider in any further evaluation of the acceptability of emergency response times for this licensee either the prior experience of the residents of the TMI area, the levels of mistrust of either

licensee or agencies of government that have been exhibited in public meetings within the area by residents who would be affected by an emergency declaration or the heightened knowledge among residents of this area in consequence of their earlier experience?

A (WITNESS GRIMES) As I stated earlier, we had the TMI experience in mind when we developed the guidelines and in particular those related to public information and education so that people understand the nature of the hazard. But as to any specific lower or fractions of PAGs, which would initiate actions, we think that is best left to the judgment of the state and local authorities whether that is an appropriate thing to do or not.

Q Has the staff had discussion with the state or local authorities with respect to their consideration of these factors?

A (WITNESS GRIMES) I do not believe so on that topic.

(Panel of witnesses conferring.)

A (WITNESS CHESNUT) I have had no discussions with the state regarding their special problems of that nature that you discussed.

Q Have others involved in emergency response planning, to your knowledge?

A (WITNESS CHESNUT) I am not sure.

Q Have you with the licensee -- you or members of your staff -- had such discussions concerning these special factors that I have identified?

A (WITNESS GRIMES) I think they may have come up in our discussions of whether a consistent set of severity levels should be used.

Q At page eight, in the last sentence of your answer to question ten, Mr. Chesnut, you state, "These emergency action levels using EPA PAGs will not prevent the escalation to a more severe accident classification based on other plant conditions or other emergency accident levels."

I believe, as I read this, that it appears to be contradictory of prior statements you have made concerning the utility and the purpose of the PAGs. Can you reconcile that apparent discrepancy.

A (WITNESS CHESNUT) That sentence you refer to is an attempt to answer the last answer to the contention ECNP-2-8, the sentence that says as a result the total exposures may exceed by large margins the listed PAG fractions prior to the advancement of a higher emergency category. The last sentence states -- I guess you can read it -- these emergency action levels will not prevent the escalation to a more severe accident classification based on other plant conditions or other emergency action levels.

The policy applied by the staff and that which is

indicated in the TMI 1 emergency plan is that the level of emergency will be based upon the -- the highest emergency action level which has been achieved or exceeded. So, for instance, if there is a dose projection using a certain -- which will result in a certain dose or a certain dose rate, there is nothing implied in that which would prevent the licensee from declaring a higher level of emergency based on some other plant condition or parameter.

A (WITNESS GRIMES) I must say I viewed that statement as reinforcing what had been said earlier rather than contradicting it, reemphasizing that it was not to be used as a limit which, if not exceeding it, would not trigger action.

Q I am puzzled, then, now, by Mr. Chesnut's indication that this is responsive to the last sentence of ECNP Contention EP-7, that you just quoted to us, Mr Chesnut. In no way does that Contention indicate that the emergency action levels would prevent escalation to a severe accident category.

In fact, quite the contrary, it indicates -- it is intended to indicate that the actual total exposures or, if you will, projected doses, combined with accumulated dose and dose commitment, may exceed those PAG fractions substantially prior to going ahead to -- the licensee going to a higher emergency category. Those are quite different.

Can you respond to that? Or are you perhaps --

DR. JORDAN: I notice some puzzlement on the part of the staff witnesses. I think we did get into this matter before and the question was, at that time, supposing there were previous accidents which exposed the populus to a fair fraction of the radiation -- of the PAG or even the full PAG, then is that taken into account in setting these Protective Action Guide levels.

WITNESS GRIMES: The Protective Action Guides are always a projected situation and aid to the decisionmaker in determining actions for incremental doses. For example, if the population had previously received one-tenth of a rem, that would not be subtracted from the one rem decision level. It is meant to be a case-by-case judgment guide for any projected exposure.

BY MS. JOHNSRUD: (Resuming)

Q Thank you.

A (WITNESS CHESNUT) I would like to add one statement to that, and that is that the accumulated dose, to the extent it is known by licensee, is provided for in their message -- information they will relay to the ERP. They indicate that they will provide not only the projected dose but their estimate of the accumulated dose.

Q And that is the accumulated dose from the time of the initiation -- beginning with the time of initiation of

dose assessment, is that not correct? I would say that on the basis --

A (WITNESS CHESNUT) Yes.

Q That is not what I am talking about here in this Contention, Mr. Chesnut.

DR. JORDAN: I think you answered incorrectly Dr. Johnsruds question. She said that accumulated dose is taken from the time of the incident in question in which the incident in question, there is some unusual event -- alert, something. I understood you to say that the accumulated dose included not only the dose during that day, but for previous days or previous months.

WITNESS CHESNUT: That would -- during that particular emergency, that emergency might involve several different classifications of getting worse or getting better. The licensee should include information on the accumulated dose.

DR. JORDAN: For that emergency.

WITNESS CHESNUT: That emergency.

DR. JORDAN: But you said that the state was informed by the licensee of the accumulated doses and by the accumulated doses you mean accumulated when?

WITNESS CHESNUT: During that emergency.

DR. JORDAN: During that emergency. There is no obligation to provide them for the previous month or the

previous year?

WITNESS CHESNUT: No, sir. There is no obligation to do that.

BY MS. JOHNSRUD: (Resuming)

Q Or for the previous day or perhaps even earlier part of a day, but rather you are speaking of an accumulated dose here that is assessed from the beginning of the operator's recognition of a problem that leads to his declaration of an accident classification. Is that not correct?

A (WITNESS CHESNUT) Yes.

Q Okay, that is what I had thought that you were saying -- both of you were saying. Thank you.

At the top of page nine of Mr. Chesnut's testimony, we have a table in which, I believe, we were provided corrections. Do the dose rates shown under NUREG-0654 guidance refer to adult, child, infant, or fetal thyroid as corrected?

Page nine.

A (WITNESS CHESNUT) Okay.

(Pause.)

A (WITNESS CHESNUT) The guidance on page 1-13 for a site area emergency. Is that the one you are referring to, or --

Q I am referring in your testimony, Mr. Chesnut, to

page nine, the table that you have given at the top in which you have given us the listing of the NUREG-0654 guidance. And under site emergency you give us corrections.

DR. JORDAN: Mr. Chesnut, I am a little puzzled. Turn to page nine of your testimony.

WITNESS CHESNUT: I have it.

DR. JORDAN: Oh, you have it. All right.

WITNESS GRIMES: He was trying to correlate it with a reference in NUREG-0654, which we have done now. NUREG-0654 does not specifically specify which, and I believe the intent there in that particular item was for the adult thyroid. I should note that if a calculation is done for PAGs, it must be done for whatever the individual -- sensitive individual -- in the population group is.

So --

BY MS. JOHNSRUD: (Resuming)

Q For the most sensitive under the PAGs. So that would be which?

A (WITNESS GRIMES) I think the child is approximately a factor of two greater exposure for -- for the thyroid case.

Q Why is not the fetal the most sensitive, particularly if, as you say, most sensitive is required?

A (WITNESS GRIMES) I would have to -- you are reaching the limits of my knowledge of radiation biology

there. I am not -- I do not have on the top of my head what the ratio of a fetal dose is or the pathway -- exact pathway -- that that would get there.

Q Am I not correct, however, that we would expect fetal thyroid to be more sensitive than either child or adult?

MR. GRAY: I object, Mr. Chairman. The witness just said he has reached the limits of his qualifications. He cannot testify to that.

MS. JOHNSRUD: He said so in terms of being able to specify the relationships in a quantified manner. I am asking him here simply for his understanding of the relative sensitivity among these categories of people -- adult, child, and fetus.

BY MS. JOHNSRUD: (Resuming)

Q Can you answer that question?

A (WITNESS GRIMES) We have mixed two things. One is what the dose from a particular concentration in the air would be to these various individuals versus how sensitive they might be to a particular dose. And I am not steeped, really, in either one as far as the fetal situation goes.

Q And so you are not able to tell us which would be considered the most sensitive among these categories?

A (WITNESS GRIMES) That is correct.

Q And I understand, then, in this table, Mr.

Chesnut, you were referring to adult?

A (WITNESS GRIMES) That is the adult.

Q Yes.

(Pause.)

Q At the bottom of the paragraph following on this same page, we have already addressed in part this matter of the staff desire for modification and the licensee's willingness to modify its conservatism with respect to the fractions of PAGs that would be used for declaration of EAL. Are there other utilities that utilize fractions of PAGs lower than the -- the level that the NRC is recommending to this licensee, and, if so, which one?

A (WITNESS CHESNUT) I am not sure which ones use a fraction of the Protective Action Guides as emergency action levels, but the way the licensee uses it here it is not really in the sense talking exactly of a Protective Action Guide. They use it in the terms of a dose rate or a fraction of a Protective Action Guide received in one hour.

Okay. The projected dose for an accident is compared with the EPA Protective Action Guides for the purpose of making protective action recommendations. The licensee merely took a fraction of that total projected dose, put it into a one-hour timeframe to use as a trigger point for a particular accident classification. So another licensee may use a certain number of millirems per hour and

that is why my testimony in the table on page I listed the emergency action level in the licensee's plan where it says one-tenth of the EPA Protective Action Guide instance. And I translated that into a number of millirems achieved in one hour.

Q Does the NRC intend to demand conformance among all reactor licensees with respect to these obligations of the EPA PAGs in the emergency action level declarations and protective action assessments?

A (WITNESS CHESNUT) We will --

A (WITNESS GRIMES) Generally yes, with the exception that we have noted on actually recommending more elaborate protective actions in particular cases. The Protective Action Guides really are not usually used as the first measure of the accident initiation. That is why we have tried to roughly put those into measurable parameters that the operator can see immediately and not have to do elaborate calculations and make a number of assumption to arrive at whether or not a Protective Action Guide is exceeded.

So, in a sense, we have specified count parameters that will trigger actions which will avoid the need to perform the calculation and may, in many cases, result in actions at small fractions of the Protective Action Guides. In other words, we are emphasizing precautionary measures

taken on the basis of plant parameters rather than waiting until there is enough information on material in the containment or released from the containment before one decides on a protective action.

So these Protective Action Guides are really secondary measures in terms of declaring emergencies and taking protective actions for the public. So I wanted to put it in the context that I think they are actually used.

Q Mr. Grimes, would the NRC be satisfied with the level of conservatism that this licensee has proposed with respect to the use of the PAGs if it were required that a licensee, the Commonwealth, and all other agencies that would be involved in emergency response at TMI were fully cognizant of this conservatism?

A (WITNESS GRIMES) I do not think so, because it would be very difficult to assure the cognizance on a continuing basis. And I would also point out the only real difference that I see in that table on page nine is with respect to the general emergency. The site emergency is equivalent. The NRC guidance and the licensee's plan is equivalent.

Q In what ways would it be any more difficult for the licensee to keep these other agencies informed of this additional conservatism that it is for the licensee to keep these other agencies informed of any other changes, or

adjustments, or characteristics of its emergency response plans.

A (WITNESS GRIMES) For example, the states have a number of other plants within its boundaries and I think also they impact on its residents which use a different scheme.

The importance is not so much the precise level of that scheme but the fact there is a common understanding throughout all of these plants and as I said, the TMI experience was taken into account in establishing that common level and extensive public comment was received over a period of nearly a year in setting these numbers.

Q Are there other variations between Commonwealth, local agencies of government, and licensees with respect to other reactors in the Commonwealth of Pennsylvania, to your knowledge?

A (WITNESS GRIMES) I am --

Q What I am asking is the licensee -- the various licensees and the Commonwealth and the agencies of government elsewhere in Pennsylvania do not have to keep a few other variations in mind as well and are they not capable of doing so?

A (WITNESS GRIMES) There are always site-specific variations.

Q Okay. Thank you.

A (WITNESS GRIMES) We believe it is important to have a common reference.

Q But site-specific variations are acceptable?

A (WITNESS GRIMES) Yes.

Q To the NRC?

A (WITNESS GRIMES) Yes.

Q I have one follow-on question for that last point. I think I would like to know -- I think I am puzzled as to why the NRC does not want to err on the side of excessive caution and particularly with regard to this particular site.

I wonder what beyond simply the desire for conformance for the assistance of the Commonwealth, what evidence, studies or guidance from the members of the public who would be affected by protective actions recommended by this licensee has the NRC staff used to support its conclusion that the licensee's conservatism with respect to the use of the PAGs is unwarranted.

MR. ZAHLER: Objection. Mr. Chairman, the examiner constantly slips back and forth between protective action recommendations and Protective Action Guides for emergency action levels. And that last question was phrased in terms of protective action recommendations. There is no foundation for the question because testimony is clear that the NRC is not requiring consistency with respect to protective action recommendations.

MS. JOHNSRUD: Excuse me, Mr. Chairman. I was identifying within that sentence -- perhaps Mr. Zahler was not following exactly the wording of it -- I was identifying the members of the public who would be affected by protective actions taken by this licensee, and I am asking what evidence, studies or guidance from those members of the public the NRC staff may have taken into account in coming to its conclusion that this licensee's additional conservatism is unwarranted. Is that distinction clear, sir?

MR. ZAHLER: I still have the same objection. There is no foundation that there is any conservatism or non-conservatism with respect to taking protective action recommendations.

CHAIRMAN SMITH: But she is still talking about the --

MR. ZAHLER: The population is unaffected by whether it is a site or general emergency. What they are affected by is whether the licensee and the state made protective action recommendations. And her question implies, really, that there is a consistency being applied with respect to protective action recommendations or some conservatism. I think the question is somewhat misleading.

MS. JOHNSRUD: Sir, I had no such implication in my question. I think it is fairly straightforward. The NRC has come to a conclusion that this licensee has engaged in a

level of conservatism in its use of a fraction of the PAGs in order to classify emergency events -- EALs -- and I am asking what studies or guidance or recommendations coming from the members of the public, who are the people who are going to be affected by the decisions that the licensee makes the staff has used.

CHAIRMAN SMITH: Okay. Overruled.

MR. GRAY: Mr. Chairman, I would just like to say Dr. Johnsrud really seems to be mixing up emergency classification and EALs. She just now said it. I think, as these witnesses have indicated, the staff's concern is that the level for classifying accidents be set out in a consistent manner -- a manner consistent with the guidance provided in NUREG-0654. For purposes of nomenclature, that, again, has nothing to do with protective action recommendations and protective actions that may be taken at any point.

CHAIRMAN SMITH: She understands.

MS. JOHNSRUD: I am well aware of that, Mr. Chairman.

CHAIRMAN SMITH: I think the question is appropriate. Mr. Grimes did report that the guidance in the NUREG was partially as a result of comments and now she wants to know -- there is one thing about your question that is not clear. Are you talking about the people affected by

the emergency plans in this area or in general?

MS. JOHNSRUD: As I drafted this question, Mr. Chairman, I had in mind those from the TMI area.

CHAIRMAN SMITH: Okay. Well --

MS. JOHNSRUD: Not necessarily those who had responded to the comment period that Mr. Grimes mentioned. But I am sure he and other members of the staff have had a lot of input from people both in the EPC and the surrounding area.

WITNESS GRIMES: The process was, as I previously described, we had NUREG-0654 out for public comment and we also -- Appendix 1 to NUREG-0654 was also out for public comment as NUREG-0610, and through that process, which was available to people in the TMI area, and I believe which we had some comments from the TMI area, was the process used to get input --

BY MS. JOHNSRUD: (Resuming)

Q Where there other studies or guidance that was used?

A (WITNESS GRIMES) Of course we used the investigations of the TMI accident.

Q All right. Thank you.

Now, at page ten -- we are, believe it or not, moving along. In answer to question twelve, Mr. Chesnut, you stated that fractions of PAGs are used as an aid to

accident classification "as such" -- excuse me, I may have misspoken. Let me start that again.

In answer to question twelve, Mr. Chesnut, you state that fractions of PAGs used as an aid to accident classification "as such do not account for total accumulated dose or dose commitment". What are you referring to by the phrase "as such"?

A (WITNESS CHESNUT) The way that they are used by Three Mile Island and, as I explained, the Three Mile Island Unit 1 emergency plan interprets a fraction of a Protective Action Guide over a period of one hour. They do not -- so they take into consideration a dose received in one hour, whereas a Protective Action Guide, as proposed by the Environmental Protection Agency, talks about a projected dose -- not a projected dose rate. That projected dose would be over the course of an accident.

So the way the licensee uses it in this case is a certain number of millirem per hour received in one hour and only accounts for radiation received in that one hour.

Q And I think we have covered this, but just to be sure, the NRC does not require the licensee to calculate total accumulated dose or dose commitment in the course of accident response, does it? The licensee, from what you said earlier, I believe, may calculate such and may report total accumulated dose and dose commitment within the

context of the accident, but is there a regulatory requirement that they do so is what I am asking here?

A (WITNESS CHESNUT) There is no regulatory requirement in the emergency planning rule for projecting -- for adding it up and calculating up the total accumulated dose.

A (WITNESS GRIMES) I think there is a requirement in one section for calculation of population dose that has been accumulated.

Q In the course of an accident?

A (WITNESS GRIMES) Yes.

Q And that would be from the initiation of dose assessment in that accident. Is that right?

A (WITNESS GRIMES) Yes. That is more of a long-term requirement.

Q I am sorry. Did you say where that is?

A (WITNESS GRIMES) I am hunting for it.

Q Okay.

MR. ZAHLER: You might look at page 70.

WITNESS GRIMES: Yes. Item M-4 on page 70 of NUREG-0654 says "each plant shall establish a method for periodically estimating total population exposure.

BY MS. JOHNSRUD: (Resuming)

Q But I thought we understood earlier that 0654 is not regulation. It is only guidance.

A (WITNESS GRIMES) That's correct. I understood your question in the context of a required regulation.

Q I guess Mr. Tourtellotte had mentioned that to us earlier today. This is an instance, I guess -

CHAIRMAN SMITH: Well, that does raise an interesting question, then. By what authority does the NRC require that the plant establish a method for periodic estimating total population exposure?

WITNESS GRIMES: What we do is review the criteria in NUREG-0654 to see if they are met. And if they are not met, whether equivalent means to meet the planning standard are met. In other words, at the front of each section is a general statement and the one in section M, I think, is the most general of all the standards.

But what is done is a judgment is made as to whether the planning -- whether the standard in the regulation has been met, and to do that the NRC uses the 0654 evaluation criteria under each standard to aid it in reaching that judgment.

CHAIRMAN SMITH: Okay. I can see it. This is a recovery and reentry requirement which in turn is covered by the regulation that there be a plan for recovery.

MR. GRAY: Yes, Mr. Chairman. That would be 50.47(b)(13).

CHAIRMAN SMITH: Sure.

Would this be a good point to take --

MS. JOHNSRUD: Whenever you are ready.

CHAIRMAN SMITH: Well, let's take our afternoon break now for fifteen minutes.

(Recess.)

MS. JOHNSRUD: Mr. Smith, may I ask, before the conclusion of this afternoon, do you intend to discuss scheduling so that we will have clearer idea of where we will be between now and, say, early April or at least some portion -- lay out some portion for us, so we can anticipate.

CHAIRMAN SMITH: I do not know how thoroughly we can go into it. This session, as you know, has taken much longer than we had planned. I think it is clear that the one standing request we have is Ms. Bradford's request, and that is she wishes to be assured that off-site will not be heard before April 30 -- I mean, March 30.

MS. GAIL BRADFORD: I can make that other request if you like.

CHAIRMAN SMITH: I beg your pardon.

MS. GAIL BRADFORD: I will make that other request if you like.

(Laughter.)

CHAIRMAN SMITH: I think that is obvious now.

MS. JOHNSRUD: I would join her.

CHAIRMAN SMITH: You requested we make a ruling

that that is the case as soon as possible. So that is the only thing I know of that is pending. Now what other problems do we have?

MS. JOHNSRUD: So far as I am concerned, the fact that I am not going to be available the 17th and 18th due to prior commitments.

CHAIRMAN SMITH: Well, you are not making any request that we defer testimony on that account?

MS. JOHNSRUD: I do not think so, Mr. Chairman. I might ask if, assuming that this panel is still available or the other witnesses that we will be dealing with from the staff are still available, I might like to be able to come back, take a look at the record, and add any follow-on questions that I had not had an opportunity to do.

CHAIRMAN SMITH: I would expect that they would not be.

MR. GRAY: I guess -- I bought time. I cannot say that they will be available from March 30 on.

MS. JOHNSRUD: I am sorry -- toward the end of this coming week, not beyond that certainly. I would not expect them to be here.

CHAIRMAN SMITH: I simply would expect this panel -- the examination would be done with this panel by no later than the end of Tuesday, the 17th, at the latest.

MS. JOHNSRUD: Okay, then, I will try to provide

whatever follow-on questions I think I have to Ms. Bradford to incorporate as best she can.

CHAIRMAN SMITH: Yes. I do not see it is going to be any later than that and if it is, for planning purposes -- well, certainly the 18th. So there is no question about it. You better have your questions to another Intervenor.

MS. JOHNSRUD: Okay.

CHAIRMAN SMITH: So that satisfies your problem?

MS. JOHNSRUD: I hope so.

CHAIRMAN SMITH: If there are no objections, can we rule on Ms. Bradford's request that emergency planning off-site not begin earlier than March 31. I think that is --

MR. ZAHLER: Licensee has no objection.

CHAIRMAN SMITH: It is going to happen whether we rule on it or not.

MR. GRAY: Staff certainly has no objection.

MS. JOHNSRUD: ECNP has no objections. I would be happier, in fact, two days later, I guess, but --

MR. ADLER: We had requested that three weeks ago, so we have no objection.

MS. GAIL BRADFORD: Can we go for making it a little later?

CHAIRMAN SMITH: I beg your pardon?

MS. GAIL BRADFORD: Can we go for making it a

little later?

CHAIRMAN SMITH: I think you are going to have to be ready to go then. But the way it looks, it could possibly be delayed beyond that. But I think the ruling should state that we will begin no earlier than March 31, but as early as that.

Are you ready to proceed?

BY MS. JOHNSRUD: (Resuming)

Q Gentlemen, does the NRC understand that the Commonwealth will determine protective actions in accordance with NRC's guidance or on bases developed by the Commonwealth itself or on some other basis?

A (WITNESS CHESNUT) I do not have detailed knowledge of the way the Commonwealth would make its protective action decisions. I have seen some of the criteria which indicates that it is generally consistent with the licensee's criteria, but detailed reviews can be addressed by PEMA.

Q With respect to actual doses that members of the public will receive in the event of a general emergency accident, is it the NRC staff's position that a dose projection is acceptably accurate for deciding protective action without inclusion of those portions of the dose that have unavoidably occurred or been committed prior to that initiation of dose assessment?

A (WITNESS GRIMES) Yes.

Q I am on page ten of Mr. Chesnut's testimony, and I would like to ask him quite specifically where in ECNP's Contention EP-7 did Mr. Chesnut or the staff find a reference to medical and dental x-rays or background radiation?

A (WITNESS CHESNUT) In your Contention there was none. That was probably an assumption on my part trying to talk about total accumulated dose -- total accumulated dose one might receive, could be from any sources in addition to a nuclear power plant release.

Q Are those exposures from medical and dental x-ray or background radiation, to your knowledge, covered by NRC or any other radiation exposure standards, guidelines or regulations?

A (WITNESS CHESNUT) I do not believe that those exposures are controlled by the Nuclear Regulatory Commission. There may be some standard I am unaware of.

Q I am sorry. I had trouble overhearing you over the paper sound.

A (WITNESS CHESNUT) There may be some standards that I am unaware of. I do not believe the NRC has any standards regulating dental x-rays or background radiation.

Q Was it your understanding in responding to this contention of ENCP that such radiation exposures were the

topic of our concern in that contention?

A (WITNESS CHESNUT) Total accumulated dose can take into account any source of radiation and that was the way I addressed it. I do not --

Q Do the EPA PAGs assume no prior accumulated dose or dose commitment from natural background, medical-dental x-ray, fallout or other unregulated sources?

A (WITNESS GRIMES) As we discussed, the EPA PAGs do not take into account the previous exposures from any source. They are a decisionmaking aid to try to decide whether protective action should be taken to avoid a prospective exposure.

Q And hence they do not take account of any prior accumulated dose from the reactor in question. Is that not correct?

A (WITNESS GRIMES) That is correct.

Q Mr. Chesnut, again, specifically to you, at page eleven, you have been discussing the various pathways addressed in the EPA PAGs and in the last sentence you state "in this respect the EPA PAGs will account for accumulated dose from the accident, but it is the accumulated dose from a particular pathway."

As you wrote that response to ECNP Contention EP-7, were you assuming that this is the accumulated dose that was being referred to in that Contention?

A (WITNESS CHESNUT) The contention did not say whether it was total accumulated dose which one might argue might be from whatever sources one could get radiation or total accumulated dose from the accident. I addressed it Protective Action Guides take into consideration the dose that has been projected for the course of the accident for that particular pathway.

Q But you were covering -- essentially covering -- yourself in the event that that was what the ECNP Contention referred to, when in fact it is now.

A (WITNESS CHESNUT) I tried to --

Q Do you understand that to be the situation now?

A (WITNESS CHESNUT) I looked at the contention and tried to provide a complete answer to it.

Q Whether it referred to it or not?

A (WITNESS CHESNUT) Yes.

Q In terms of the potential impact upon the health and safety of an individual exposed to radiation from a nuclear power reactor, is it more important for that individual that the NRC, the licensee and the Commonwealth consider the accumulated dose from a particular pathway only, or the summation of the accumulated and committed doses from all pathways?

A (WITNESS CHESNUT) The effects of radiation on a person could be whole-body or to a particular pathway or to

a particular organ. I pointed out in my testimony that there were three separate protective action, or I pointed out that there were separate Protective Action Guides -- separate protective action pathways. The reason is that the one -- the pathway is different. The potential protective action is different and so it is hard, when you are using it as a guide to trigger a certain protective action, you have to know where the threat is coming from. Is it coming from a thyroid. Is it an iodine problem? Is it going to affect your thyroid, or is it coming from whole-body? The protective actions may be different.

Or is it a particulate problem? The protective action may be different. So just stating that someone may be X-number of rem or millirem through the course of an accident does not really tell you which is the best protective action to take.

Q All right. Now that is making the assumption that one particular protective action is going to be the best to take.

A (WITNESS CHESNUT) A combination may be necessary.

Q All right. Let us assume a circumstance in which radiation exposure is coming to an individual from more than one pathway, more or less simultaneously. Is it possible that such can occur?

A (WITNESS GRIMES) Yes.

Q In that instance, is it not necessary in order to evaluate the best protective actions for the licensee and Commonwealth to be cognizant not only of those pathway doses that you have referred to -- pathway exposures -- but also the total, the summation of those pathways, assuming therein the components of the pathway dose?

A (WITNESS GRIMES) I assume they would be cognizant of the fact that there was more than one dose. However, in the dose calculation itself, for example, for total body, that takes into account the exposure received from various pathways for the total body exposure. And ordinarily, except for the iodine problem, ordinarily, if you take action on a total body exposure you will take action early enough to avoid approaching the Protective Action Guides that might be set similarly for other --

Q So you really are agreeing that the summation of the accumulated and committed dose is the number that we are after in order to assess the nature and extent of the hazard for an individual, recognizing that there are these internal components as well?

A (WITNESS GRIMES) Well, if you look at total body dose, then that is the rough summation of all ways to get a total body dose.

One cannot add five rem thyroid to one rem whole-body and say I now have six rem total body. It does

not work that way.

Q Of course, not.

A (WITNESS GRIMES) So a simple summation is not a useful thing to do.

Q All right. I think you are using the term in a somewhat different way from my use of the term. I think perhaps we understand, both of us, what I am talking about here. Do you feel clear?

A (WITNESS GRIMES) I guess I am not. I could not say I am sure I know what you are driving at. No.

Q All right. Does the NRC use a comparable pathway approach with respect to Part 20 of 10 CFR?

A (WITNESS GRIMES) Comparable to --

Q To the EPA PAG approach?

A (WITNESS GRIMES) In the sense that there are separate doses for separate organs that would be true.

Q Are there significant differences in the approaches used between EPA and NRC in your view?

A (WITNESS CHESNUT) The Part 20 doses are much -- are much lower and they are sometimes divided up into particular organs because of the particular sensitivity of those organs or parts of the body.

Q Is that not true also of EPA's approach?

A (WITNESS GRIMES) To some extent. The exposure or concentration limits are not given as in Part 20 for as many

different conditions.

Q On page twelve -- I am sorry. I thought you were finished.

A (WITNESS GRIMES) All right.

Q At page twelve the ECNP Contention that we are considering does not reach the question of the comparative utility for specific protective actions, fractionated doses or pathways as opposed to integrated PAGs, to use your term, Mr. Chesnut.

Do you, Mr. Chesnut, concur that what is of prime interest to the individual member of the public is the total radiation dose or the significant dose to organ that he or she would receive in the course of an emergency?

MR. GRAY: Objection. Mr. Chesnut really cannot speak for what an individual member of the public would consider of most importance to him.

BY DR.JOHNSRUD: (Resuming)

Q May I rephrase that, then, Mr. Chesnut, in terms of the NRC staff understanding that the total radiation exposure or significant organ exposure would be the matter of greatest significance to an individual member of the public? Has that assumption underlain the NRC's approach to these evaluations?

I think I asked this of Mr. Chesnut.

A (WITNESS CHESNUT) A particular organ could be more critical. You would have to -- you have to know what the pathway is. For instance, if you have a tremendous amount of iodine, your thyroid could be the critical organ.

Q Right. You know that and I know that and I am sure the Board knows. This addresses the NRC's perception of what members of the public view to be significant in terms of their own radiation exposures during an emergency.

Has the NRC made assumptions? Do they operate on certain perceptions concerning the individual's evaluation of dose?

A (WITNESS GRIMES) If I am speak to the general guidance that the NRC adopts, the NRC adopts the guidance provided by the EPA. They are the federal agency charged with providing that guidance.

Q I am sorry, I am having troubling hearing you again.

A (WITNESS GRIMES) We rely on the guidance provided by EPA. They are the federal agency charged with providing that specific guidance, and we follow their judgment on this matter.

Q All right. Now, I asked Mr. Chesnut, and I would like to ask again, if the NRC takes into account the individual's perception of what matters, namely total dose or significant dose to a critical organ? And I am asking this in terms of the overall evaluation that the agency does, that the NRC staff does, of emergency preparedness and capability for response.

A (WITNESS CHESNUT) I cannot speak for the whole agency, but I do feel that there is -- each individual person's concern is not weighed in setting limits or protective action guides.

As I testified earlier, the state may decide to take protective actions based on its feeling of the public's sensitivity in that area.

Q Okay. But the NRC is taking into account, the possibility that the total exposure to an individual or exposure to critical organs may exceed by large fractions the PAG fractions -- by large margins the PAG fractions that are listed prior to the utility's being required to advance to a higher emergency category on the basis of other observations of the accident severity; is that not true?

A (WITNESS CHESNUT) Okay. Part of the problem that I perceive in yours and my communications is that I am talking about EPA protective action guides used to make protective action recommendations and decisions. You have in several instances referred to fractions of a protective action guide, which is applied over a period of one hour and used by Licensee in declaring an emergency class.

Q Right.

A (WITNESS CHESNUT) I see them as two separate issues. In my mind it is possible -- though, to answer your question, that one of the fractions of a dose rate per hour could be exceeded before going to the next emergency class. But still, what is being used to make the protective action recommendation is the projected dose for the course of the accident, not for a one-hour period.

Q I understand that. I think we all do now, yes.

(Pause.)

Q At page 13, I think this is in response to question 16.

(Pause.)

Q Is there or may there be dose commitment as well as accumulated dose experienced by an individual member of the public in consequence of any releases of radioactivity from the site in the course of an accident assessment, which may not be factored into the accident-related dose

assessment?

MR. GRAY: Do you understand the question?

WITNESS CHESNUT: Yes. It is possible, for instance, for a release to have occurred so fast that it may not be fully caught.

BY DR. JOHNSRUD: (Resuming)

Q Okay.

A (WITNESS CHESNUT) And there could have been some dose commitment received from that.

Q Would it be NRC's view that the offsite monitoring, real-time monitoring system with immediate reporting to Licensee, would assist in that fuller assessment of those possible doses that otherwise would be missed?

A (WITNESS GRIMES) Yes, it would assist. I am not sure that the -- while the exact calculated doses may have been missed because of dose -- an effluent pathway was bypassed because of some failure which routed gases in an odd direction, does not mean that the protective actions would not have been initiated based on the plant parameters which caused the accident and subsequently the release.

So the monitors would indeed assist in the quantification of that particular exposure that you mentioned.

Q And that in turn might assist the Licensee in his

recommendations to the Commonwealth concerning the protective actions that are appropriate, is that not true?

A (WITNESS GRIMES) They could assist in particular in the direction an' extent of the protective actions, much as they would for the dose which was calculated and then confirmed or modified by those same monitors. They are useful in either situation for that purpose.

Q Mr. Chesnut, again at page 13, in connection with your answer to question 17, if an individual has been exposed to radioactive materials, is that exposure hypothetical if the dose has not been measured, or is it a real dose?

CHAIRMAN SMITH: Dr. Johnsrud, I hope you are not going to spend much time on that type of question.

DR. JOHNSRUD: I am not going to. I really honestly, Mr. Chairman, had the feeling that that response was indicating that a dose that had not been measured in the course of the accident was therefore a hypothetical exposure. And that would appear to, I would say --

CHAIRMAN SMITH: You assure us you are not going to spend much time on that.

WITNESS CHESNUT: I used the word "hypothetical" because I do not have a scenario. I had to come up -- is it possible? Yes, I can see that it would be possible that an exact quantification of the amount of release could occur.

I do believe that there would be other indicators of that accident.

But I -- that is why I used the word "hypothetical."

BY DR. JOHNSRUD: (Resuming)

Q At page 14, in response to question 18.

Does the NRC have information concerning how much lead time the Licensee would gain or believe it gains in consequence of its use of the small fractions of PAG's relative to the time when it must make its declaration concerning the need for protective actions?

A (WITNESS CHESNUT) I do not understand your question.

Q Okay. I am asking if the NRC has an understanding of the amount of lead time -- lead time that the Licensee believes that it is gaining with respect to using the small fraction of PAG's in its accident classification relative to that time when the Licensee must make protective action recommendations?

A (WITNESS CHESNUT) The Licensee uses protective action guide fractions, as I said, in sort of a dose rate type of format which is -- which is equivalent in all but the general emergency case that we described earlier to the guidance in Appendix 1 to NUREG-0654. The Licensee is charged with making protective action recommendations based

on the information he has.

If he has dose rate information or plant parameter information, as soon as he has it he must include his recommendation for protective actions. I do not believe whether he uses one particular fraction or another would delay his protective action recommendations. As we said before --

Q I think here I am asking not about an expectation of delay, but of being able to provide those recommendations somewhat sooner than would be the case of the protective action guide levels, rather than a small fraction, had been utilized.

A (WITNESS GRIMES) I think that is in general the reason we have the various emergency classes, so that initial actions can be made, augmentation of the staff can be carried out, initial notifications and communication lines can be opened at an early time, without waiting until plant conditions would indicate a general emergency or site area emergency; that these early notification and early augmentation of the staff at either low dose levels or more likely specific pre-indicators of plant parameters do indeed gain time in the overall response to an emergency.

A (WITNESS CHESNUT) Also, protective action may be recommended before the release even occurs based on plant parameters, not -- before we were talking about dose

projections, not dose measurements offsite.

Q Right.

(Pause.)

Q Will you turn now, please, to page 26 of Mr. Chesnut's testimony. Mr. Chesnut, in your response to question 33 you state: "As described in response to question 7, some further modification will be required to more closely conform the emergency action levels with the standard classification/action level scheme recommended by NUREG-0654, Appendix 1."

Perhaps I was not reading carefully your response to question 7, carefully enough. What is it -- what is the further modification that you are referring to there?

A (WITNESS CHESNUT) That is the modification of the emergency action levels for the coolant activities and for the radiation levels or the, quote, "fractions of protective action guides" used by the Licensee.

Q At page 27, in answer to question 35.

How does the NRC evaluate the Licensee's knowledge as to what is, to quote you, Mr. Chesnut, "an obviously invalid or erroneous alarm"?

(Pause.)

A (WITNESS CHESNUT) I think some of that is good engineering knowledge, to be honest. There are training programs required for licensed operators and other

operators.

Q Will good engineering knowledge tell the operator when an alarm is false or invalid?

A (WITNESS CHESNUT) Sorry, sorry.

Q Does the NRC depend on that being the case? Two questions, please, Mr. Chesnut.

A (WITNESS GRIMES) I'm sorry.

A (WITNESS CHESNUT) Operator training at handling emergencies or handling abnormal conditions is part of the operator training program. Although I am not familiar with the details of what the operator training program is at Three Mile Island, I am aware that there are alarm or abnormal procedures used by operators, there are operating procedures, there are emergency procedures used by the operators at Three Mile Island, and they include methods of going through, taking various indications that they see and determining if there is really a valid abnormal condition or not.

Q Does the NRC have regulatory requirements with respect to the Licensee's determination of equipment malfunction which may be occurring in the course of identifying an accident?

A (WITNESS GRIMES) There are no -- there are no specific regulations that relate to requirements for that training. In our audit inspections, we do examine

procedures and we do question staff on what they would do in certain situations.

We also, in our inspection program, take into account whether there is a pattern in the plant operation and the Licensee event reports of things that are ignored or instruments that are not believed.

Q Failure incidents?

A (WITNESS GRIMES) Yes.

Q Do you have any formulations for what constitutes a dangerous level of frequency of such failures to detect malfunctioning alarms or systems?

A (WITNESS GRIMES) No. The whole area of operating experience and feedback is being worked on very heavily. And we have not -- while we have groups that address this problem on a continuing basis, we have not come up with any formula which one could use to judge adequacy.

I think it depends a great deal on specific events, and our appraisal teams do look at specific plant experiences and use their judgment as to whether particular patterns are developing.

Q Mr. Chesnut, in view of the discussion we have just had concerning this item and your response to question 35, would you perhaps now feel that the last sentence, in which you refer to "obviously invalid or erroneous alarms," was perhaps a fairly loose response to the issue in

contention here?

A (WITNESS CHESNUT) No.

Q Why not?

(Panel of witnesses conferring.)

Q I am really asking this of Mr. Chesnut without assistance from the other panelists.

A (WITNESS CHESNUT) I have been an operator before, not on a commercial nuclear power plant. Perhaps I relied a little bit on my --

Q Not too close.

A (WITNESS CHESNUT) -- previous experience. I know operators are trained and I know there are procedures and I have seen them in the control room at the Three Mile Island station. They have alarm procedures for determining whether an instrument is malfunctioning or not operating, or there is an erroneous indication.

Q Are you aware of any significant history of misidentification of alarms at TMI?

A (WITNESS CHESNUT) I am not aware of --

DR. LITTLE: Just a minute. I want to interject something here.

Mr. Chesnut, would you take NUREG-0600 and look at I-2-13, the first major paragraph on there.

WITNESS GRIMES: I do not believe we have a copy of NUREG-0600.

(Pause.)

WITNESS CHESNUT: Dr. Little, would you repeat the page, please.

DR. LITTLE: I-2-13, the first major paragraph on that page, about radiation alarms on the closed cooling system.

(Witnesses reviewing document.)

DR. JOHNSRUD: Dr. Little, I do not have 0600 before me. Is this something that the witness could read very briefly for us? Is it significant enough?

DR. LITTLE: It has to do with alarms going off in the closed cooling system which were not considered valid alarms.

DR. JOHNSRUD: Thank you.

DR. LITTLE: I think we are going to run some pages off for people to look at.

WITNESS CHESNUT: Did you ask a question about that?

DR. LITTLE: I thought that might jog your memory about alarms going off and whether they were considered valid or invalid.

WITNESS CHESNUT: It does appear that an operator thought that an alarm was occurring and it was not unusual.

(Panel of witnesses conferring.)

WITNESS CHESNUT: It looks like it was just a

misinterpretation of these indications of what he had. So it was an operator error referred to here.

DR. JOHNSRUD: Excuse me. I missed the end of your sentence.

WITNESS CHESNUT: It could have been an operator error referred to here.

BY DR. JOHNSRUD: (Resuming)

Q Were you not aware of this analysis in NUREG-0600?

A (WITNESS CHESNUT) I had read NUREG-0600 several months ago, and I did not remember this page.

Q As emergency preparedness team leader for all of Pennsylvania's nuclear power plants, how much of your time and attention do you -- do you devote or do you anticipate devoting to TMI Unit 1?

A (WITNESS CHESNUT) Recently it has been most of my time. I cannot give you a percentage of time I would be spending on Three Mile Island as opposed to other plants.

Q And you are -- your testimony is that you are willing to rely essentially solely on the engineering judgment and experience of the operators with regard to what constitutes obviously erroneous or invalid alarms, instrument readings, in turn based on your personal experience as a naval reactor operator? Is that the essence of what you said a few moments ago?

A (WITNESS CHESNUT) No. There has to be methods to determine whether you have a valid alarm or not. I am not knowledgeable, though, of the individual qualifications of all the operators and I am not charged with determining the effectiveness of the daily operator training program.

From an emergency planning aspect, I would like to see -- I do not see any benefit to be gained by declaring an emergency based on an invalid or an erroneous alarm. That is what I interpreted --

Q Even if an emergency is in progress and the operator has misread?

A (WITNESS CHESNUT) I do not want the operator to misread his indications, no, and I did not say that. I do not believe the protective actions should be taken on erroneous indicators, though. They should be taken on actual indicators.

Q I am sure all of us concur.

A (WITNESS CHESNUT) And that is what I mean by my statement here, that I just don't want to see someone acting based on improper information.

Q Okay. And you two are drawing the distinction that has been brought out by Mr. Gray and others between accident severity declaration on the one hand and protective actions on the other; is that not true?

A (WITNESS CHESNUT) No, it has nothing to do with

that. When you are declaring anemergency or making a protective action recommendation, you should make it on true and valid indications, that is all I am saying.

Q Of course. And you concur with Mr. Grimes' testimony, which I believe was that the NRC does not have regulatory requirements for the determination of equipment malfunction which may be occurring in the course of accident identification?

A (WITNESS GRIMES) I do not think that was quite my testimony.

Q Can you correct my interpretation?

A (WITNESS GRIMES) I said there were no regulations which specifically covered that in detail. There are, of course, very general regulations which could be interpreted to include that type of thing.

Q Mr. Chesnut, at page 28 -- and take heart; I am approaching the end of my questions here -- you state in the top paragraph: "My discussions with the Licensee indicate that 50 microcuries per milliliter was chosen as an actual level because it is higher than normally expected and previously experienced spikes in coolant activity at TMI-1 and is roughly equivalent to .1 percent fuel failure."

This was the Licensee's decision?

A (WITNESS CHESNUT) Yes, it was.

Q Are you aware of any additional or perhaps

experimentally verified bases for the selection of this 50 microcurie per milliliter level than are stated here?

(Pause.)

A (WITNESS CHESNUT) NUREG-0654 did not provide any specific guidance as far as the numbers of microcuries per milliliter of coolant activity for the unusual, that category, which is what that 50 microcuries per milliliter is associated with.

Q I think part of what I am asking here is -- is simply the statement that it happens to be higher than is normally expected or previously experienced a very sound basis for utilizing that number, or are there other bases that perhaps we are not aware of?

A (WITNESS CHESNUT) That is but one way to distinguish from the normal coolant activity or transient that would occur in operation of the plant and would be an indicator of a problem and a potential for some sort of cladding damage, perhaps.

Q My last group of questions to you I think would be repetitive of Mr. Adler's testimony concerning the time period required for the analyzing of coolant activity level. And so to speed us along a little bit after this long time, I will forego any further questions concerning that matter. I may have some follow-up questions subsequently, but that is all that I have on the ECNP

contentions, except to ask:

Why did the NRC not address at all, so far as I have noted, ECNP contention 9 on onsite?

A (WITNESS CHESNUT) Do you have the other ECNP number on that? Is that 2-33?

CHAIRMAN SMITH: It is our first meteorology?

DR. JOHNSRUD: Yes.

WITNESS CHESNUT: That is testimony which is addressed by another NRC staff witness who will be appearing later.

MR. GRAY: Yes, that testimony has been prefiled.

DR. JOHNSRUD: Thank you.

That's all, Mr. Chairman.

CHAIRMAN SMITH: Ms. Bradford?

MR. GRAY: I would point out that Ms. Bradford had requested Mr. Grimes to find a reference on the effectiveness of cloth material for filtering, I think, particulate matter. And he does -- did locate a reference, which he can provide. And if Ms. Bradford has questions relative to that, that would be appropriate.

WITNESS GRIMES: I can give the reference now and perhaps at a later time provide the relevant pages of the reference, if you desire.

The reference is "Respiratory Protective Devices Manual." It is published by the American Industrial Hygiene

Association. The date on the document is 1963. And the relevant pages are pages 123, 124, and 125.

BY MS. GAIL BRADFORD: (Resuming)

Q Do you have an author?

A (WITNESS GRIMES) No, there is no author on the title page. But we will provide copies of those pages and the cover page -- the title page, also.

Q Thank you.

(Pause.)

Q Mr. Chesnut, regarding the manning of the county communications links, does the staff know who is responsible in each county for determining that prompt notification systems should be activated?

A (WITNESS CHESNUT) Are you referring to the siren alewrt system?

Q Yes, sir.

A (WITNESS CHESNUT) Staff has not seen the details of the procedure on who and how exactly they will be activated.

Q So the staff does not know how long it could take for that person or persons to instruct the appropriate persons to activate the prompt notification system?

A (WITNESS CHESNUT) No. We will require that Licensees by July 1 demonstrate the physical and administrative means to conduct that prompt notification.

Q Including the administrative means that the county uses?

A (WITNESS CHESNUT) Yes.

Q Licensee's witness Mr. Rogan testified under cross that he expected that notification of offsite authorities following the declaration of an emergency could be completed in two minutes. What are the staff's views on this matter?

A (WITNESS CHESNUT) The Licensee's emergency plan has described a communications system and methods for communications which indicate that notification within the 15-minute requirement is possible. We will monitor that in future exercises to ensure that it is continually maintained.

CHAIRMAN SMITH: Now, is that a response to your question?

WITNESS CHESNUT: I do not know if two minutes is feasible, to answer your question exactly. I am not going to commit to saying it can be done in two minutes.

BY MS. GAIL BRADFORD: (Resuming)

Q Would you know whether there would be any difference in the instance of a general emergency wherein the Licensee would be obligated by its procedures to notify all five emergency management organizations, in addition to PEMA?

CHAIRMAN SMITH: Well, excuse me. Having

interfered with your examination, you got your answer. Now the follow-on question does not make any sense. He says he does not know. But now are you asking --

MS. GAIL BRADFORD: No, no, sir. He said he knew about 15 minutes, but he did not know about two minutes.

CHAIRMAN SMITH: That he what?

MS. GAIL BRADFORD: That he knew that the requirement was 15 minutes.

CHAIRMAN SMITH: Yes, but he could not --

MS. GAIL BRADFORD: And he thought that could be met, the 15 minutes.

BY MS. GAIL BRADFORD: (Resuming)

Q Isn't that what you said, sir?

A (WITNESS CHESNUT) Yes.

Q Would you still have that view in the instance of a general emergency, wherein the Licensee would be obligated to notify the five emergency management organizations, in addition to PEMA?

A (WITNESS CHESNUT) Yes.

(Pause.)

Q Regarding the staff's testimony that went into, when the EAL has been exceeded the emergency director is required to declare the appropriate emergency class, is this an enforceable requirement by the staff?

A (WITNESS CHESNUT) The Licensee commits to doing

it in his emergency plan.

A (WITNESS GRIMES) Yes, it is enforceable if it is in the emergency plan.

(Pause.)

Q Testimony at 48-49.

I just want to preface this statement, this question, by a statement about the nature of our concern, which is that we made a discovery request about the details on the siren alerting system, and what we have received is the -- is a map with proposed locations for the sirens on them and circles showing how far those sirens might cover.

And we were interested also in seeing whatever engineering studies were available, if possible.

MR. GRAY: That discovery request was made to whom?

MS. GAIL BRADFORD: The Licensee. I also asked the staff whether they had that information. Do you remember that?

MR. GRAY: Yes, and I believe we told you we got the map about the same time you did.

MR. ZAHLER: Just so the record is clear, Ms. Bradford did informally request whatever information we had, and I produced this map. As I explained to her, the study, the engineering study that goes with the map, is not complete.

As the panel testified from the Licensee, we are going to submit it around mid-April. Licensee cannot produce what it does not have.

MS. GAIL BRADFORD: What I understood Mr. Zahler to respond earlier, he as counsel for Licensee did not have it at his office, not that Licensee did not have it.

MR. ZAHLER: If there was any ambiguity, the study is not finished. Licensee does not have the study. It will be ready around mid-April.

MS. GAIL BRADFORD: What is the study that Mr. Giangi referred to as having been completed?

MR. ZAHLER: There was some testimony about a study done by Federal Signal last summer for a different siren system. That does not go along with the siren system that Licensee is now proposing.

I think, as Mr. Giangi testified, the criteria between the time the first study was done and what Licensee is now proposing have changed, in that the appendix to 0654 was refined in further detail. They picked up the Battelle studies and the requirements there, and as a result Licensee has commissioned a further study with respect to the siren system it is now proposing.

MS. GAIL BRADFORD: So you are saying that the study Mr. Giangi referred to in his testimony was not concerned with the siren system that the Licensee is now

proposing to install by July 1? Or what are you saying?

MR. ZAHLER: That is correct, it does not relate to the map that we gave you or the siren system that is being proposed.

BY MS. GAIL BRADFORD: (Resuming)

Q What information has the staff received thus far on Licensee's proposed siren alerting system?

A (WITNESS CHESNUT) The staff has received a map similar to the one you observed. The staff has received a one-page schedule listing some of the proposed dates for acquisition of the equipment and installation of the equipment.

The staff has been orally provided with some of the bases for the locations of the sirens, power supplies for the si ens, and the types of sirens. That information I believe was substantially, if not all, we received and provided in oral testimony last week.

Q Has the staff received the engineering design study perf rmed by the Federal Signal Corporation, which is what Mr. Giangi was apparently referring to?

A (WITNESS CHESNUT) I have not seen that study.

Q Has the staff received information related to the sound level survey which was conducted for the Licensee?

A (WITNESS CHESNUT) No, we have not.

Q On the basis of being unable to find reasonable

progress on compliance with the prompt notification requirements of the Commission's regulations and NUREG-05654, Revision 1, can the staff support Licensee's proposal to restart TMI-1 prior to demonstrating reasonable compliance with the requirement?

A (WITNESS CHESNUT) We stated before that the Licensee will have to -- the staff will require the Licensee to meet those stated requirements of the emergency planning rules. If restart occurs after July 1, they will have to have had to demonstrate the physical and administrative means of that early warning notification system.

As far as reasonable progress, I stated in my supplemental testimony essentially the kind of information I have been provided. It appeared that a system was being or in the process of being procured, and the Licensee has provided us with dates which indicate that will be installed prior to July 1.

I did also say that the staff expects to see some written formal documentation on the subject prior to making that reasonable progress, before July 1.

Q Will the staff undertake to study the question of adequate power supply to the sirens in the event of either a blackout or storm damage?

(Pause.)

A (WITNESS CHESNUT) Currently there is no criteria

for a backup power supply or redundant sirens for the early warning notification system.

A (WITNESS GRIMES) And we do not expect to require any backup power supplies.

Q Is the staff aware of the example I asked Mr. Giangi about, in which the only test exercise that has been conducted since the accident occurred at the same time that we had a two or three-day blackout in this area, in which up to 120,000 houses were without electricity for a period of some hours?

I mean, it was a coincidence, but a --

A (WITNESS CHESNUT) I have not seen the information to know, first of all, that is indeed correct. And I was present when you discussed it with Mr. Giangi.

Q Do you -- do you see any need to follow up on looking into the possibility of coincidences of storm damage or blackouts?

A (WITNESS GRIMES) If I can speak to that, with respect to the criteria, that question was considered during the development of the criteria and it was decided that independent power supplies would not be required. The bases were:

First, the low likelihood of the coincident events;

And the second, the fact that the very loss of

power would cause -- likely cause people to be more alert to information coming over the news media in terms of keeping abreast of what is going on and wanting to know what is going on;

Thirdly, the types of accidents that might be initiated because of a loss of power and a further failure of onsite power supplies are fairly slow in developing and could give time to provide other means of notification.

DR. JORDAN: Mr. Grimes, are there not some requirements on reliability expressed in NUREG-0696?

WITNESS GRIMES: Not for siren systems. 0696 does not speak --

DR. JORDAN: Does not address?

WITNESS GRIMES: Not at all.

(Pause.)

BY MS. GAIL BRADFORD: (Resuming)

Q And whether or not -- you know, you would need more verification on this July 16 example that I am talking about. I mean, just grant for a minute that it is true. Wouldn't that, just as an example of unrelated events happening at the same time, you know, a multiple failure, you might say, of unrelated events --

A (WITNESS GRIMES) We have seen --

Q Would that cause you to look at that situation?

A (WITNESS GRIMES) We had that type of event i'

mind when we wrote the criteria. And blackouts periodically occur in other parts of the country. So I do not think there is any special significance to a blackout in this area.

Q Except it happened on the same day as the test exercise. What you are saying is -- what I understood you to say is you decided it was very improbably that that would be the case.

A (WITNESS CHESNUT) I do not really see any cause and effect relationship that would make me look into it any further.

Q There isn't.

A (WITNESS GRIMES) I first stipulate that blackouts do occur and, once I have considered that fact, whether they happened historically to occur in coincidence with other events does not have relevance unless there was a cause and effect relationship with those events.

(Pause.)

Q Can the staff support the restart of TMI-1, absent an acceptable evacuation study for TMI-1?

A (WITNESS GRIMES) Could you repeat? I did not quite catch it.

Q Can the staff support the restart of TMi-1, absent an acceptable evacuation time estimate study for TMI-1?

A (WITNESS GRIMES) We will have to have an

acceptable stud, before we would recommend restart.

Q What position does the staff take with regards to the reliance placed on evacuation time estimates provided in the February 4, 1980, letter from Mr. Herbein to Mr. Reed and the Wilbur Smith & Associates study?

A (WITNESS CHESNUT) The staff indicated to the Licensee, regarding the first submittal, that it was not adequate. The Wilbur Smith submittal, in meetings between the Licensee and the staff, the Licensee agreed to perform a new study which met the criteria of NUREG-0654. And this was the study which was provided to us this morning.

I have not observed it or reviewed it to determine whether or not it indeed does meet these requirements, though.

Q Is it the staff's position, then, as of this date, other than the report which you received this morning, there is no acceptable evacuation time estimate for TMI-1?

A (WITNESS GRIMES) I think that as a general question the staff would, I think -- cannot conclude that there is at this point an acceptable one. Whether there is one, there may very well be one, but we have not reviewed it to be able to conclude that there is one.

In other words, we have something in our hands now that may be an acceptable study, but we have not reviewed it and cannot proceed until we do review it to recommend

restart.

Q And other than this one study which was just passed out this morning, other studies are not adequate and acceptable?

A (WITNESS GRIMES) They do not fully meet the criteria and so we would look to a study that did.

Q Page 57.

CHAIRMAN SMITH: Have you run off of your cross-examination plan now?

MS. GAIL BRADFORD: No. I am on page 3.

CHAIRMAN SMITH: Page 3?

MS. GAIL BRADFORD: Question 11.

(Pause.)

BY MS. GAIL BRADFORD: (Resuming)

Q Well, I will just make this short. It is about sirens. We have covered sirens. But is it the staff's position that the current notification system that is now in place is inadequate?

A (WITNESS GRIMES) After July 1 a better system will be required. If startup should occur before July 1, we have no specific siren type requirements.

Q The current system is inadequate for restart after July 1?

A (WITNESS GRIMES) Yes.

(Pause.)

Q Has the staff done any studies on what mitigation sheltering would provide or is the staff aware of any studies?

A (WITNESS GRIMES) Yes.

Q What studies?

A (WITNESS GRIMES) There are some listed in the references, I believe, to NUREG-0654.

(Pause.)

A (WITNESS GRIMES) On page 64, for example.

Q Can you direct us to other studies?

A (WITNESS GRIMES) Yes. There is a study entitled "The Effectiveness of Sheltering as a Protective Measure Against Nuclear Accidents Involving Gaseous Releases." The authors are George H. Anno, A-n-n-o, and Michael A. Dore, D-o-r-e. It has a report number, PSR Report 515, December 1975.

It was prepared for the Environmental Protection Agency by the Pacific Sierra Research Corporation.

(Pause.)

I have another reference which was used in the development of WASH-1400. The title is "Structure Shielding from Cloud and Fallout Gamma Ray Sources for Assessing the Consequences of Reactor Accidents," by Burson, B-u-r-s-o-n, and Profio, P-r-o-f-i-o.

Q What was the first author's name?

A (WITNESS GRIMES) Burson, B-u-r-s-o-n.

This was prepared by EG&G.

Q What was that?

A (WITNESS GRIMES) Prepared by EG&G for the U.S. Energy Research and Development Administration.

Q When?

A (WITNESS GRIMES) It has a report number EGG-1183-1670.

Q Excuse me? EGG-dash?

A (WITNESS GRIMES) 1183-1670. December 1975.

Q Thank you.

(Pause.)

Q Can you give us an overview of what kinds of mitigation different kinds of buildings would give?

A (WITNESS GRIMES) Yes. And I think this overview is also given in the third reference on page 64, although I do not have a copy with me.

There are three different types of protection factors that can be considered: one against a passing cloud over a house or other structure, and that varies from area to area. I believe in this area one might expect perhaps a factor of two or three shelter against or reduction in dose because of being inside. And if one has a basement, substantially more protection might be expected.

The second --

Q If I could just ask about the passing cloud, how -- what duration of time elapses?

A (WITNESS GRIMES) Well, that could be any duration of time. This is simply the effect of the attenuation of, for example, gamma rays through the house structure. So the cloud could exist outside for a long period of time or a short period of time. But the dose otherwise calculated if one were standing outside the house would be reduced by about a factor of two.

The second factor that one could consider is if the cloud passed and left deposited material on the ground, for example. There, particularly for basement effects, the factor might be fairly large, perhaps ten, because of geometry effects, as much as attenuation effects from the house.

The third aspect is the inhalation protection factor, and these factors have been variously assumed in past studies. I believe WASH-1400 assumed a factor of about .7 for houses. More recent studies indicate probably about a factor of two for clouds which might envelope a house for a few hours might be expected. If a cloud were to pass very quickly, of course, the factor might be much higher, providing the windows were closed and no air exchange were occurring through mechanical systems, for example a window air conditioner.

(Pause.)

And I think that summarizes the various types of sheltering factors that can be obtained. And I think the decisionmakers need to have these general factors in mind. One cannot predict precisely what any individual house will have, and it is not worthwhile trying to do a house to house survey.

But the intent of NUREG-0654 is to make the decisionmakers aware of what benefits can be obtained by keeping people inside or, if basements are available, telling them to go to a basement, so that they can at least qualitatively make judgments as to the optimum protective action in any given circumstances.

Now, I have not mentioned large office buildings. Downtown buildings might have very, very high shielding factors against external sources of radiation, perhaps up to 100 in a parking garage basement, for example, or even higher. But the inhalation factors there might not be a great deal different than the house situation.

CHAIRMAN SMITH: Where is your -- I am having trouble following your cross-examination plan. Have you run off of it now?

MS. GAIL BRADFORD: Yes, sir. My sheltering question was off. Then you continue on page 5. Do you have -- do you have all the pages, 1, 2, 3, 4, 5?

CHAIRMAN SMITH: Yes. I just keep looking for -- looking for sheltering, and I can't find it. I got lost on the alarm systems, the siren systems.

MS. GAIL BRADFORD: That was on there. The siren system was on there.

CHAIRMAN SMITH: Yes, I know it was. But I --

BY MS. GAIL BRADFORD: (Resuming)

Q Can you tell us what assumptions were given in these studies about wind speed or kinds of buildings?

A (WITNESS GRIMES) Or what?

Q Kinds of buildings. Are we talking about residential structures?

A (WITNESS GRIMES) Yes. I think there were several types of structures assumed. One would have to consult the study to look at those. I do not have all the assumptions in mind right now.

(Pause.)

Q I have a list of problems that were identified in various studies of the TMI-2 accident. And some of these we can go through quite quickly, if you like. I was thinking of skipping it, but I was concerned about the problem pointed out by the valid or invalid alarms, and I just wanted to check through these things. And you could answer quite quickly if you wanted.

I will just list these deficiencies by source and

ask, were these recognized weaknesses in the Licensee's plan at the time of the accident resolved.

A (WITNESS GRIMES) Are they presently resolved?

Q Are they presently resolved.

In NUREG-0600: failure to adhere to tech specs, RCS leakage, emergency feedwater operability, et cetera.

A (WITNESS GRIMES) I am sorry, I could not understand.

Q Could you not here me?

A (WITNESS GRIMES) I just could not understand what you said. You said it a little fast.

Q Failure to adhere to technical specifications, for example, reactor coolant system leakage, emergency feedwater operability.

MR. ZAHLER: Objection.

CHAIRMAN SMITH: Of course, we have spent an awful lot of time on this subject matter. We are going to spend more. But where is it in the direct testimony? I mean, this is not -- how does this relate -- in the first place, how does this relate to emergency planning?

(Pause.)

MS. GAIL BRADFORD: Well, some of these things are and some of them are not related to emergency planning.

CHAIRMAN SMITH: I think you are going to have to, at the very least, make them relate to emergency planning,

and probably make them relate to the direct written testimony. But I would ask, all that relate to emergency planning, maybe they would like to answer them even if they are not in the direct testimony.

MS. GAIL BRADFORD: All right.

Do you have these pages?

CHAIRMAN SMITH: Is that 5?

MS. GAIL BRADFORD: Yes.

CHAIRMAN SMITH: Okay. Oh, I see. All right. Okay.

BY MS. GAIL BRADFORD: (Resuming)

Q Inoperability and lack of callibration of environmental air samplers.

A (WITNESS CHESNUT) The Licensee's plan indicates that they have methods for ensuring the proper -- correction. They indicate that they will maintain and inspect the callibration. That will be checked further on in our implementation reviews.

CHAIRMAN SMITH: Well, I am trying to ascertain the purpose. Of course, we heard about this. Now what you are trying to accomplish now is, does the staff agree that the problem is adequate, as compared to getting initial evidence on the subject matter; is that what you are trying to accomplish?

MS. GAIL BRADFORD: Yes, sir. I mean, he could

say it is not now adequate, but he has -- he knows that they are going to address it or whatever. And I would like to know whether he thinks it is now adequate.

CHAIRMAN SMITH: You are seeking conclusions?

MS. GAIL BRADFORD: Yes, sir.

And you do not need to tell me how they are going to address it if that has been addressed at length.

WITNESS CHESNUT: I cannot draw a conclusion on that right now.

CHAIRMAN SMITH: You cannot? Well, how about the testimony that you listened to? Did that --

WITNESS CHESNUT: The planning discusses that there are procedures for inventorying and commitments for inventorying and ensuring the callibration. During our instrumentation review we will go on site and actually inspect those procedures and see how it is being done.

CHAIRMAN SMITH: The implementation?

WITNESS CHESNUT: Yes, sir.

CHAIRMAN SMITH: All right. Except for the implementation, then, what is your --

WITNESS CHESNUT: It is addressed in the plan. It meets the criteria of -654.

BY MS. GAIL BRADFORD: (Resuming)

Q Lack of training for emergency personnel?

CHAIRMAN SMITH: You missed one.

MS. GAIL BRADFORD: I thought I might get a rejection on that one.

WITNESS CHESNUT: All right. The training for emergency personnel is addressed in the emergency plan, and I think you probably know what that says in there as well as I do. They address what types of training is going to be provided for what types of people.

Beyond that, I cannot make a determination towards adequacy right now. The Licensee indicated they are developing a training program and that it will have completed one round of complete training prior to restart.

WITNESS GRIMES: I think we should make clear that there is a difference between being finally satisfied for a final prestart inspection and being satisfied that there is reasonable assurance that we will get satisfied. I think weare at the point on all of these planned review items that unless we have said we are dissatisfied, we are satisfied, unless you bring up something we have not thought of as we documented it in our testimony and in our report.

So while we are going to make a final determination in our final inspection before restart, I think we can also testify as to adequacy of the general plan and progress to this point.

BY MS. GAIL BRADFORD: (Resuming)

Q Failure to properly follow procedures for

classifying and declaring emergencies?

A (WITNESS CHESNUT) There are procedures for classifying an emergency consistent with 0654. I am not taking an oath of what some operator is going to do in the future. The provisions indicate that they made a commitment to do that.

Q Failure to maintain adequate records of radiation surveys?

A (WITNESS CHESNUT) I have seen procedures to be used by radiation survey teams in the event of an emergency. The implementation review is aimed at the detailed review of those procedures.

A (WITNESS GRIMES) I think in this area we will cover some routine things that are covered in the health physics inspections and appraisals, as well as the emergency plan appraisals. The off-normal aspects will be covere din our emergency plan appraisals.

Q In NUREG-0616, the special review group: lack of available operable radiation survey instruments. As I am asking this, are you basically familiar with the problems identified in the TMI-2 accident?

A (WITNESS CHESNUT) Yes.

Q And what the problem was then and then what the correct now is, is what I am really getting to; whether the correction planned or --

A (WITNESS CHESNUT) Yes, I can say how the plan addresses the problems that were experienced in the previous accident.

Q Lack of available operable radiation survey instruments?

A (WITNESS CHESNUT) In that regard, the emergency plan discusses that routine checks of emergency kits will be performed and will include callibration. It also indicates that there will be surplus equipment available to insert into emergency kits in the event that one of the pieces of equipment is inoperable.

Again, when we go on site to check the implememtation, we will actually check to see how well that is being done, not just how well it is being planned for.

CHAIRMAN SMITH: Is this the type of answer you want, or do you want it even more summary?

MS. GAIL BRADFORD: That -- that is fine.

BY MS. GAIL BRADFORD: (Resuming)

Q Lack of backup power to meteorology tower?

(Panel of witnesses conferring.)

A (WITNESS CHESNUT) That is a dated requirement for systems in 0654. That will be addressed by Mr. Levine.

Q Inadequate communications capabilities. Of course, we have had a lot of testimony on that.

A (WITNESS CHESNUT) Yes. I personally observed the

equipment, the communications equipment, and reviewed the plan procedures, and that appears to have been corrected.

Q Problems communicating with radiation survey teams in the field.

A (WITNESS CHESNUT) The provisions in the plan call for using walkie-talkies or portable radios that are available in the emergency kits and are supplied in the emergency kits; and to be directed from the control room or from the environmental assessment center.

Q Is that different from the situation at the time of the accident?

A (WITNESS CHESNUT) The numbers and placements of equipment and the operability if radios at the time of the accident, I cannot tell you right now. They have been addressed in the plan. Provisions have been made for communications between the people directing the radiological assessment monitoring teams and the teams themselves to provide that information back to the control room or to the environmental assessment control center.

(Pause.)

Q Inadequate security response to emergency conditions?

A (WITNESS CHESNUT) The implementing procedures include a security -- emergency security implementing procedure, emergency access and security.

Q In Mr. Giangi's testimony or in his answers to cross, he spoke about striking a balance between being sure that fire people, fire people from offsite can get there fast enough and maintaining security. Are you -- do you know what procedures he is suggesting, or are you aware of that?

A (WITNESS CHESNUT) I have the implementing procedures that were submitted March 1. I have not reviewed those except in a cursory fashion.

MR. GRAY: I am not sure Mr. Chesnut is the appropriate one to review and evaluate security procedures. I do not know whether that is a part of in fact the emergency planning review function that these people do here.

MS. GAIL BRADFORD: It would seem that security procedures might hamper an emergency response and therefore he should know about it.

CHAIRMAN SMITH: Well, you made a reference here to NUREG-0616, finding of inadequate security response to emergency conditions. So apparently there is some basis for your question, if your response is accurate -- I mean, if your referance is accurate.

MS. GAIL BRADFORD: I am sure it must be, since Mr. Sholly wrote it.

(Laughter.)

CHAIRMAN SMITH: In any event, you cannot provide any more information?

WITNESS CHESNUT: No. Essentially, the plan indicates that there are procedures for allowing emergency workers and badging emergency workers from offsite. Any additional problems that might occur during an emergency, we have a procedure submitted, and a review just has not been completed in a detailed fashion on that.

BY MS. GAIL BRADFORD: (Resuming)

Q Do you know when -- when you are going to be -- if you ever get off the stand, presumably, when you are going to have a complete review completed?

A (WITNESS GRIMES) Perhaps I can speak to scheduling. We have completed our review of the plan and we believe we have completed the review to the extent that we can testify as to the progress made for the purposes of the hearing.

Some time prior to restart, we will conduct an inspection onsite to ascertain that the plan is implemented and that there are no other things that would prevent a response to an emergency. The timing of that I cannot pin down precisely. I would guess it would be not earlier than June.

Q Thank you.

In the Rogovin report: failure to accomplish

onsite and offsite radiation dose measurements in a timely manner. Do -- do you think that has been adequately addressed?

A (WITNESS CHESNUT) The plan describes an organization and staffing which indicate that that could be done. It indicates its intent to do that.

CHAIRMAN SMITH: She wants your opinion. I mean, all of this is -- as I understand it --

WITNESS CHESNUT: I think they can take care of it. I think they have got the equipment in place to do it.

CHAIRMAN SMITH: We have all heard all this testimony. Now she wants your, the NRC staff's opinion on it.

BY MS. GAIL BRADFORD: (Resuming)

Q Just to back up a little bit, I mean, you may have heard Dr. Johnsrud mention she had a certain sense of deja vu of being assured once again, since she was an Intervenor in the TMI-2 licensing procedure and it did not turn out that all the statements made in that proceeding were borne out in our experience, and I am -- especially in regard to emergency planning.

CHAIRMAN SMITH: Now I guess I did -- wait a minute. Always allow me to interrupt. Even though it is being rude, allow me to do it.

I guess I did not fully understand your question.

You said you had a list of questions here and you wanted a simple response as to whether the staff is satisfied, what their view is. I mean, I asked if this was a summary view you wanted and you said yes. Now I guess this is not the case.

MS. GAIL BRADFORD: I do not know why you guess that that is not the case.

CHAIRMAN SMITH: Well, maybe I should have allowed you to finish your statement. But you seem to be now suggesting that the staff's simple opinion as to the adequacy of the records and the plans is not enough. I mean, I thought that was the purpose of your inquiry now.

MS. GAIL BRADFORD: Sir, I am pointing out that certain things -- and it is really a brief list -- certain things were --

CHAIRMAN SMITH: I am not quarreling with the list. I even pointed out when you missed one.

I am just trying to figure out what kind of answers you want from these witnesses. They are entitled to know what the significance of their answer is.

MS. GAIL BRADFORD: This is a list of things that were pointed out by various studies of the accident. My question is whether, in the opinion of the staff, these problems pointed out by the accident have been adequately addressed.

CHAIRMAN SMITH: I think it is a good idea. That is a good thing for you to do. But you seemed to be digressing there for a moment. I did not understand the purpose of your statement that you were making when I interrupted. That is the problem.

Go ahead with your question.

BY MS. GAIL BRADFORD: (Resuming)

Q Also in the Rogovin report, inadequate equipment and inadequate training for measuring radioiodides in the presence of noble gases.

A (WITNESS CHESNUT) Yes.

Q You feel that that problem has been adequately addressed?

A (WITNESS CHESNUT) With regard to portable instrumentation, yes. I believe some of the technical staff is addressing some of the details of the instrumentation to be installed as a result of NUREG-0578.

Q Absence of a clear chain of command and lack of discipline in approach to communications with offsite authorities.

A (WITNESS CHESNUT) I feel that has been corrected.

Q Failure to respond adequately to staff-identified weaknesses in emergency training program.

CHAIRMAN SMITH: Well, that, I do not think that

is a fair question. I think you are going to need some more precision on that one.

MS. GAIL BRADFORD: Well, it is on page 930. I do not have it.

WITNESS CHESNUT: Pardon me?

MS. GAIL BRADFORD: I do not have the report right here.

CHAIRMAN SMITH: Well, we can come back to it. I have it here. Just go on with the others and I will get it.

BY MS. GAIL BRADFORD: (Resuming)

Q In the Kemeny Commission report, they pointed out inadequate training of physicians under contract in emergency radiological medical care. Are you aware of any corrections to that problem?

A (WITNESS CHESNUT) Would you repeat that question, please?

Q Inadequate training of physicians under contract.

A (WITNESS CHESNUT) Physicians?

Q Physicians, doctors under contract, in emergency radiological medical care.

A (WITNESS CHESNUT) I do not know what training has been given to doctors to date on emergency medical care. The Licensee has described arrangements for emergency care

for contaminated individuals on several occasions that appear to be adequate. But the exact training of those people I cannot testify to.

A (WITNESS GRIMES) I might say in addition on that point, there is a provision through the Department of Energy to put those physicians, any physician involved in this kind of an emergency, into contact with expert physicians at Oak Ridge National Laboratory. And that would be part of the Department of Energy support.

Q Is that set in place now or planned?

A (WITNESS GRIMES) Yes.

DR. JORDAN: Could that possible be Oak Ridge-associated universities rather than Oak Ridge National Laboratory?

WITNESS GRIMES: It may be. When I talked to DOE, they used "Oak Ridge" and I am not sure which reference they had.

CHAIRMAN SMITH: I cannot find that reference in the main Rogovin report. You are referring to a staff report, I believe. The question is failure to respond adequately to staff-identified weaknesses in emergency training program, parentheses, 930. And I cannot find a page 930.

MR. ADLER: Sir, it is in volume 2, part 3. Did you look there?

CHAIRMAN SMITH: That is the problem. I do not have part 3.

(Pause.)

BY MS. GAIL BRADFORD: (Resuming)

Q The other question is lack of a specific plan for providing information to the public and the media.

A (WITNESS CHESNUT) I feel that has been corrected. There is a public information plan the Licensee utilizes to provide information to the media.

Q It is a two-part question, about the media and information to the public.

(Panel of witnesses conferring.)

A (WITNESS CHESNUT) What type of information? During an accident?

Q Both.

A (WITNESS CHESNUT) During an accident, that is primarily a function of the state and local organizations. Prior to an accident, as I stated before, some of the details of the public information program are still under development and being reviewd.

CHAIRMAN SMITH: We are looking for your other questi[illegible]

MS. GAIL BRADFORD: Did Mr. Adler find it?

CHAIRMAN SMITH: Mr. Brenner has had it copied.

(Pause.)

CHAIRMAN SMITH: It seems like there was a reference to summary recommendations.

MR. ADLER: Mr. Chesnut, perhaps Mr. Sholly had in mind pages 928 to 929. On page 930 it is really training for offsite agencies. But Section F beginning on page 928 --

CHAIRMAN SMITH: Why don't -- why don't you borrow a copy, look at that, and then just put the question to the panel again some other time when you have a chance to see what Mr. Sholly's concerns were? I mean maybe Tuesday.

MS. GAIL BRADFORD: Yes, sir. This is the only other question I have for this panel. So if you want to go on with something else, that would be a good idea.

CHAIRMAN SMITH: All right. Mrs. Aamodt?

MS. AAMODT: Yes?

CHAIRMAN SMITH: Yes, ma'am, you may proceed.

(Pause.)

BY MS. AAMODT: (Resuming)

Q Can you hear me?

A (WITNESS CHESNUT) Yes, ma'am.

CHAIRMAN SMITH: Ms. Bradford, it will be up to you to remember to bring it up again. Until you raise it, we will forget it.

BY MS. AAMODT: (Resuming)

Q On page 29 and 30, Question 38-A.

A (WITNESS CHESNUT) Yes, ma'am.

Q What is done with the data on radioactive releases transmitted to the NRC?

(Panel of witnesses conferring.)

A (WITNESS GRIMES) The Intervenor on radioactive releases, along with the assessment that the Licensee has made of those radioactive releases and the recommendations that the Licensee has made to the state, are made known to the NRC over a telephone line at the present time. And the NRC then makes a judgment as to whether those calculations based on those releases are reasonable, whether the recommendations for protective actions are reasonable.

It then communicates with the Licensee and with the offsite authorities to give them an opinion on the adequacy of the protective actions recommended by the Licensee. This is an add-on to the normal process. The normal process -- and the critical path, so to speak, is a recommendation from the Licensee to the state, and then the NRC makes an independent judgment of that when it gets its operations center in Bethesda in operation.

And then later on, if it is a serious emergency, when it -- when the regional representative arrives at the site, and the authority is transferred to him to make that independent judgment.

But essentially, what is done with the information

is it is analyzed and a judgment made as to whether things are going in a reasonable fashion and whether the NRC can be of use in providing its opinion on the way things are going to both the Licensee and offsite authorities.

Q Now, I have been drawing little diagrams as to how all of this -- this is happening, and consulting with some others and -- this is -- I am just a little concerned, having had a contention on training and testing, that there are enough people to handle all this information that is coming in and going out.

This is another consideration, essentially, isn't it, in that this information is going out, with information coming back, opinion coming back? Isn't that correct?

A (WITNESS GRIMES) That is another --

Q Another -- another consideration is that this information, both in taking of time and in the flow to FEMA and the BRT, how does that fit in? Is that the first thing that they would do, would be to check with NRC?

A (WITNESS GRIMES) That is one of the things that they are required to do on a continuing basis in an emergency, is provide information to the NRC.

Q Yes.

A (WITNESS GRIMES) And so the emergency plan must account for, at least initially, communications to the NRC as well as to state and local groups. After the incident

has progressed somewhat, we would expect that a resident inspector will have arrived in the control room and he could take over many of the communications duties and provide that information to the NRC and relieve the Licensee personnel.

MR. ADLER: Mr. Chairman, we of course have no objections whatsoever to Ms. Aamodt pursuing this area, since it is an area of our concern also.

I am not sure if she was present when we decided to split it up into a separate section. It is our feeling that it would make a cleaner record to do it all together. I just wanted to point that out to her.

CHAIRMAN SMITH: Yes. The NRC's response will be covered in a separate section. But I understand your questions now relate to communications.

MS. AAMODT: Yes.

CHAIRMAN SMITH: Which is her contention.

MS. AAMODT: I am concerned about it. If I am just adding onto the record at this point, I would be glad to know.

I am working in a difficult way. This is my husband's contention and he is not in this area. He is in Michigan.

CHAIRMAN SMITH: Well, the consideration --

MS. AAMODT: I am trying to do the best I can with it.

CHAIRMAN SMITH: The consideration is there is going to be a separate session in which Mr. Grimes will answer questions about what the NRC does or would do in the event of an accident. But somewhere there has to be a place for your questions about communications which I understand you are addressing now.

MS. AAMODT: Yes, that is right.

CHAIRMAN SMITH: So I think that I would suggest that you limit your questioning now to communications.

MS. AAMODT: Yes, these are all communications.

CHAIRMAN SMITH: What the NRC does will be another session.

MS. AAMODT: All right. Well, I am really interested in how -- in the manpower available, and whether this is -- well, let me ask the questions as my husband has them here. Maybe it will come out.

BY MS. AAMODT: (Resuming)

Q On page 32, Question 40A, the last sentence of the first paragraph. When will capability in the TMI-1 control room be used to provide information to counties?

When will capability in the TMI control room be used to provide information to co ties?

A (WITNESS CHESNUT) The communications capability is there now.

Q Yes.

A (WITNES CHESNUT) The way that the plan currently reads is that the notification -- the initial notification -- of an emergency goes first to Dauphin County, then to PEMA and then to -- and then PEMA notifies the remaining counties.

Q Okay.

A (WITNESS CHESNUT) In the general emergency category, that is somewhat different. The sequence then is that the Licensee will notify all five of the counties in addition to PEMA in a parallel fashion.

Q Yes. I should not have let you go that far. I think it was really bringing that up to come to the second question, which is relate answer to PEMA's role consistent and coordinated responses.

A (WITNESS CHESNUT) Oh, okay. What is meant in my testimony in the emergency plan is that the majority of the technical information is transmitted to BRP in recommendations, or some of the data, technical data, is analyzed by BRP and they work through PEMA to get information disseminated to all the counties.

Direct lines between PEMA and the counties will transmit information necessary to go regarding protective actions.

Q And what are the time constraints that impact on the first question, capability, and to the -- the routing through PEMA?

A (WITNESS CHESNUT) My information is it is routed through PEMA.

CHAIRMAN SMITH: Before you go too far, I do not think you are answering her question.

WITNESS CHESNUT: Would you please rephrase your question, or restate it, rather?

BY MRS. AAMODT: (Resuming)

Q It is about the time constraints that impact on PEMA's role. And also on the TMI direct -- direct communication from the TMI control room to the counties.

CHAIRMAN SMITH: Mrs. Aamodt, may I make an observation? You are reading from what is an examination outline apparently prepared by Mr. Aamodt.

MRS. AADMODT: My husband, yes.

CHAIRMAN SMITH: You are reading it literally. If you do not see it in outline form, the questions are not as obvious. Maybe it might not be a bad idea to let them see your outline.

MRS. AADMODT: I wish I had another copy.

CHAIRMAN SMITH: That might be helpful, because then you can see the logic of her approach to it and what she is trying to do.

But, of course, you do not have to let them see your cross-examination plan.

MRS. AADMODT: I do not mind if they see it.

CHAIRMAN SMITH: Okay. Why don't we make extra copoies of this, and then when you take up the examination again Monday morning --

MRS. AADMODT: I prefer they did not have it for over the weekend, though. I would feel as though that would be unfair.

CHAIRMAN SMITH: You don't want them to have it over the weekend. Okay.

MRS. AADMODT: I would prefer not.

CHAIRMAN SMITH: All right. Go ahead.

MRS. AADMODT: Did I -- did we -- we did not get that answer, did we?

WITNESS CHESNUT: I did not understand the question.

BY MRS. AAMODT: (Resuming)

Q All right. Let me start again. We are looking for time constraints that impact on, number one, the capability of the TMI control room to be used to provide information to the counties, and, number two, PEMA's role in

providing information to the counties.

A (WITNESS CHESNUT) All right. The time constraints that I see -- rather, I see more of a time requirement placed on the Licensee to do notification of the counties or to ensure that the off-site authorities are notified, that being the state and the five counties; that being the NRC expects within 15 minutes or requires within 15 minutes of declaration of an emergency that the off-site authorities be notified.

What other -- I see no other constraints other than how long it takes to make the phone calls.

Q In the -- I was looking at my little diagram in the control room. You will have someone calling to the NRC and someone calling to PEMA and to Dauphin; is that right? Are those all automatic dialers? Is that possible for one person to do that with an automatic dialer or not?

A (WITNESS CHESNUT) The automatic dialer is a telephone that has ten buttons on it, and it has the names of the various agencies or groups that are going to be notified. And instead of having to go look up the phone number and physically dial the number, they just push the button next to the -- next to the label, and it automatically dials the organization.

Q Yes. But do they -- are they -- that is one phone, then, that is being used for those three? Not one

phone is being used for those communication links; are they?

A (WITNESS GRIMES) The NRC notification would be over a dedicated line.

Q Dedicated line. Yes.

A (WITNESS GRIMES) For that purpose.

A (WITNESS CHESNUT) There is also the NAWAS, the warning system that was referred to by Licensee, which is a voice-activated radio-transmitted warning signal which will go to the state. And then you hae the telephoen systems which are in place there.

Q I am sorry. Go ahead. I am sorry.

A (WITNESS CHESNUT) So for those three phone calls -- Dauphin, PEMA, and NRC -- I see no reason why those could not be accomplished within -- within 15 minutes of declaration of an emergency.

Q Right. One person, then, is handling all three calls from three different telephones that are arranged in some order near each other.

A (WITNESS CHESNUT) It would -- it could be a series of different personnel. Licensee's plan calls for phone calls by a control room operator and by the shift supervisor.

Q So two people would be handling essentially those three telephone calls; is that right?

A (WITNESS CHESNUT) Initially. And if more people were necessary, they could be requested to assist in the communications.

Q Please do not -- I am hoping that someone is left to run the plant. That is the point I was trying to resolve for myself: that there would be some technical people left to run the plant.

A (WITNESS CHESNUT) I have addressed in my testimony the allocation of the people and the assignments, the fact of the numbers of people who are on shift at all times at Three Mile Island with respect to the requirements for the shift staffing.

Q Now, the -- are these telephones arranged close together in a location in the control room? Do you know?

A (WITNESS CHESNUT) There are some phones in several different locations, and I would have to go back to a diagram or the control room to put my hands on exactly which phone is next to which phone.

Q I just wondered whether having them close together would allow fewer people -- would allow even a single person to handle that operation. But having them far apart --

A (WITNESS CHESNUT) There are several of them that are close together, and the communications, depending on the amount of information that has to be transmitted, you may have one person handling communications or several.

The plan calls, for instance, after an hour, one communicator and two communications assistants to assist him with the communications.

Q I am talking about the first 15 minutes after a situation has developed that would --

A (WITNESS CHESNUT) The emergency plan calls for the shift supervisor to assign communications functions to one of the operators in the control room. And also, the emergency plan has -- I already stated that the communicator and the two communications assistants arriving shortly or within one hour.

Q Within what?

A (WITNESS CHESNUT) One hour.

Q One hour.

A (WITNESS CHESNUT) Yes.

MRS. AADMODT: Chairman Smith, skipping over to page S-3, page 38, question 46A.

BY MRS. AAMODT: (Resuming)

Q Line 15, why do you -- did you say "should occur" rather than "will occur" -- "With these provisions, notification of York and Lancaster Counties should occur within about 15 minutes"?

A (WITNESS CHESNUT) What I was referring to there was the provisions described by the PEMA duty officer to have to notify the remaining four counties.

Q That has been a concern. I thought that that perhaps was a question for the state. But you do have it here, I see. Will -- do you have any idea how many people will be at PEMA at any particular hour of the day and day of the week to accomplish those five telephone calls?

A (WITNESS CHESNUT) As I described there, one of my -- one of my concerns is that -- is through contacting the PEMA duty officer, who is not necessarily at PEMA, he will be on call with call forwarding or beeper systems to be contacted by Three Mile Island and will have -- be responsible for contacting the remaining four counties.

Q Do you mean he might be on the road someplace or not where he can telephone? Did you say a beeper system?

A (WITNESS CHESNUT) Yes, that is correct. That is possible. FEMA will be evaluating those provisions. I have not looked at the procedures and the requirements for that PEMA duty officer.

Q Oh. And then he has to make five calls, or four calls, is that right, to the four counties?

A (WITNESS CHESNUT) Yes.

Q Yes. But he may not be near a telephone at the time he receives that notification?

A (WITNESS CHESNUT) That is correct.

Q Could you conceive -- maybe this question does not apply. Let me read it first.

(Pause.)

Now, looking back where BORV is to call back to the Licensee, could you conceive of a set of circumstances where Licensee might fail to follow up on BORV notifications and BRP fails to make them?

A (WITNESS CHESNUT) The procedures call for the Licensee to call back if the verification is not received within 30 minutes; and in that event the Licensee, if it suspects that the counties have not been notified, will rely on its contingency communications procedures which call for them to work through Dauphin County to complete the remaining notifications.

Q I understand how it is supposed to go. But can you see any problems in it going that way with the Licensee in communication with NRC and with PEMA, and now the call is supposed to come back from BORP. Can you see how that could possibly be overlooked if that call does not come back and the --

A (WITNESS CHESNUT) I --

CHAIRMAN SMITH: You changed your question, I believe.

MRS. AADMODT: Did I change it?

CHAIRMAN SMITH: It seems to me that it has been changed.

MRS. AADMODT: Could you clear it up for me, Mr.

Chairman?

CHAIRMAN SMITH: She -- her -- she is not asking you to restate what the plan is. But she wants you to see if there are weaknesses which would allow a failure of -- to follow up -- the failure of PEMA to notify counties and the failure of the Licensee to follow up and determine that PEMA has not notified or BRP has not notified counties.

WITNESS CHESNUT: With regard to the FEMA -- correction: PEMA -- BRP problem, I have not come to their procedures with the kind of detail to make that kind of decision. With regard to the Licensee looking at their plan, it is conceivable that a call might not come back for verification. I am not saying it will happen. I guess that is a possibility.

WITNESS GRIMES: We should also note in that regard that these are for the lower levels of emergency declarations that this process would be used. If the emergency escalated into a general emergency class, Licensee would then be obligated to make the direct phone calls.

BY MRS. AAMODT: (Resuming)

Q I am aware of that, Mr. Grimes. The -- I am trying to point out the weaknesses there. In -- in trying to encourage you, perhaps, to go to the plan for the emergency in the lesser classifications, since Licensee has autodial capability to notify all affected counties, how can

PEMA insertion assure minimum delay? This is from page 39, question 40.

A (WITNESS CHESNUT) Question 40?

Q It is question 40, page 39, question 48, I suppose. Yes. I am sorry. Re minimum delay. The next to the last --

A (WITNESS CHESNUT) I was referring in that testimony to the fact that there is some delegation of authority which -- which could, by spreading out some of the responsibilities actually make things faster.

As you said, though, if there is difficulty reaching PEMA, it could be slower.

Q Could be slower?

A (WITNESS CHESNUT) Yes.

Q Yes. Page 39, question 47A. And I think we answered that. That was regarding the 15-minute notification. As you say, it could be slower.

In the July 16 exercise, were you -- were you there for the July 16 exercise?

A (WITNESS CHESNUT) Yes. I was in the PEMA headquarters.

Q You were? How many people did they then have to report but do not actually make them report? How many people do they then have to notify the four counties?

A (WITNESS CHESNUT) I cannot give you a specific

number. There -- there were a great number of people in the emergency operations center there.

Q That wasn't -- that was not typical of what it might be without advanced notification of an emergency?

A (WITNESS CHESNUT) I am not in a position to say whether or not that is typical, because I do not know the everday arrangement at PEMA?

Q Do you plan to try that drill without advanced notification?

CHAIRMAN SMITH: Haven't you strayed from your Contention and your cross-examination plan?

MRS. AADMODT: Well, as I looked through it while I was sitting here, I found that communications questions were interspersed. My husband had taken it sequentially from pages. And I felt that it was better in my being able to follow it and to bring it all together in the record to ask all the communications questions.

CHAIRMAN SMITH: These are still communications questions?

MRS. AADMODT: This is all communications. And then there are two -- about four other categories, and I have drawn the questions together in each case. And I added -- this was an add-on.

I was just wondering, sitting here listening these days, what had been learned. I read through the drill, and

I just wondered what Mr. Chesnut's feeling was about the drill. I have had some feelings that having advanced notification took away from the amount of information that we would have gotten from running the drill.

BY MRS. AAMODT: (Resuming)

Q My question was have you ever considered giving -- having a drill without advanced notification?

A (WITNESS CHESNUT) I -- I think Mr. Grimes would be the best one to answer that question.

A (WITNESS GRIMES) In general, our guidance indicates that periodically there should be drills or exercises conducted during off-duty hours.

There are different types of T notification. If everyone knows that an exercise is to start on a particular day at a particular hour and they all preassemble, that is one kind of prenotification. Usually, what happens in even an exercise that everyone knows is going to happen, is that people are told not to report to their duty stations until called.

Q I could not hear you.

A (WITNESS GRIMES) People are told not to report to their duty stations until called during the exercise, even though they may know what the day of the exercise is. And that does simulate how fast people are available.

In addition, it is my opinion that over the plant

lifetime of some -- an occasional totally announced drill might be appropriate, but by and large, if you combine the sort of drill I described where people do not report to their duty stations until called with communications drills that are totally unannounced, in other words, you check to see if people are available to report but do not actually make them report, then you -- you have determined whether or not your organization will actually function an you can take corrective measures if you find that people are not available at certain times.

Q I was involved in some -- in a study of civil defense leaders, civil defense -- I do not know what you would call it -- but in every community, in how -- how many could be notified at any particular hour of any particular day of the week. And I am just wondering whether, with advanced notification, you have a true picture of -- of your communication times delays, as if you did not have notification, you know.

MR. GRAY: Is there a question there?

BY MRS. AAMODT: (Resuming)

Q I think you can say do you think we have a true picture of that kind of thing?

A (WITNESS GRIMES) I think the exercises and drills that are generally called for would give us a good picture, but I cannot testify as to the details of those off-site

plans. And I think we will ask the Federal Emergency Management Agency to speak specifically to the off-site provisions.

Q On information to the public -- this is page 35, question 43A -- the last -- the last line in the paragraph beginning "However," please elaborate on similar arrangements may be negotiated outside the NRC regulatory process for other public authorities.

CHAIRMAN SMITH: You see, one of the reasons why I favored giving them a copy of your cross-examination plan is that you do not indicate clearly that you are referring to quoted material. It is not -

MRS. AADMODT: I am sorry. I am sorry. I will do that, Chairman Smith.

BY MRS. AAMODT: (Resuming)

Q This is the last line on page 35 --

A (WITNESS GRIMES) Yes, we have that now.

Q -- of the paragraph beginning, "However, there are no," it says, "It should be noted, however, that all unplanned releases of whatever size are reported to the NRC. Similar arrangements may be negotiated outside the NRC process for other public authorities."

Could you elaborate on that and say why has this arrangement been made?

A (WITNESS GRIMES) Well, the NRC --

Q Maybe it is a lack of an arrangement. I perceive it as a lack of arrangement for other public authorities to receive --

A (WITNESS GRIMES) What we require is that those releases of safety significance or potential safety significance which fall into the four emergency classes be reported to off-site authorities.

However, if there are small releases which do not exceed the operating limits, but are nevertheless planned, our regulations, our emergency planning regulations, do not require that that sort of release be reported to off-site authorities, because no action on behalf of the public is required.

Q Not even protective action?

A (WITNESS GRIMES) No.

Q It is not allowed then either?

A (WITNESS GRIMES) Because the releases are smaller than those that would be allowed during normal operation anyway. The only difference is between planned and unplanned small release.

Q I see. So perhaps you could comment on a statement Mr. Zahler made yesterday that he was not aware of routine releases.

MR. ZAHLER: That was not my statement, Mr. Chairman.

MRS. AAMODT: Wasn't it -- could you -- are not -- routine releases did not occur with every startup or shutdown or every transient? I think that was my question. Was that the question, Mr. Zahler? Do you remember?

MR. ZAHLER: I cannot recall exactly. But I think what I said was that during a startup or shutdown of a plant, there may be releases, there may not be releases; and I did not know one way or the other whether a release happens, it may vary from situation to situation.

BY MRS. AAMODT: (Resuming)

Q Could you comment on that, Mr. Grimes? Is that your perception that radiation may or may not be released?

A (WITNESS GRIMES) Yes.

Q You mean there can be startups or other -- shutdowns or other transients where there is no radiation released at all?

A (WITNESS GRIMES) Yes.

Q Is that a measuring capability, or is that really no radiation?

A (WITNESS GRIMES) The releases that occur are the result of equipment operations and would depend on not only the particular sequence of operations that was taking place, but would also depend on the condition of the plant in terms of whether there was radioactivity in process systems. And the first time a new plant is started up, there is no

radioactivity outside the fuel to be released.

So I would have to -- have to agree that you cannot make a categorical statement about there always being releases during any plant operations. On the other hand, it is not unexpected that small releases occur during plant operation, including startups and shutdowns and transients.

Q I understand the -- the -- the difference in the composition of the releases of the plant life, with more krypton being released the older the plant is. But in -- within most of the life of the plant, other than, say, initially -- initial startup of the plant -- is there radiation released or not released during transients, excluding the initial years?

A (WITNESS GRIMES) I cannot make a general statement. But if you wish to ask the question about a particular transient, we could assume that there is release, if you like, for the purpose of the question.

Q No, I would not be able to do that.

CHAIRMAN SMITH: Well, what -- where are you going with this line?

MRS. AADMODT: I am here on page S-2 and -- which is a question which says did the analysis on -- this is page 36, question 44A. I think it is. Then in the center of that paragraph it says such routine releases were previously analyzed during initial licensing of the facility and found

to have no significant impact. And this is referring to, I believe, to routine releases.

BY MRS. AAMODT: (Resuming)

Q The question is is the amount -- acknowledge the possiblility of fetal or gene damage from routine emissions?

A (WITNESS GRIMES) There are two types of analyses done with respect to routine releases. One is a review to establish that the releases will be within the Commission's regulations. Those regulations are, in turn, set based on information from radiation councils that have discussed the impact and effects of radiation on all types of damage to humans. Based on those reports and recommendations, these regulations are set. In that sense, it takes that into account.

There is also an environmental impact statement published which for a particular plant, as I recall, discusses numbers of expected public health impacts from releases during the plant lifetime.

So I think that, indeed, those types of impacts are considered in licensing the plant.

Q But, Mr. Grimes, are you aware of the -- the NRC booklet that analyzed the doses after the TMI-2 accident? It is a thick orange book.

A (WITNESS GRIMES) I do not know if you are --

Q "Dose to the Population, it says, "in the Vicinity of Three Mile Island, I believe, was the title.

A (WITNESS GRIMES) I recall some such report. I --

Q I am sorry I did not bring it. I meant to find it in my own books at home. But perhaps you would remember a footnote there on one of the pages, which says that the effects of low-level radiation are unknown and that a linear relatiorship which was presumed to have existed is no longer believed to exist.

So that are these data that the effects of routine releases based on -- are they -- do you believe that they are valid in that that footnote is in an NRC document as recently as two years ago?

MR. GRAY: Mr. Chairman, I object to the question. Ms. Aamodt is referring to an unidentified document that the witness -- it is not -- has not been identified to him. He is being asked to present a view on that unidentified document and a characterization of what that document says which we are not sure of.

I just believe it is an improper question.

MRS. AADMODT: Is the document here? I know where the page is if it is here. Or perhaps I could bring it on Tuesday and ask you that question. You would have time to check on it, too. Would that be possible, Mr. Smith?

CHAIRMAN SMITH: I don't know. We are not going

to go very far along that line. I mean this is emergency planning testimony. The statement is made to explain the Commission's regulations, and we are not going to go very far beyond the Commission's regulations. We are not going to go at all beyond the Commission's regulations.

(Laughter.)

CHAIRMAN SMITH: I do not think it is going to take you very far. The regulations cover the releases which may be made and the reporting of them. And the answer is "No."

BY MRS. AAMODT: (Resuming)

Q All right. Are you satisfied with these -- with the studies on analyses, Mr. Grimes?

A (WITNESS GRIMES) What?

Q Are you satisfied with the studies that have analyzed the routine releases and find no significant impact?

MR. GRAY: Objection. Mr. Grimes' satisfaction with those or with any -- any studies that have formed the basis for the regulations are irrelevant.

CHAIRMAN SMITH: Well, it really is irrelevant, although he has no choice, really.

MRS. AADMODT: Okay.

CHAIRMAN SMITH: If he wants to continue working.

(Laughter.)

CHAIRMAN SMITH: So really, I think you have gone beyond the purpose of his appearing here then.

MRS. AADMODT: I am trying to develop something here, and it is the end of the day.

CHAIRMAN SMITH: Well, yes, it is. I think maybe we had probably -- would do better after the weekend. We will start fresh then.

MRS. AADMODT: All right. I will try to arrange these in more sequential order then.

CHAIRMAN SMITH: Sure.

MRS. AADMODT: Chairman Smith, could I possibly suggest, since we have two days off, that the -- I hope this does not seem abrupt or out of place, but I have had a great deal of difficulty hearing in this hearing. And today, I noted just the first two hours this morning, I believe, there were seven times when the people not being able to understand was -- interrupted the hearing.

And remember, if you know -- if you are very well acquainted with the language, you do not need as many words to comprehend it. You can pick up maybe 50 or 60 percent of the words and still understand what is being said. But this is particularly difficult for someone in my situation --

CHAIRMAN SMITH: What are you requesting?

MRS. AADMODT: -- who is trying to understand both legal language and technical language and communicate --

understand it on this level.

So I am asking if the PA system, what is wrong with it, could be investigated.

CHAIRMAN SMITH: Yes, we have, we have spent a lot of time and effort to try to improve it. We have requested and received some attention to it. I am afraid it is the best we can do. But you are exactly right; it is difficult. You have to pay close attention, and you reported earlier that you have a hearing defect. So you take anyplace in the room that you want to that you think will accommodate your problem.

MRS. AADMODT: But, Chairman Smith, I do not have a serious hearing defect, I have a slight one. But I feel that -- that it is rather discriminatory against those who cannot -- who aren't -- who need every word in order to understand, rather than those who need maybe every other word.

CHAIRMAN SMITH: There is nothing I can do about it, Mrs. Aamodt. Nothing. We have tried. We have exhausted all our resources, and we just -- certainly, not in time for Tuesday morning. I doubt if we will ever get the system improved in time for this hearing.

MR. GRAY: Mr. Chairman, I will ask our witnesses, Mr. Grimes, to get closer to the microphones, and Mr. Chesnut to get farther away next week. Maybe that would

help a little bit. I don't --

MRS. AADMODT: Today has not been as bad as some other days.

CHAIRMAN SMITH: We will adjourn now, and we will meet Tuesday at --

MS. GAIL BRADFORD: Excuse me. Would you --

CHAIRMAN SMITH: All right.

MS. GAIL BRADFORD: Would you set a time for argument on the emergency planning briefs?

CHAIRMAN SMITH: We did not anticipate necessarily there would be any argument on them.

MS. GAIL BRADFORD: Sir, when we first talked about it, you said there would be both opportunities, and when I was just looking back at the transcript from March 3, in the morning, and Licensee had no objection to setting a time for argument.

CHAIRMAN SMITH: Did you file --

MS. GAIL BRADFORD: It was dropped after that.

CHAIRMAN SMITH: Did you file your written response?

MS. GAIL BRADFORD: No, sir. I was counting on the opportunity which you said today we would have for argument.

CHAIRMAN SMITH: So you believe that we promised you argument, an argument on it? I thought that the

arrangement was that we would look at the written responses, and if they required argument -- but Dr. Jordan thinks that you are correct. You were given the option.

MS. GAIL BRADFORD: And I am not suggesting we do it now, sir.

CHAIRMAN SMITH: Okay. Well, then, let's set arguments at 10:00 a.m. Tuesday morning.

MS. GAIL BRADFORD: That is fine with me if it is fine with other parties.

CHAIRMAN SMITH: Arguments are not necessary if parties want to rely on the written responses.

MR. ADLER: It was my impression that the arguments would be based upon the reply briefs if we could have an identification of what issues are going to be argued. There is a multitude of issues that could be argued.

CHAIRMAN SMITH: Yes, I know. As I recall, the evolution of it is that you were concerned about the burden of preparing a written response and you wanted the option for oral argument.

MS. GAIL BRADFORD: No, sir. What my problem was is that I wanted the option for oral discussion of this.

CHAIRMAN SMITH: Well, I do not know. I do not know how to handle it, other than to set a time for argument and hear what she has to say. I am sure you are prepared --

you have given it a lot of thought, and I am sure the parties are prepared to handle what comes along or at least state your position on what comes along.

MS. GAIL BRADFORD: Sir, we also objected to the Licensee and the staff and the Commonwealth presenting a common brief without even consulting us in that process.

CHAIRMAN SMITH: I am not aware that they are required to.

MS. GAIL BRADFORD: Well, sir, we stated it is a problem for us. And we wish to have an opportunity to discuss this.

CHAIRMAN SMITH: Okay. Well, we will set that down for 10:00 a.m. Tuesday. You can make objections and state your position. And may I ask that you as -- bring that to the attention of all the Intervenors who are interested in this subject matter. I think you are all here now except -- I guess you are all here.

MS. GAIL BRADFORD: Well, Newberry -- but yes. Yes, sir.

DR. JOHNSRUDE: Mr. Chairman.

CHAIRMAN SMITH: Yes, ma'am.

DR. JOHNSRUDE: Do I understand in this regard that the argument will be on the reply briefs that are due today?

CHAIRMAN SMITH: Well, no, they will not be on the

reply briefs due today. Inasmuch as we gave the option, I guess they an be on the original briefs in lieu of reply briefs.

DR. JOHNSRUDE: But there will be opportunity to address those reply briefs if they are being or have been filed?

CHAIRMAN SMITH: Assuming you get them. I do not know. That is not the purpose of it. The purpose was not to have a third round of argument. The purpose was to have oral arguments in lieu of written arguments unless the Board felt that there was additional need after all the reply briefs were received for argument.

So if you have -- if you receive them and you want to raise it, that would be fine. But we are not going to wait until they are all received.

MR. ZAHLER: Mr. Chairman, I have two comments. One, since Mr. Sholly did file an initial brief and he is not here, just so there is no ambiguity, I would request that the Board, since Mr. Sholly has been coordinating with Ms. Bradford, request that Ms. Bradford inform Mr. Sholly that argument will be held on Tuesday, so that he at least has information on that. I don't know whether he is planning to attend or not. But he is one party who is not here at this time, and he did file a brief of his own on that issue.

Secondly, if the Board directs argument Tuesday morning, Licensee will obviously participate. I do want to state for the record, however, that there was more discussion with respect to this -- two weeks ago, when the panels first started and we talked about reply briefs, and it was Licensee's understanding that the Board would decide after it received reply briefs whether there was a need for oral argument and that there was not an option open to any party to have oral argument on it.

Obviously, if the Board directs oral argument, we will participate. But Licensee's view was that the state of the record was not that ANGRY had an unequivocal right to oral argument.

MS. GAIL BRADFORD: Sir, I refer to transcript on that.

CHAIRMAN SMITH: I have no independent memory. My own memory was along your line. But Mr. Brenner and Dr. Jordan have a differing memory. So we have to go to the transcript.

MS. GAIL BRADFORD: 12,722.

MRS. AADMODT: Chairman Smith, could I, while they are looking that up, could I ask you have management issues been closed so that findings are due on them in 30 days? And if so --

CHAIRMAN SMITH: Management?

MRS. AADMODT: No.

CHAIRMAN SMITH: No. Findings are not scheduled for management. Findings are scheduled -- we have not issued a formal order on it, but we will now. Findings are due on plant design and modification issues, one, either April 30 or May 1. There has been no time set yet for findings on any other issues.

MRS. AADMODT: All right. I had -- my husband had understood when we got a book from Mr. Jordan, this book, that they were due within 30 days of the last day that I appeared here on that Contention 2 on training and testing. But that is not true?

CHAIRMAN SMITH: No.

MRS. AADMODT: All right.

CHAIRMAN SMITH: Findings -- we will issue an order on findings other than findings on plant design and modification at about the close of the hearing. But it will be somewhat in line with the memorandum that we sent to the Commission, or the schedule. And that is, 30 days from the end of the hearing.

MRS. AADMODT: Can you submit yours earlier?

CHAIRMAN SMITH: Yes.

MRS. AADMODT: You can do that? Right. Okay.

(Laughter.)

CHAIRMAN SMITH: Yes, ma'am. Most people, in all

honesty, prefer not to. But you certainly can.

MRS. AADMODT: I can understand they want to get everything out of the record that they can, yes.

(Board conferring.)

CHAIRMAN SMITH: I can't -- we cannot find it, Mr. Zahler. But upon the representation by Ms. Bradford that she has been led to believe that she did not have to file a written response, I think we should let her answer orally. I really think, with the initial briefs and the reply briefs that I have read, I think there has been a lot of discussion on it. But I -- but I -- if she wants an opportunity to argue, we will set a time for Tuesday morning at 10:00.

MR. GRAY: Mr. Chairman, is it possible to schedule the argument for later in the day so that we might finish with this panel?

CHAIRMAN SMITH: That -- I do not know if we can. But I want you to know this, that the argument is going to be -- is going to be concise and is going to be narrow and to the point, and it should not take long.

And I would very much urge no one to repeat what is in the written briefs. We have read them, and we will read them again, what is necessary to be said orally. But it will not take long.

I think it might be helpful to have all the information in on that.

Okay, if there is nothing further, then we will adjourn until 10:00 a.m., Tuesday.

(Whereupon, at 6:13 p.m., the hearing was adjourned, to reconvene at 10:00 a.m. Tuesday, March 17, 1981.)

NUCLEAR REGULATORY COMMISSION

This is to certify that the attached proceedings before the

in the matter of: METROPOLITAN EDISON COMPANY (TMI UNIT 1)

Date of Proceeding: March 12, 1981

Docket Number: 50-289(Restart)

Place of Proceeding: Harrisburg, Pa.

were held as herein appears, and that this is the original transcript thereof for the file of the Commission.

David S. Parker

Official Reporter (Typed)

(SIGNATURE OF REPORTER)