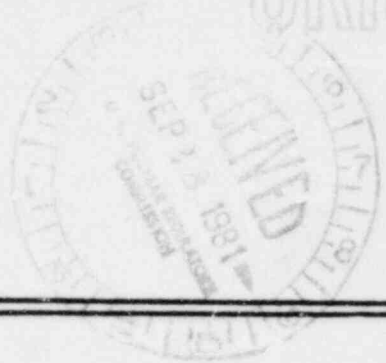
NUCLEAR REGULATORY COMMISSION



In the Matter of:

South Carolina Electric & Gas Company)
)
Summer 1)Docket No. 50-395 OL
)

DATE: Septmber 29, 1981 PAGES: 4502 thru 4679

AT: COLUMBIA, SOUTH CAROLINA

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UNITED STATES OF AMERICA

BEFORE THE

NUCLEAR REGULATORY COMMISSION

In the Matter of:)
)
SOUTH CAROLINA ELECTRIC & GAS)
COMPANY) Docket No. 50-395-OL
)
Summer Nuclear Station, Unit 1)

Room 149
Rembert Dennis Building
Columbia, South Carolina

Thursday, September 24, 1981

PURSUANT TO ADJOURNMENT, the above-entitled matter came on for further hearing, at 8:30 a.m.

BEFORE:

Board Members:

HERBERT GROSSMAN, Esq., Chairman
Administrative Judge
Atomic Safety and Licensing Board Panel
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

GUSTAVE A. LINENBERGER
Administrative Judge
Atomic Safety and Licensing Board Panel
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

FRANK HOOPER
Administrative Judge
Atomic Safety and Licensing Board Panel
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

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APPEARANCES (Continued)

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I N D E X

WITNESSES:	DIRECT	CROSS	REDIRECT	RECROSS
Panel of: KENNETH BEALE) and) LEWIS STORZ)	4504	--	--	--
Panel of: BRIAN K. GRIMES) and) THOMAS K. KEVERN)	4568	4658	4661	--
Panel of: THOMAS C. NICHOLS, Jr.) and) WILLIAM C. MOORE)	4663	--	--	--

EXHIBITS:	IDENTIFIED	RECEIVED
Applicant's:		
No. 39	4506	4508
No. 40	4666	4666

PROCEEDINGS

8:50 a.m.

JUDGE GROSSMAN: The 16th day of hearing is now in session.

Mr. Bursey, continue with your cross-examination.

WHEREUPON,

KENNETH BEALE
AND
MICHAEL F. STORZ

were resumed as a panel of witnesses on behalf of the applicant, and having been previously duly sworn, were examined and testified further as follow

MR. KNOTTS: If I may interrupt Mr. Bursey's cross-examination, Mr. Beale has brought to my attention that in going over his numbers last night he came up with some minor corrections, but nevertheless for the sake of accuracy we would like to make them, and with Mr. Bursey's indulgence and the Board's indulgence I'll ask him to proceed.

JUDGE GROSSMAN: Mr. Beale.

MR. BEALE: Yes. In the scenario that I gave, in making sure because of Mr. Bursey's questions last night, of accuracy, the four numbers that I gave, I would like to correct three of those.

The time which we had was 1345 was the corrected number, and 1515, I would like to change those to 1340-- the original number was correct -- and change the 1517 to 1527.

I would repeat that if you would like to clarify. The 13 --

JUDGE GROSSMAN: Yeah. Before we go further, we're not going to make those corrections on the original which I recall would be Applicant's Exhibit 38.

MR. KNOTTS: That's right. They will just be in the record.

JUDGE GROSSMAN: We might just as well have Exhibit 39 unless you have some other exhibits and we're putting you out of order --

MR. KNOTTS: No, no. That's fine, Judge.

JUDGE GROSSMAN: I think it would be clearer if we put a corrected Exhibit 38 being Exhibit 39 in.

MR. KNOTTS: Very well.

(Applicant's Exhibit Number 39 was marked for identification.)

JUDGE GROSSMAN: You may continue.

MR. BEALE: Thank you.

Okay. And then the next numbers are the last entries on the scenario. Where I had the 1425 that's correct, it would remain the same number, and the 1548 number now changes to 1613.

The numbers now, the corrected ones wil read for the entry Complete Evacuation of five miles downwind will now read 1340 and 1527;

For complete evacuation of ten miles downwind the

corrected numbers now are 1425 to 1613.

JUDGE LINENBERGER: Excuse me now. Now, complete evacuation of five miles should be what?

MR. BEALE: They should be as stated, 1429 and 1626.

JUDGE LINENBERGER: As stated.

MR. BEALE: Right.

JUDGE LINENBERGER: Okay. And then the last two, complete evacuation of ten miles downwind once more?

MR. BEALE: Okay. It would be 1425 and 1613.

JUDGE LINENBERGER: Okay.

MR. BEALE: I apologize for the incorrect numbers.

MR. KNOTTS: Mr. Beale, as I recall, you compiled the corrected numbers while Dr. Kaku was testifying when the material was in your lap.

MR. BEALE: That's correct.

JUDGE GROSSMAN: Proceed, Mr.Bursey.

CROSS-EXAMINATION (Resumed)

MR. BURSEY: Mr. Beale, one question just about the times we've been going over. Is it correct as I'm reading on the corrected sheet at 1626 for complete evacuation of five miles?

MR. BEALE: That's correct.

MR. BURSEY: And 1613 for complete evacuation of ten miles?

MR. BEALE: That's correct, downwind.

MR. BURSEY: So then it takes less time to evacuate ten

miles than it does five miles?

MR. BEALE: Yes, because you've got to understand you're talking from five to ten miles, they're going on simultaneously. Okay. So it's going to take a shorter time for people from five to ten to leave than it would be all the way within the five miles.

JUDGE GROSSMAN: Mr. Beale, when you're talking about downwind, you're talking only about a few sectors; is that correct?

MR. BEALE: That's correct.

MR. KNOTTS: Is Exhibit 39 admitted, Judge? I guess I never offered it.

JUDGE GROSSMAN: It is with the -- Is there any objection to admitting Exhibit 39? Mr. Knotts, you will supply the parties and the reporter with copies?

MR. KNOTTS: Yes, sir.

MR. BURSEY: No more objections than there were to Exhibit 38 which I would still leave standing if the purpose of the introduction of 39 is for the changes.

JUDGE GROSSMAN: All right. Then it is admitted subject to of course your objections.

(Applicant's Exhibit Number 39 was received into evidence.)

MR. BURSEY: Mr. Beale, you mentioned Note Pad. Can you tell me more what Note Pad is?

MR. BEALE: Note Pad was a -- from my understanding was a system set up within the Institute of Nuclear Power Operators for use in exchange of information between the nuclear industry, preferably utilities.

There are many variables on the Note Pad system for use by certain individuals within a utility. One of those would be an emergency planner, so if I myself had a question to inquire about what certain utilities were doing about a certain item, then I would enter that on Note Pad, and then I would get information back to me either through telephone communications or through the Note Pad system itself.

MR. BURSEY: Do the county Office of Emergency Preparedness people subscribe to Note Pad?

MR. BEALE: No, sir.

MR. BURSEY: Is that a subscription?

MR. BEALE: No.

MR. BURSEY: So I believe Note Pad came up as a question that was looking for something analagous to the Three Mile Lessons Learned, technical updates for county people.

Do you know something that is analagous now to Note Pad for evacuation planners on a county level?

MR. BEALE: I would say from a county standpoint I don't think there is anything like the Note Pad system, but I think since TMI that counties have been much more close in relationship with state officials than they were prior to TMI.

In other words, to say that there is more of a closer liaison or working relationship than it was with TMI.

MR. BURSEY: Mr. Beale, I believe you testified yesterday that in the May 1st drill there was a 40-minute time delay in the activation of the EBS.

MR. BEALE: Correct.

MR. BURSEY: And that if the main electrical power source or the sole power source for the sirens was not functional that it might take an additional hour for emergency personnel utilizing vehicles to drive around sounding their sirens to notify people of the need to evacuate. Is that correct?

MR. BEALE: Correct.

MR. BURSEY: Well, that -- I don't think then -- I don't think that it is really unreasonable for us to postulate that additional hour and forty minutes could happen to be added onto the time frame, and that would put us -- if 1800 is the time when the plume reaches the edge of the ten-mile zone, that additional hour and forty minutes would put us a few minutes into the red zone, and I -- Is that correct?

MR. KNOTTS: If that's a question, I object to the --

JUDGE GROSSMAN: Sustained. Mr. Bursey, rephrase that so it is a question and not a statement by you.

MR. BURSEY: Mr. Beale, if the time delays that we mentioned of sirens not being operable and the EBS not going right on time were to give us an hour and forty minute delay,

what time would that mean that the complete evacuation of the five-mile downwind sector would be completed?

MR. KNOTTS: I take that to be a hypothetical question.

JUDGE GROSSMAN: I see nothing wrong with the question. You can answer it.

MR. BEALE: I would like -- I really do not understand the hour and forty minutes, but in response to the question my assumptions went to the scenario that's in Paragraph 14. Nowhere in Paragraph 14 did it indicate complete breakdown of public alerting system or EBS.

But putting that aside, one must understand that we are talking of certain sectors. We're not talking about a total ten miles or a total area around Summers, we're talking about individual sectors.

I gave you yesterday my off-the-top-of-my-head assumption that it would take approximately 60 minutes for local sheriffs, local emergency vehicles to get out into the location and sound their sirens. That number may be better, it may be greater.

MR. BURSEY: Yes, sir. The question was that if it takes an hour and forty minutes longer, what time is the five miles -- according to your scenario is the five miles evacuated?

JUDGE HOOPER: Excuse me. Was -- yesterday was Mr. Bursey's hypothetical case, which I'm not sure he's talking about hypothetical or what he's talking about -- was this with both

the sirens out and the radio out? I thought it was only with one out.

MR. BURSEY: That's correct.

JUDGE HOOPER: Mr. Bursey, you're changing your grounds a little bit this morning. You're saying this is a different case now, both the sirens and the radios are out. Is this correct now you're changing the hypothetical?

MR. BURSEY: No.

JUDGE HOOPER: And then yesterday as I recall you were talking about the radio was still on, the sirens were off.

MR. BURSEY: Dr. Hooper, perhaps we have a different understanding of how it works.

I think it is extremely gracious to think for a minute that if the electricity were off that the radios would even work, but given the fact that they are working and just the sirens were down, if the emergency personnel have to ride around and tell people to go turn their radios on and the radio broadcast system doesn't come on, or you've got a forty-minute delay before it comes in and the sirens aren't sounded for forty minutes --

JUDGE HOOPER: Mr. Bursey, I'm not interested in your testifying, I'm interested in you telling us again what your hypothesis was yesterday when he gave you that number that he just spoke of.

I'm not interested in you telling me a lot of other details; I am interested in finding out what was said yesterday.

If we have to go back to the transcript --

MR. BURSEY: Dr. Hooper, I'm going to tell you what I said yesterday, and I'm going to repeat it very slowly for you.

Forty minutes after the EBS is supposed to be broadcast it broadcast; that is what happened May 1st, it's not an off-the-wall postulation.

At the point the county people -- okay, the siren is to be sounded, it takes an hour for the sirens to be sounded, not instantaneously across the evacuation zone as would happen with electricity, so we have an hour and forty minute, a very reasonable addition to this scenario, and that's my question what that very reasonable addition in time to this scenario would mean to the evacuation of the five-mile zone, so we would be adding an hour and forty minutes to that, and that's what I asked Mr. Beale.

MR. BEALE: May I comment on that?

JUDGE GROSSMAN: You can certainly answer the question, Mr. Beale.

MR. BEALE: First of all, as I stated earlier I do not understand the hour and forty minutes.

If Mr. Bursey is saying that from the time we initiate notification and the sirens in the ten-mile area are totally out and inoperable, and I indicated sixty minutes for use by emergency vehicles, he I think is assuming that at the end of that hour that is when you would broadcast the emergency broadcast

system.

I am saying no, you're not going to do that; you are going to initiate notification to the public yes, it's going to start and it's going to take an hour. At the same time you would notify the state, and the state would put on EBS to broadcast information to the public.

Granted, some of the people are not going to be notified because they haven't heard the notification to the public by use of sirens.

In reference to Mr. Bursey's comment that there is no power so how are radios going to work, most automobiles have radios, and I'm sure if people are in their cars they're going to listen to the radios and they're going to hear them, and they're going to be able to evacuate.

I mean we're picking situations here to where,yes, not all the people are going to get that word in that time frame of an hour, but I think assuming that the hour starts and we wait sixty minutes and then broadcast is not sound.

MR. KNOTTS: To the extent it asks the witness to assume a forty-minute delay in the case of a general emergency which is the scenario we're dealing with, it's asking the witness to assume facts contrary to his own testimony and for which such that scenario there's no evidence.

JUDGE GROSSMAN: Well, we are going to allow variations on the basis of other testimony here. These are hypotheticals

based on what might happen, and there's nothing improper about that that the Board can see, and whatever qualifications a witness has to make with rega.d to the answers, that's his function.

Now, the point I understand is that using some variable that Mr. Beale brought up, the question is whether there are a few minutes in the red zone here. You know, I don't th ink that is a very difficult topic or outside the scope of what we're talking about now.

MR. KNOTTS: Judge, my point is that forty minutes based on the drill was for a case where there was a site emergency which Mr. Beale tesified about yesterday and indeed earlier.

We have here a general emergency where the state has to activate -- according to the director has to activate the emergency broadcast network within a shorter time, I believe the record will reflect fifteen minutes.

JUDGE GROSSMAN: We're not arguing the merits, but just the propriety of the question. I think the witness can clarify it much better than we are able to do here, so--

MR. BURSEY: I believe that my attempt to introduce what I consider to be some reasonable time delays to be anticipated into a scenario that would function the way the applicant suggests would broach no problems. That is what I am attempting to do, and I think it is necessary for me to put in the record at this point that Mr. Knotts' continued references to forty minutes and Mr. Beale not knowing what it is as being something

that has no applicabiility to this discussion, I would like to refer to the critique of the V.C. Summers exercise of May 1st which says that in that instance they were referring to a site emergency which was declared at 10:15 a.m, but the EBS was not activated until 10:50, thus the required time to notify the public was greater than the 15-minute criterion.

What this exemplifies is that they have 15-minute criteria, and they didn't meet it, so we could postulate this could happen again.

JUDGE LINENBERGER: Excuse me. We cannot accept testimony from you. You're here to cross-examine.

The ruling went in your favor. Why don't you stop when you're ahead and go on with the questioning, sir?

MR. BURSEY: Judge, I don't -- I mean I hear you, I appreciate it, but when I think that there's something that, just like Mr. Knotts does, that is put into the record that reflects something that is not based on fact, and which my lack of legal understanding I have nothing left to do but to try and clarify the point.

I'm not going to let anything slide at this point. I really think I am getting treated in a slipshod fashion on the issue of Mr. Beale's testimony.

JUDGE GROSSMAN: Mr. Bursey, just continue with the questions now, and both Mr. Bursey and Mr. Knotts and all other counsel please refrain from testifying. Let's just have

questions of the witness.

MR. BURSEY: Mr. Beale, I will ask you the question as to how much time it would take and what time it would be to completely evacuate the five-mile zone given the hypothetical time addition of an hour and forty minutes, that would be 16 -- it would be 1806, so 1806 would be 6:06 in the vernacular of Dr. Kaku's scenario, either way we're six minutes into the red zone. Do you agree?

JUDGE HOOPER: Mr. Bursey, you have to define red zone. There's no one here who knows what you're talking about when you say red zone. Would you please define it?

MR. BURSEY: Six minutes over the time alloted for the complete evacuation of the area affected by the plume, sir.

MR. BEALE: Could I have your numbers once again?

MR. BURSEY: An hour and forty minutes added to your 1626.

MR. BEALE: Correct. You said that would be at 1806?

MR. BURSEY: Yes, sir.

MR. BEALE: Based on those numbers, yes, that number would be correct.

MR. BURSEY: And so that would not -- that would be six minutes longer than necessary? Excuse me. I mean six minutes -- you would be lacking six minutes needed to evacuate the complete area?

MR. BEALE: If you're saying based on Paragraph 14

assuming 1800 hours -- Okay, 1800 hours, you would have the postulated release at the ten-mile area, six minutes would have gone over that time frame if that's your question, yes, but I am not saying that people are, you know, not evacuated.

MR. BURSEY: No, sir, but as an emergency planner don't you feel that -- I mean this is not much of a safety margin that we're dealing with her, is it?

MR. BEALE: No, I don't agree with that, but --

MR. BURSEY: You think that the safety margin for responding to a loss of coolant accident as postulated here is comfortable?

MR. BEALE: I think from -- you mean from the standpoint of my -- If you're assuming that based on my summation or summary of my scenario, I'm saying based on Paragraph 14 these are the actions that would take place based on the planning that we've done, not only utility-wise but state and local, and I think the numbers are correct.

MR. BURSEY: Mr. Beale, do you think that there is any time for error, any significant amount of error in responding to an emergency of this kind?

MR. BEALE: If you're asking if -- yes, I do think there is some error possibly in the numbers. Not errors in the numbers, but errors from the standpoint that yes, as we addressed yesterday that maybe some people would not be evacuated if that is what you're driving to.

MR. BURSEY: Yes, sir, that is a point, a point of margin of safety. There is very little margin of safety in a scenario like this, isn't there?

MR. BEALE: No, I don't agree with that.

JUDGE GROSSMAN: Mr. Bursey, please move on.

(Pause.)

MR. BURSEY: I think that's all the questions I have.

JUDGE GROSSMAN: Fine. Mr. Goldberg.

MR. GOLDBERG: We'll defer to the state for the time being.

JUDGE GROSSMAN: What?

MR. GOLDBERG: We'll just defer to the state.

JUDGE GROSSMAN: Okay. You're not postponing it?

MR. GOLDBERG: We'll just reserve cross-examination. I'm not sure that we have any questions.

JUDGE GROSSMAN: You prefer the State to go first?

MR. GOLDBERG: Yes.

MR. WILSON: We have no objection, Mr. Chairman.

Mr. Storz, yesterday you mentioned a decision that really wasn't a decision at some point where your -- as far as declaring a general emergency I believe it was. Do you recall that testimony?

MR. STORZ: Yes, sir.

MR. WILSON: Can you explain what you meant by that? I understood later on in your testimony there was an indication

there was a decision that had some discretion involved I think from your shift technical, or site supervisor, excuse me.

MR. STORZ: First let me briefly give you an idea who's on-shift and what the responsibilities are.

MR. WILSON: That's fine. Thank you.

MR. STORZ: There is a shift supervisor who is the senior management individual at the plant routinely. He's in charge of the operations of the plant, that's his assigned responsibility.

MR. WILSON: Is that your responsibility, or are you training someone to assume such responsibility?

MR. STORZ: The individuals who work for me, and in my capacity as their supervisor I could also perform that function.

MR. WILSON: The people that work for you in the heirarchy?

MR. STORZ: There is an individual 24 hours a day that is placed in charge of the facility operation. He's called the shift supervisor. He has nine operational people in his crew, including himself, and we have approximately six other technicians including the shift technical advisor that would be performing functions on a 24-hour a day basis.

He delegates to the reactor operator at the panel -- we call this individual the operator at the controls -- the responsibility of monitoring the nuclear plant and the steam plant. This is the individual that is focusing his attention

on the actual performance of the equipment.

We also have another supervisor who's called the control room foreman who directs the technical activities of the facility.

There are other operators assigned jobs to monitor equipment out in the plant, and we have several backup operators to assist during casualties in the control room.

There is a designated operator at the controls. This is the individual who would respond to the plant during the emergency. He will by the very fact that he's there on top of the situation be making recommendations to the control room foreman and ultimately to the shift supervisor who's not bound to the control room until the emergency starts. At that point he returns to the control room.

Now, the shift supervisor could be as many as three or four minutes from the control room out in the facility. During this time period when the event is initiated the control room foreman who is bound to the control room and the control room operator will be making these determinations which I discussed yesterday.

By the time the shift supervisor -- let's assume the worst case, he were out in the plant -- arrives in the control room, most of these determinations would have been made. They will make the recommendation to him.

If there is indication that we are into the emergency

plan, and that will be indicated by our emergency operating procedures which are clearly different from the emergency planning procedures -- these deal with hardware and reactions to indications coming into the control room. There are steps in those procedures which indicate to the operator that we are in the emergency plan.

Now, in another process of determining which level of emergency we're going to declare, that is where the shift supervisor now starts playing his role as the commander of the facility.

He takes the recommendations from the nuclear operator, reverifies them either through his control room foreman or by actual first-hand observation, and we're talking seconds basically on the type accident we are dealing with in this scenario, it's one of the more easily defined accidents, it's not settled and it's very spectacular. Clarification in this case is less difficult than in other cases that they could have used, so the decision-making process can go very rapidly, and utilizing the emergency action level guidelines that are part of the emergency plan procedures the shift supervisor arrives at the decision we're in a general emergency; he gets support from the other licensed operators who are equally qualified to make these decisions.

If the shift supervisor didn't arrive for some reason, the control room foreman would assume that responsibility and go

ahead and make the decision. That's all established through chains of command.

END OF A Does that clarify your question?

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MR. WILSON: So at that point whoever is in charge, the shift supervisor or the foreman, the Control Room will pick up the phone and call the State?

MR. STORZ: We have an individual, when the emergency plan is initiated, it would be announced and we have a team set up and one of the individuals is called a Communicator. His entire job is devoted to initiating calls to the local state and federal authorities and we have these what we call ring down phones or direct lines in the several facilities. Part of that notification is to notify our own PR people, our key management individuals and if we're activating our tech support center and the emergency off site center, those calls will be made at this time. The Communicator makes these calls under the direction of the shift supervisor.

MR. WILSON: Thank you. The focus I guess of my interest is on the delineation of these functions. When you're making determinations in the control room as to the nature of the accident, are you basically following a delineated series of steps once you make a determination, this much must flow from a certain point?

MR. STORZ: That's correct. There is no deviation from these clearly defined procedures. The training of the operator, especially since the heightened interest since Three Mile Island, is to respond in a very logical way so that you reduce the confusion that occurred at Three Mile Island. In other words, we

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clearly spell out the stage, which action, which emergency level we're entering, so that their teams can take appropriate action and a lot of this decision-making which was alluded to takes three and four hours has now been boiled down to a matter of minutes. You use these indicators, you make these decisions, there is very little deviation allowed, if any.

MR. WILSON: Thank you, Mr. Storz. That's all I have Mr. Chairman.

Did the staff wish to go now?

JUDGE GROSSMAN: Oh!

MR. GOLDBERG: Yes, we have one or two questions.

Mr. Bursey has drawn some comparison between the May 1 exercise and Dr. Kaku's postulated scenario and I think Mr. Storz in answering a question by Mr. Wilson may have touched on the comparison a little bit, but I wonder if either Mr. Beale or Mr. Storz could compare the progression of events from the May 1 exercise as they relate to the progression of events in Dr. Kaku's scenario from the standpoint of timing of the emergency response activities.

MR. STORZ: There is an individual whom I haven't mentioned in this chain of command who we call Management Duty Supervisor. He is a senior individual at the plant that gets a call any time any kind of problem is developing in the plant. During our May 1 exercise, for example, I was that individual, so I have firsthand knowledge of these time frames that we're talking

B3pw

about on the May 1 drill. The unusual event that was declared is quite different than the general emergency that was declared very rapidly in this scenario, a very slowly developing casualty instead of a casualty that was developed at the instant of initiation of the event. All right? Our mobilization of all the emergency teams was done in a very efficient and smooth way. It wasn't one that was implemented immediately, so we went into the first level emergency preparedness, the problem was escalated to a higher level, we went into that level and ultimately got to the general emergency.

Now the purpose of this was to demonstrate all aspects of the emergency plan, not just a finale called general emergency. In order to demonstrate these things, the scenario I believe was prepared in this manner. Now to compare the May 1 drill to this scenario is a very difficult thing to do because the activities on the May 1 drill were designed to test all aspects of the emergency plan. The first portion of it basically was in-plant to see how the operators would respond to the indicators being supplied, their decision-making processes would get them into the right emergency declaration. The general emergency and site emergency really begins to test the off site evacuation procedures and how the state and county officials respond. So making the comparisons back and forth without clear definition of the point you're trying to make is very difficult to sit here and discuss. I feel that the scenario that they provided was one that first is

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very easily identifiable by the operators and was just a real test of the entire plan from point one rather than slowly developing, getting people out on stage and then standing by for escalation, is what in my mind emergency planning is all about because as soon as you get an indicator that a problem is developing you initiate the organizations, you get them up to speed, you get the people on station and that was not the case in this scenario. We went from normal operation into the general emergency, which is very hard to make the comparison.

MR. BEALE: If I may comment, just to follow up on that. One of the things that's laid out as one of the items in our plan is drills and exercises and one thing that we have indicated in our plan is the fact that we must have a drill that will cover all facets of emergency planning. That includes the four classifications that we talked about, unusual event, an alert, site and then finally general emergency. To test all those capabilities, that is the purpose of why we went through the four on May 1. The time sequence is much different, as your question implies, from Dr. Kaku's paragraph 14 scenario. At some time I'm sure there will be times when we would test situations where we go either to a site emergency right away or whatever but for the purpose of the exercise on May 1, it was to cover all four classifications. So in reference to time, the one we did on May 1 was a much larger time frame. We were talking a total time frame of 16 to 17 hours of total emergency exercise

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time.

MR. GOLDBERG: Finally, Mr. Beale, do you have a copy of the Evacuation Time Estimates prepared by Wilbur Smith & Associates?

MR. BEALE: Yes.

MR. GOLDBERG: Would you turn to Figure 3 please?

(The witness complies.)

MR. GOLDBERG: Figure 3 is the population distribution within ten miles which was used yesterday as the basis for questioning of Dr. Kaku and other panelists. Would you tell me please in Sectors J and K, which are the sectors within which the hypothetical plume from Dr. Kaku's accident traveled, could you tell me how many residents there are within the two mile radius?

MR. BEALE: Zero.

MR. GOLDBERG: Thank you.

(Brief pause.)

JUDGE GROSSMAN: Mr. Storz, first of all could you give me again the title that you just referred to that you were -- in which capacity you were acting at that May 1 exercise? I didn't quite catch that.

MR. STORZ: We refer to it as the Management Duty Supervisor and there are five individuals at the facility that can perform that function, the Plant Manager and his four group supervisors, of which I am one. We act as advisors to the shift

B6pw

supervisors. We are contacted with a beeper system or we let the shift supervisor know where we are if we're off site. This is an assigned responsibility. Any time any kind of problem develops whether it relates to our licensed operations or just normal plant problems, we're contacted for advice. This may be far ahead of any type of accident that might be developing.

JUDGE GROSSMAN: Now when the shift supervisor makes the determination -- he is the one who makes the determination as to whether there's a general emergency, is that correct?

MR. STORZ: Yes, sir.

JUDGE GROSSMAN: Now does he make -- does his word go over what the Management Duty Supervisor says? Which one has the authority?

MR. STORZ: I point out in the scenario that we're dealing with that the Management Duty Supervisor would have been called in the emergency plan, there would not have been time for him to call that individual. He would carry out his responsibilities before making this call. I don't want to confuse the decision-making process. I brought up this point to point out that management, and I'm talking plant management, stays connected or coupled with the shift supervisor 24 hours a day.

JUDGE GROSSMAN: Well now let's say there was time for him to call, would he then have input into whether the general emergency would be called?

MR. STORZ: The Management Duty Supervisor, as part of

B7pw

our long range planning will probably be the Emergency Director that will man the Tech Support Center. In other words, when we initiate the emergency plan, if the plant manager is not directly available, one of these management duty supervisors acts as his alternate, as the emergency director, who ultimately comes in and mans the Tech Support Center. Does that help clarify his responsibilities?

JUDGE GROSSMAN: Beyond a certain point but it's before that point that I really am concerned and the point before which I'm concerned relates to declaring the general emergency and what input he has in the declaration of the general emergency or the decision to make -- to call it a general emergency. Now does he have any input into that?

MR. STORZ: In the scenario presented, he would not have had any input.

JUDGE GROSSMAN: Yes, but he didn't have enough time.

MR. STORZ: In the May 1 scenario, I will point out to you, that in responding to the call early in the unusual event where we don't establish the Tech Support Center, I arrived at the site while we were still in a declared state of unusual event. I could have, if I had chosen to, assumed the responsibility as emergency director.

JUDGE GROSSMAN: And then you would have been responsible for making the decisions?

MR. STORZ: Yes. That was in the slowly developing

B8pw

accident scenario. In a rapidly developing accident scenario, the shift supervisor is the emergency director and will make the decision.

JUDGE GROSSMAN: Well that creates a problem in my mind and I do want to explore it somewhat. It is very costly, is it not, to declare a general emergency, to the company?

MR. STORZ: I would view it more costly if we didn't declare one and there was a need for one.

JUDGE GROSSMAN: Okay, well let's say a general emergency is declared, what is the minimum that you would expect that the company would incur in the way of additional costs, that is costs over just continuing to operate as normal, as always is done.

MR. STORZ: Are you talking in manpower wages or --

JUDGE GROSSMAN: Well I'll let you tell me what you foresee as the immediate cost.

MR. STORZ: Well the immediate cost would be not unlike a normal work day. The individuals that are a part of our emergency response organization are the regular employees at the facility. Now there would be costs associated, I assume, and Mr. Beale may be better able to answer, in subsidizing the county and state. Now I don't know if we're in some way responsible for that or not. My specific responsibilities are dealing with emergencies inside the plant.

JUDGE GROSSMAN: Okay, let's leave the declaration of

B9pw

general emergency but -- well let me ask you whether that's tied in at all with what you do with regard to emergency actions taken in the control room. In other words, is there any tie-in with the declaration of a general emergency with how drastic the actions are that you may take within the control room as to the actual operation of the facility?

MR. STORZ: If I can refer to this scenario as an example, the scenario failed all of our safeguards equipment. Now at that point we had to make some serious decisions. As I mentioned in my testimony yesterday, one of our important jobs is to keep cooling to the core. We would attempt to restore in some form a portion of that emergency core cooling system, and those actions would be actions that the operations department of the shift supervisor and the operators would be directing the bulk of their attention, to get cooling restored to the core.

JUDGE GROSSMAN: Well let me ask you, does the fact that you may or may not declare a general emergency have any effect on whether you would take this action in regard to cooling the core?

MR. STORZ: Those actions would be spontaneous, that's part of our responsibility, to insure that we keep it cool.

JUDGE GROSSMAN: Well let me put it the other way then.

JUDGE HOOPER: Which actions, I didn't understand when he said "those actions".

MR. STORZ: The actions pertaining to protecting the core

B10pw

would be spontaneous.

JUDGE GROSSMAN: Now let me ask you the other way. Let's say you took actions to maintain the cooling of the core, an emergency action, does that in itself suggest to you to declare a general emergency?

MR. STORZ: The rules in 0654 are very explicit about how much time you have to debate that question and that's how Mr. Beale arrived at those two columns. There is a 15-minute period where the shift supervisor and the operators, if they can take corrective action, we would not have been in that particular category. If they could have restored the cooling we would have been in a site emergency, not a general emergency. That's the point you're trying to make, we are restricted by the times that have been established by the NUREGs.

JUDGE GROSSMAN: No, the question I really have is whether there is any inhibition on the plant operator from taking an emergency action because of the consequences that would be incurred by the company from taking that action. In other words, if you let's say SCRAM the system does that require that you then declare some sort of an emergency? That's just an example, or let's say you flood the system, does that then require that you take some sort of -- that you declare some type of emergency?

MR. STORZ: I'd like to point out that in the licensing process, it is emphasized very heavily that your first responsibility is to the health and safety of the public. The entire

B11pw

program of licensing operators sets them apart somewhat from the normal management pressure scheme. Their responsibilities are then very clarified during training. I think it is reinforced very strongly by letters that have been initiated by the executives of the company, called Executive Directives, which spell out very clearly the responsibility of a licensed operator and specifically the shift supervisor. Their -- in my mind there is very little hesitancy, if any at all, to declare a general emergency if the type indicators indicated in the scenario as presented were in our control. And I believe that the lessons learned at Three Mile Island and the flack that operators specifically got will not happen again.

JUDGE GROSSMAN: Okay, do you also understand my concern along those lines with regard to having a consultation or the possibility of deferral of decision to a Management Duty Supervisor, if one official is obligated to take the step that will be very costly to the company and to find a way to defer it to someone else with perhaps some further time going by. That may appear to present the problem of whether we're going to lose time in taking that kind of action because of the possibility of deferral. Do you understand the problem?

MR. STORZ: I understand your problem and I'd like to point out that from experience most conversations between a shift supervisor and the Management Duty Supervisor is an awareness conversation. The shift supervisor is the licensed senior

B12pw

management official at the facility. The Management Duty Supervisors are key plant supervisors, group supervisors and the plant manager. In several cases they are not licensed, they are being made aware that they are going to be involved in the continuation of our emergency plan, they are part of our emergency plan. It's a consulting awareness approach so that if he got called to the site, he's already thinking about the problems that he's going to be faced with when he arrives there.

MR. BEALE: One thing -- could I comment?

JUDGE GROSSMAN: Sure.

MR. BEALE: I think from your questioning that one must look at that from the emergency planning standpoint and the training that we have given our people that it is pretty much -- I think following along with Mr. Storz's comment that shift supervisors understand their role and they know that based on an accident scenario such as Dr. Kaku, I don't think there would be any hesitation at all for them to declare because the planning basis and procedures dictate that he must do that.

JUDGE GROSSMAN: Well we're not only concerned with Dr. Kaku's scenario and I understand the point you're making and it is not a very subtle form of accident, but there are other sequences that you've indicated are perhaps more likely in which there is a possibility, where there is more judgment that has to be used in taking remedial action both within the control room and as far as declaration of general emergency and the question is

B13pw

how well defined are the roles so that someone for one thing couldn't spend some time deferring a hard decision to someone else and another question is how the costs of the possible action might influence the decision as to what action to take and those are the -- that's the line of questioning that I have now and I've asked my questions, I guess Judge Linenberger will go into it more thoroughly.

End B

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JUDGE LINENBERGER: Mr. Storz, I gather from your answers to the Chairman's questions that the people in the control room and associated with managing the facilities and the emergency planning are not people who are under those circumstances concerned about costs. Is that correct?

MR. STORZ: That's correct, sir.

JUDGE LINENBERGER: I think the Chairman has a very good point. I can see going through your head or somebody else's head the thought that "My gosh, we've got replacement power to purchase here because this facility is off line, and if we start all this state and local action going, there's tremendous costs involved, people's lives are being disrupted to evacuate," and there could be some little pressure to "Cool it. Don't be too quick," to clear things in a state of emergency.

Now, are you telling me these kinds of psychological pressures are not going to weigh on you folks when something starts going wrong?

MR. STORZ: I have to put myself in the position that I could be that operator, because I'm going to be one of the licensed individuals, and I would have to tell you from my own decision making process if the indicators indicate it clearly, I would make that decision. I cannot speak for every individual out there, but I know through their training they have been reinforced that if that decision needs to be made management is not going to stand in the way or interfere with that process. In fact, it can

C2gjs

unfold just like our scenario suggested, and the decisions and the calls would have been made by the time the management duty supervisor is notified, because he is several calls down on the list.

JUDGE LINENBERGER: Not to beat this thing to death, but you've indicated your outlook, and you indicated that you sort of thought others would share it.

Let me ask you explicitly do you feel that management has made it abundantly clear to everybody with line responsibility at the time of an emergency that worrying about the evacuation and the safety of the facility is their prime responsibility, "Don't worry about the costs, the replacement power problems and all those things. Stay with that emergency"? Has that been made abundantly clear by management?

MR. STORZ: A categoric yes.

JUDGE LINENBERGER: I think the Chairman touched on another thing that I would perhaps phrase a little differently, but I think he was getting at it.

When something starts to go wrong, there are two categories of activity, if you will, that must be attended to. One is within the plant; the other is outside the plant. Now, as things get progressively worse--and we'll assume they do for this hypothetical question, and let's hope it's always hypothetical--it seems to me that there's a real possibility that--and I don't know all the organizational titles here--you, the plant supervisor, the senior operator, his attention is going to be bouncing back

C3gjs

and forth between these two classes of activity. He'll be thinking about how things are going beyond the exclusion zone, and then he'll realize "My gosh, I have to check back now. Did those pumps come on? Is everything all right here? Now, wait a minute, how's that evacuation going?" and he's going to be whiplashed back and forth between two separable types of operations.

How do you keep that kind of thing from completely scuttling the effectiveness of either one of the operations?

MR. STORZ: I think I can clarify that for you. I can give you two types of situations, one occuring at three o'clock in the morning and one that's occuring, for example, three o'clock in the afternoon.

Three o'clock in the morning we have a minimum shift. Each individual's job has been defined both for his normal routines and how he would respond if the emergency event is starting at three o'clock in the morning. The reg. guide clearly defines what type and how many people you have to have to handle the job. We have during that time frame, the three o'clock in the morning, divided up these responsibilities with the on-shift personnel. Our staff is clearly larger than the staff which was available in the morning at Three Mile Island when they had their accident, and the basic reason for this is to cover these additional emergency responsibilities. A call-out would start immediately to support activities. An unusual event does not require a call-out, but alert would start the call-out for additional personnel. And as

C4gjs

you escalate up, you have to call out more people to man the tech support center. These individuals, when they arrive on site, make a turnover from the operations group and relieve you of these very concerns that you're talking about.

During an afternoon event, where most of the individuals would already be at the site, that process only takes fifteen or so minutes. At three o'clock in the morning it would take around thirty minutes, because there's a drive time for individuals to reach the site, a turnover time, and they assume those responsibilities.

Now, I would suggest that your concern is valid for the first few minutes of every accident, because there's no way to get that type information started in both directions simultaneously. We have these time frames established in 0654, we drill to meet them, and I think that time will prove that they're fairly reliable because it takes several minutes to identify an accident.

One of the lessons learned at Three Mile Island was to unburden the operator so he could re-focus all his attention on the problems. The shift technical advisor, which has been discussed several times here in the last couple days, is an individual who comes in the control room who has no other assignments but to help evaluate the accident. He is going to become the technical advisor to the shift supervisor. He's going to be observing all the plant parameters so that proper actions are being taken to protect the core.

C5gjs

JUDGE LINENBERGER: Does this man you're just now speaking about have no responsibilities with respect to off-site matters? He's solely concerned with in-plant problems?

MR. STORZ: Yes, that's correct.

JUDGE LINENBERGER: He doesn't have to notify anybody, he doesn't have to worry about sheriffs and school buses?

MR. STORZ: No, sir. Like I pointed out to you in my earlier testimony, we have a communicator. That individual is a plant operator, understand the terminology and is familiar with the messages that we use to transmit information to the state and local authorities. He's been trained to do that. He is one of the on-shift operators. He's a key individual in these first few minutes, when the notifications must go out to the other authorities.

JUDGE LINENBERGER: Mr. Beale, do you have anything to add on this?

MR. BEALE: No, I think that's fine. He's covered it well.

JUDGE LINENBERGER: You were just now speaking about the communicator. Dr. Budnitz made a comment yesterday afternoon about something I think he called hardwire communications, and somebody in your control room at a certain point would pick up some kind of a phone and, lo and behond, he'd be in direct contact with the NRC Crisis Center or whatever it's called in the Washington area.

C6gjs

Now, let's talk about that a little bit. In the first place, I can see you people moving around with problems on your hand and saying to yourself "The last thing in the world I want is those guys in Washington breathing down my back right now." When in the sequence of events is it appropriate for the communicator or somebody to get in touch with this crisis center, and is it or is it not mandatory or discretionary?

MR. STORZ: We have a document that guides us through this decision making process. The technical specifications for the facility, which we're licensed to and bound by law to adhere to, tells us which events and which situations require immediate notification, one hour notification and other notifications of longer times with the NRC. There is a specific list of these items which require us to maintain contiruous contact with the NRC once we notify them. There's been a long debate regarding this particular issue, and whether or not a facility can be safely directed from a far-off distance. My understanding is that their attentions are not to try to direct us, but to assist us only; and for their awareness, the conditions in the facility.

JUDGE LINENBERGER: Well, is it the communicator who carries on this dialogue?

MR. STORZ: The communicator in this situation, where we have to maintain continuous contact, obviously couldn't be calling other agencies on a fifteen-minute basis. We will assign an individual at that point to maintain the continuous phone contact

C7gjs

with the NRC. That's where this call-out starts to provide a lot of benefit, because the other individuals will be arriving at the site. We will probably try to assign an individual who has engineering as well as operator knowledge of the facility. For instance, an off-duty but assigned to emergency response shift technical advisor.

JUDGE LINENBERGER: One of you gentlemen has indicated that under the sequence of events that Mr. Beale has been talking about that there is an obligation within, I guess it was fifteen minutes from the 1205 time, an obligation to make this determination about a general emergency.

Now, that's an obligation. What are the teeth in it? In other words, you, Mr. Storz. Suppose you're on site when there's a LOCA, you're right there in the control room. Five minutes later there's an ECCS failure, as postulated here. People start checking indicators, control boxes and so forth. And fifteen minutes later, when it's time to make this determination of general emergency, somebody comes to you and says "Gee, if I had another five minutes, I know I can get those pumps going. Let's not panic."

Now, where does that put you?

MR. STORZ: Between the rock and the hard place.

JUDGE LINENBERGER: Yes, sir, and what do you do?

MR. STORZ: I go ahead and declare a general emergency, and I would provide that information to those individuals that are

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concerned. In other words, I would have to state to them that I may be able to bring those under control very rapidly, and that's all I could tell them.

JUDGE LINENBERGER: You spoke for yourself then, which is fine. What is there about administrative controls, management directives or what have you that assures that somebody else there instead of you is going to follow that course of action?

MR. STORZ: Very stiff penalties that are being currently levied by the Nuclear Regulatory Commission to other utilities I think has reemphasized the need to follow established procedures. They are currently levying what I consider very heavy penalties on managements where they failed to observe their own procedures and rules.

JUDGE LINENBERGER: To change the subject here, there was a discussion of how things would go outside the facility if the emergency sirens had lost what I'll call normal, I guess AC power. I didn't hear anyone ask or say whether it was intended that these emergency sirens will at some point have a backup source of power in case the normal utility power goes off. Can somebody address that?

MR. BEALE: I think I can. First of all, I'd like to clarify something before I answer your question. I think an assumption has been made that these sirens are on our power grid. They are not. There are other utilities, cooperatives, that feed power to the sirens. So, it's not totally our system that the

C9gjs

sirens are on. But in answer to your question, there is no backup power available to the sirens, they're on just straight AC power. And if the power is out, the siren does not work.

JUDGE LINENBERGER: Well, you've already discussed the implications for that and the complications, and I just wanted to establish that.

Once the first three items in the sequence you provided in Applicant's Exhibit 39 have been taken care of, in other words we've just passed the time of 1250, who--not by name, but by organization--has responsibility for the fourth item, actually initiating evacuation?

MR. BEALE: That would be the local counties.

JUDGE LINENBERGER: Does that mean, then, that beyond about 1250 into this sequence, or maybe it's earlier than that--excuse me, let me ask the question the other way. At what point in this sequence of events can the control room personnel forget about what's going on outside the plant in terms of any line responsibility or implementing actions off site?

MR. BEALE: Well, there isn't really any time. Based on this scenario, when we're into a general emergency, the station must maintain contact with the off-site agencies and update them every fifteen minutes.

JUDGE LINENBERGER: So, this is an information kind of thing?

MR. BEALE: Yes, exactly. It could be, an example, no

C10gjs

change in status. It could be that the plant is still in the same conditions that we were fifteen minutes ago, and therefore you would not go into a long dissertation of giving the same numbers you gave fifteen minutes. We utilized that capability in the May 1 exercise.

So, really, when you start into an alert condition, which is two classifications less than this, you must maintain that fifteen-minute update to outside agencies.

JUDGE LINENBERGER: Beyond that update at fifteen minute intervals, is anybody in the line operating organization also responsible for any line responsibilities with respect to evacuations beyond the fifteen minute notifications to the outside world?

MR. BEALE: Well, it depends a lot on the recommendation, and I'm trying to understand your question here. If you're saying that the initial one has indicated the evacuation of the two miles, that would be the recommendation of the station. It could come sometime later, as I've indicated at 1309, where we'd have additional recommendations. So, that would come from the station also.

JUDGE LINENBERGER: So, the plant personnel make these recommendations, it's not just that the feed status information to a state or county official who makes the recommendation. The plant makes the recommendation, is that right?

MR. BEALE: Yes. Let me try to run through. Maybe it would help clarify.

JUDGE LINENBERGER: Well, I don't want to spend a lot

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of time on this, but I'm just trying to get a feeling for how burdened plant personnel in a crisis situation are, how burdened they are with things going on away from the plant.

MR. STORZ: Could I just add one thing?

MR. BEALE: Sure.

MR. STORZ: In addition to notifying the local and county authorities, we initiate our own emergency group, which is approximately thirty-five what we call key personnel, who assume a lot of this information gathering and dissemination to these off-site authorities. We have a technical support center which is separate from the control room which has been provided with a duplicate set of information that the operator sees on displays. They can analyze and process this data independently from the control room, without interference for the operators, whose attention is focused on solving the problem in the plant.

This communication setup, of course, and decision making process is going on between these two groups. But they're handling this burden of keeping the updates and the new information to the outside authorities.

MR. BEALE: I must point out that I indicated yesterday that at approximately 1300 or 1315 we'd have our tech support center and our emergency operation facilities set up. The burden of communications is taken off of the control room and is picked up by these organizations. So, therefore, the control room, the shift supervisors and Mr. Storz people, will concentrate their

C12gjs

efforts strictly on plant conditions.

JUDGE LINENBERGER: Thank you very much. That's all I have.

JUDGE HOOPER: Mr. Storz, the Chairman was questioning you a minute ago about the relationship between the shift supervisor and the management supervisor, and I think I came away with a little doubt about some aspects of this relationship to really ferret it out. I think we've got to sort of take a hypothetical.

Now let's say we're in this critical fifteen minute decision period that you described. You've mentioned the case where if you can't find this guy you go ahead and make the decisions yourself. But say your beeper gets him over there and the two of you are sitting here thinking about--maybe things are not quite so clear cut, and there's an argument here about what some of the gauges mean, and maybe he has one point of view and you're the shift supervisor and you have a little bit different point of view.

I don't know whether this situation is hypothetical, feasible or not. It may not be credible. Let me go through it, and you can tell me what is not credible about it.

Well, you get up to the fifteen minute period and somebody's got to press a button or do something. Who wins in this argument?

MR. STORZ: The shift supervisor.

JUDGE HOOPER: That's all I wanted to know. You don't have to bring in a third party or anybody, he wins?

C13gjs

MR. STORZ: That's correct.

JUDGE HOOPER: I sort of hate to get into this, because it may open a bag of worms, but I guess maybe we better.

Let's say we're not dealing with a clearcut situation. Maybe you've got a diagnosis problem and you have to have this hotline open to Bethesda and all the experts, you have to have a hotline to the vendors and all of these guys that know more than any of you guys know about this thing.

Now, I can understand this technical guy on your staff is going to help you out a little bit, but I guess I'm a little bit concerned about the same thing Judge Linenberger was talking about. Here you've got a bunch of people reading dials, people trying to do some diagnoses, and you're not exactly sure what's wrong. And this is all in a fifteen minute period.

Now tell me, if you don't get the thing diagnosed in the fifteen minute period, what do you do? You take the worst possible case and press the button? Can you help me with this problem a little bit?

MR. STORZ: I think I can help you with it, because I feel that there are so many hypothetical situations that do or don't occur and people discuss. The reality of the control room is not a hypothetical situation, it's there. The indicators are there. They're reliable. The operator's been trained not to rely on a single indicator. He verifies his information and uses the procedures that are available.

C14gjs

Now, let's take the situation you have hypothesized, that these procedures don't clearly define to him his action. That's when the shift supervisor takes the bulk of his experience and those people that he has immediately surrounding him where they are in the reality situation and makes his best decision, just as any good line supervisor will do.

Now, he's going to try to consult with as many people in this situation in the time frames provided to come up with the most accurate and most efficient, and he will choose the more conservative because that's how our training program has been spelled out and that's the management directive.

JUDGE HOOPER: Well, let's say that some guy from Westinghouse says "Your core is not uncovering" and some guy from the NRC says "Oh, heck yes, the core is uncovering very rapidly," and you're sitting there looking at some gauges. But you still say "Well, I think the core is not uncovering, so I'm not going to do it," and it's your decision then, you're shift supervisor. You're going to be the one that says "I'm not going to press the button because I think that Bethesda's right and not Westinghouse" or vice-versa.

MR. STORZ: I could point out to you that we are licensed operators of the facility and we have been delegated thatresponsibility by the license, not the Westinghouse technical expert, not the NRC expert, and the burden for that decision is still with the shift supervisor in charge of the shift.

C15gjs

JUDGE HOOPER: Yes, but here you're not so sure yourself, see, and what I'm getting at is I want to be sure that in this conservatism business--at this point conservatism is really in your hands, is it not, and you can either call it conservatism or judgment. It's judgments in your hands?

MR. STORZ: That's right.

JUDGE HOOPER: I guess that's really it.

JUDGE GROSSMAN: Is there any point at which the man in Bethesda can say "I order you to take this action"?

MR. STORZ: None that I know of.

JUDGE GROSSMAN: I have no further questions. Mr. Knotts?

MR. KNOTTS: I have a couple of followup questions.

Mr. Storz, you told Judge Linenberger, I guess it was, about the freedom that the shift supervisor has as reinforced by management to assert his authority and independence. And Judge Linenberger asked you in effect whether there was anything that would reinforce that from the down side, as it were, and you referred to civil penalties to the company. Am I remembering your testimony about as you do, sir?

MR. STORZ: I think it was Judge Linenberger that asked me about the penalties.

MR. KNOTTS: Well, what I want to be asking you about is whether--let me back up a minute. You may not be aware because you weren't here when Mr. Nauman was here. He told us about the directives that have been given the plant workers during construction

C16gjs

about sanctions for not following procedures that were important to safety, punishment for not following procedures. And I was just wondering whether there was any sanctions administered by the company against responsible people in the organization who failed to follow safety procedures?

MR. STORZ: Any that I'm aware of?

MR. KNOTTS: Yes, sir.

MR. STORZ: In fact, recently an individual who had violated one of our procedures was terminated.

MR. KNOTTS: Mr. Beale, is there a priority on this notification list of ring-down phones? Is there some order in which the county, the state and the NRC and the other people on the list are notified?

MR. BEALE: That's correct. In this case of the scenario, the prime person as far as off-site would be locals. In a planning base for state and local planning, an immediate general emergency as we've postulated here has been laid out in their plans that when a recommendation comes from the utility, in all likelihood they would implement that recommendation for evacuation.

MR. KNOTTS: Does the recommendation to the local people take place through the ring-down phones?

MR. BEALE: That's correct. We have ring-down dedicated phone lines to each county central dispatcher.

MR. KNOTTS: Does that mean that somebody at the plant picks up the telephone and it rings in the county office?

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MR. BEALE: That's correct.

MR. KNOTTS: Does that happen simultaneously or are the four counties notified sequentially?

MR. BEALE: Well, by the time we're licensed we're going to hope to have a system to where we can pick up a phone and get all parties on at the same time and repeat the message to the four counties and to the state, so that the communicator Mr. Storz has indicated does not have to do this five times.

MR. KNOTTS: Where does the NRC come on the list, just out of curiosity?

MR. BEALE: If I remember, it's third.

MR. KNOTTS: So, the counties, then the state, then the NRC?

MR. BEALE: Correct.

MR. KNOTTS: I think you mentioned yesterday, Mr. Beale, that at the time of the plume release in the hypothetical you were then discussing with Mr. Bursey the emergency off-site facility would be evacuated, and I wanted to know whether that would be what you would expect to happen in Dr. Kaku's scenario or whether a precautionary evacuation might have taken place at some other early time.

MR. BEALE: Well, based on the time frames here, I would estimate that it would be more cautionary evacuation, because from the standpoint that no releases have taken place in my summary or scenario. So, yes, based on the scenario of Dr. Kaku and

C18gjs

degrading of systems going on and buildup of activity in the containment, I'm sure that that type of precautionary evacuation would possibly take place.

MR. KNOTTS: So, at any time that the release was judged to be imminent, is that when the evacuation would take place?

MR. BEALE: Yes.

MR. KNOTTS: Mr. Storz, is my understanding correct that the first fifteen minutes or so of the accident that emergency responsibilities and operating recovery responsibilities proceeded in parallel? Is that a fair summary?

MR. STORZ: Yes, sir.

MR. KNOTTS: You told Mr. Wilson, Mr. Storz, that the particular event described in Dr. Kaku's scenario is rather spectacular to the operator or words to that effect. I don't mean to put words in your mouth. How do you know that? Do the operators receive training that displays this to them in some fashion?

MR. STORZ: That's part of our routine training, which includes simulator training. The classic accidents have been used to analyze for development of safety systems for our practice. And without a doubt, the accident described in their scenario is probably the most spectacular and probably the easiest one for the operator to immediately identify.

MR. KNOTTS: Would you agree, Mr. Storz, that there is enough information in the control room in Dr. Kaku's scenario

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for those individuals responsible to recognize the event, declare a general emergency and make the initial notifications that they are called upon to make within the time frames given by Mr. Beale in Exhibit 38, or now 39 as it is?

MR. STORZ: Yes, sir.

MR. KNOTTS: I have no further questions.

JUDGE GROSSMAN: Mr. Bursey?

MR. BURSEY: Could we take five minutes before my cross?

JUDGE GROSSMAN: Why don't we take fifteen minutes, then.

(A short recess was taken.)

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CHAIRMAN GROSSMAN: Mr. Bursey.

BY MR. BURSEY: (Witness: Storz)

Q. Mr. Storz, you referred to the initiating accident that Dr. Kaku's scenario referred to as spectacular, were you you referring to a double ended guillotine break?

A. Yes, sir.

Q. You say they are less subtle transients that could initiate this type accident, is that correct?

A. No, sir.

Q. How about more subtle?

A. I said there were more subtle transients, more subtle failures that make the operators decision making more difficult. I did not say that there is more subtle transients in the emission that would cause a double ended pipe rupture.

Q. But the consideration of the rapid determination in a general emergency given your scenario, where you, at 1206 determined you had a general emergency was based on a double ended guillotine break?

A. It was based on the scenario provided to us for this discussion.

Q. Was that a double ended guillotine break?

A. Yes, sir, and a loss of the emergency core cooling system, and if so, the double ended pipe rupture does not put you into a general emergency.

Q. Would common mode failures that--would those be more

subtle situations that could precipitate, combined with an ECCS failure, the necessity to determine a general emergency.

A. Without giving me some specific examples, I would be unable to answer that question.

Q. But there are common mode failures that could compound and cascade and result in them?

A. Common mode failures are typically used for analysis purposes and in reality rarely occur, if ever.

Q. If you look at page 12 of Section 14 of Dr. Kaku's scenario at 12 o'clock, it says the LOCA is initiated by a transient, a human failure, a double ended guillotine break or common mode failure, is that right?

A. That's correct.

Q. So Dr. Kaku did postulate a number of hypothetical initiators for the accident, is that correct?

A. That is correct.

Q. And you chose the most spectacular of those postulated hypotheticals?

MR. GOLDBERG: Judge Grossman, I object. I think that Dr. Kaku was the one who narrowed it down to a double ended guillotine break and I think he should--

CHAIRMAN GROSSMAN: I think the question is proper. Answer the question.

MR. STORZ: Without specific details regarding the transient and human failure, common mode failure, it would

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be difficult to estimate how long it would take an operator to determine whether a general emergency was going to be required. I can tell you with the simple word LOCA attached to a failure of the emergency core cooling system, large or small, would still put you into the general emergency, irregardless of the transient, human failure or common mode failure. Just taking the two on face value, a LOCA is initiated and a loss of the emergency core cooling system will put you into the general emergency,

CHAIRMAN GROSSMAN: I think the question was a little more simple than that. It was just whether the double ended guillotine break was the most spectacular of all of the examples given, was that basically your question, Mr. Bursey?

MR. BURSEY: Basically.

MR. STORZ: Yes.

BY MR. BURSEY: (Witness: Storz)

Q. And that one of the--in your words, I don't know whether more or less subtle is what you said, but a more subtle initiator, it might take more time to declare that state of emergency?

A. That's correct. But at 12 o'clock, a LOCA was initiated by whatever means and at 1205 the emergency core cooling system had failed or was turned off, therefore, I had the two key indicators, a LOCA and a loss of emergency core cooling system and the operators could still make that judgment.

Q. Without the spectacular event, might it not be more difficult to determine?

A. But that is not what the facts state here. The facts are clear that at 12 o'clock a LOCA is initiated and at 12:05 the core is uncovered and the emergency core cooling system had failed. Now, if I interpret that information on its face value, I have my information I need to make my decision.

Q. Do you have redundant instrumentation to determine almost instantaneously the core is uncovered?

A. There is redundant instrumentation provided for a reactor vessel level, which is an indication of the water inside the reactor vessel.

Q. Do management duty supervisors, you mentioned that there were a team of people that were supervisors in different areas which made up a cadre of advisors, could you tell me who they are and how many they are?

A. Currently, the Plant Manager, myself, the Assistant Plant Manager, the technical support supervisor and the maintenance group supervisor.

Q. And the shift supervisor you are saying is the one that would make the determination of the state of general emergency, is that right?

A. That's correct.

Q. And Mr. Nichols, the Plant Manager, if he were on hand, would he have any overriding authority to the shift

supervisor?

MR. KNOTTS: A point of clarification. Mr. Nichols is not the plant manager. Did you mean Mr. Bradham?

MR. BURSEY: Okay, lets delete the name and just say the plant manager.

MR. STORZ: I have been advised that as part of the record the organizational chain of command has been placed on the record. I would like to review that briefly. Mr. Nichols is the executive in charge of nuclear operations, reporting to him is Mr. Williams and reporting to Mr. Williams is Mr. Bradham and reporting to Mr. Bradham is myself. The individual shift supervisors report to me. There are two individuals that can affect a change in the shift supervisor. Myself, I can relieve the shift supervisor or the plant manager can order that another shift supervisor will relieve the shift supervisor. Does that answer your question?

MR. BURSEY: If I may infer that yes if you relieve the shift supervisor, you could override his command.

MR. STORZ: That is correct.

BY MR. BURSEY:

Q. If they were, say between four and five hours into this scenario, to releases 20 percent of the core inventory, what would that mean about the control room habitability?

A. I am not sure if I, off the top of my head, would know what a release of 20 percent of the core inventory means.

If it was contained in the containment building, the habitability of the control room would be unaffected. If it was released through the atmosphere, we have systems that will isolate the control room which is shielded for a design basis accident . Whether or not this accident is included in that design base, I have no way of knowing, as there's no numbers been provided with, as I can tell from the discussions in the last few days, on what the dose rate at the site boundary, for that matter in the containment, had ever been reached; and without these numbers, it is impossible to make any positive statement on the conditions in the facility.

Q. Well, sir, I believe that Dr. Kaku at one point referred to 1500 to 2000 rads for a fatal dose for on-site workers due to a breached containment. Were that hypothesized dose level, what would that mean about the control room?

A. That hypothesized dose level would not cause an over-exposure of operators in the control room to my knowledge.

Q. Do you know what dose level would?

A. An exposure level inside the control room of that magnitude would cause a lethal dose. However, as I pointed out the control room has a totally independent ventilation system tha is isolated from the outside world with its own filtration and clean up to remove contaminants and radioactive gasses from the air that is in the control room and in addition, we have emergency breathing apparatus which gives us another

layer of protection against contaminants in the atmosphere in the control room. The dose rate would be clearly indicated because we have monitors in the control room so we could read it out directly. There is portable instrumentation in the control room which backs up the installed instrumentation and I feel very confident in my operting experience that these type situations can be handled by the operations department and other individuals at the facility.

One of our jobs and responsibilities is to not panic in a situation where radiation has leaked into the plant but to deal effectively with it and to try to eliminate its release to the public.

I know that the operators are always mentioned when failure occurs and my experience has been that the operators are very effective and can be relied upon, so--

Q. At the levels that we just mentioned that would necessitate a site evacuation of some personnel?

A. Yes. The individuals I mentioned earlier, the key personnel that will support the emergency plan are also housed in the same area as the control room with the same ventilation capabilities and back up support. Those individuals would be protected from this high radiation level and continue to function in their capacities.

Q. Well, is there a point given in a core melt sequence with breached containment that would necessitate the evacuation

of the control room?

A. None that I am aware of.

The only thing that could cause an evacuation of the control room is an environment condition which might result in a failure of the protective equipment where radiation levels has reached a level that would cause us to evacuate for other conditions such as possibly a fire in the control room which would make it inhabitable or reduces the capability.

We have ability to take and maintain control of the core and the emergency core cooling system from panels outside the control room and these panels are also located in such a manner that they have closed ventilation and radiation shielding.

Q. So that if you had to fall back out of the control room, you have an alternative control room to go to?

A. Not--it is referred to as a safe shutdown panel, panels and those panels are directly related to an insulated floor cover and provide cooling and yes, they are like small control rooms.

Q. Were the levels of radiation so significant that it was necessary to evacuate all personnel, is there some apparatus that would be maintained or at least an attempt to maintain the core without human monitoring?

A. Yes.

Q. So that all plant personnel could be evacuated?

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A. The reliability equipment has been established through use of testing. The operators are there to make sure, as another way of assurance that these systems continue to operate. I would have confidence if a hypothetical situation forced us to leave the site that if it was functioning when we left, that it would remain functioning for a fairly indefinite period of time. I am talking of the low pressure recycle injection system that is referred to as long-term cooling capability. So, if you hypothesize that I had to leave, I could hypothesize that the probability of the equipment failing is very remote.

Q. Mr. Beale, Dr. Budnitz yesterday on page number 4182 of the transcript, line 9, stated "It is not only the most likely exercise of these plans but one which perhaps these plans maybe aren't capable of coping with", it being Dr. Kaku's scenario, PWR-3.

MR. KNOTTS: Unless Mr. Bursey is going to relate this to something--

CHAIRMAN GROSSMAN: Well, why don't you wait until he asks the question. I understand the possibility of objection.

MR. KNOTTS: All right.

BY MR. BURSEY: (Witness: Storz)

Q. You had evidenced in your testimony here that you felt you were capable certainly of not only coping with this but having as close to perfect evacuation as possible, and I am wondering if you could tell me why your expert said these

ra D 10 1 these plans maybe aren't capable of coping with this type of accident?

MR. GOLDBERG: Objection.

MR. KNOTTS: I object both to the form of the question and to it being within the proper scope of wherever we are at, recross I guess.

CHAIRMAN GROSSMAN: Well, it doesn't look to me to be within the scope of the redirect, Mr. Bursey, or any of the other cross examination.

MR. BURSEY: I have no more questions.

CHAIRMAN GROSSMAN: Any further questions?

MR. KNOTTS: Nothing further.

MR. GOLDBERG: I have one question.

BY MR. GOLDBERG: (Witness: Storz)

Q. Mr. Storz, I am not sure who used the term spectacular event first, but we understand what it referred to. As I understood, and correct me if I am wrong, that term as it became known, referred to the combination of a large break LOCA and ECCS failure which is the postulated initiating event for this emergency, is that correct?

A. Yes.

Q. And not to the kind of preliminary events that are described in entry 12 o'clock in paragraph 14 of Dr. Kaku's scenario which includes transient human failure, double ended guillotine break or common mode failure which could lead to

a LOCA is that correct?

A. Yes, it is.

MR. GOLDBERG: No further questions.

JUDGE LINENBERGER: One little clean up point here. One of you gentlemen in response to Judge Hooper indicated that--I think you indicated that an employee had been terminated because of a procedural violation of some sort, was that essentially what has been said?

MR. STORZ: Yes, sir.

JUDGE LINENBERGER: Okay, the question I have is are there management directives or well publicized policies that make it clear to employees, especially--particularly I am talking about with operating responsibility in a nuclear plant, make it explicit and specific that disciplinary action from company management can be expected if certain classes of actions and procedures are not followed?

Is there a stated policy on this that employees are informed about that you know of?

MR. STORZ: Without reviewing materials to give you a yes-no answer, I think I would like to consult on that, whether or not there is a stated paragraph. I know for a fact that on some procedures relating to safety and specifically in relating to management directives, the procedure clearly states that violation of this particular procedure is grounds for disciplinary action. It is a very important procedure

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in the facility and I think-- My personal feeling is that a basis of trust must be formed between the licensed operator and management. This basis for trust is that they recognize that we have developed procedures, management does, and that we are going to follow them and, in turn, the operator who blatantly violates procedure or knowingly violates procedures is subject to disciplinary action. Now whether that is stated specifically that clear in our management directives, I can't say yes or no.

JUDGE LINENBERGER: Mr. Beale, do you happen to know?

MR. BEALE: No, sir, I do not.

JUDGE LINENBERGER: All right, leaving management directives aside here, you have indicated that there are certain types or classes of procedures for which it is plainly spelled out that violation of that procedure will be cause for possible disciplinary action?

MR. STORZ: Yes, sir.

JUDGE LINENBERGER: Okay. Thank you.

CHAIRMAN GROSSMAN: Any further questions on what was raised by Mr. Goldberg and Judge Hooper?

Sorry, Judge Linenberger.

Thank you very much, gentlemen, Mr. Storz and Mr. Beale, you are excused.

(Witness excused.)

Mr. Goldberg, I believe you have a witness?

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MR. GOLDBERG: I would like to call Brian Grimes and Thomas Kevern to the stand, please.

CHAIRMAN GROSSMAN: Mr. Grimes, please remain standing.

Whereupon,

BRIAN K. GRIMES

was called as a witness by and on behalf of the staff and, having been duly sworn, was examined and testified as follows:

CHAIRMAN GROSSMAN: Please be seated.

Mr. Kevern, you have already been sworn and you remain sworn.

MR. KEVERN: Yes, sir.

Whereupon:

THOMAS K. KEVERN

was RECALLED as a witness by and on behalf of the staff and, having been previously duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. GOLDBERG: (Witness: Grimes)

Q Mr. Grimes, do you have before you a written statement of your professional qualifications?

CHAIRMAN GROSSMAN: Mr. Grimes, would you first give the reporter your full name?

THE WITNESS: Yes, Brian K. Grimes.

CHAIRMAN GROSSMAN: And Mr. Kevern too, please.

THE WITNESS: Thomas K. Kevern.

MR. GOLDBERG: May I proceed?

CHAIRMAN GROSSMAN: Yes.

BY MR. GOLDBERG: (Witness: Grimes)

Q Mr. Grimes, do you have before you a written statement of your professional qualifications?

A. Yes.

Q. Are there any corrections you wish to make to that document?

A. No.

Q. Do you adopt that written document as a statement of your professional qualifications for purposes of your testimony in this proceeding?

A. Yes.

MR. GOLDBERG: At this point, Mr Chairman, I would move that the written statment of Professional Qualifications of Brian K. Grimes be received in evidence and bound in the transcript as though read.

CHAIRMAN GROSSMAN: Mr. Bursey, any objection?

MR. BURSEY: Is that solely the qualifications and not the scenario?

CHAIRMAN GROSSMAN: I believe that is all that the offer is.

MR. BURSEY: I have no questions with regard to his qualifications.

CHAIRMAN GROSSMAN: And no objection to the admission

of the qualifications?

MR. BURSEY: No, sir.

CHAIRMAN GROSSMAN: Received in evidence.

(Insert.)

BRIAN K. GRIMES

PROFESSIONAL QUALIFICATIONS

OFFICE OF INSPECTION AND ENFORCEMENT

I am employed as Director, Division of Emergency Preparedness, Office of Inspection and Enforcement, U. S. Nuclear Regulatory Commission, Washington, D. C. I am also the NRC Cochairman on the joint NRC/Federal Emergency Management Agency (FEMA) Steering Committee for Emergency Preparedness. Responsibilities under my current assignments include directing the activities of personnel in the review of emergency plans for operating power reactors, operating licenses and construction permits and coordinating NRC and FEMA efforts in the review of emergency preparedness at and around nuclear power plant sites; assuring that the NRC's Operations Center is staffed, trained, and ready to respond promptly and effectively to actual or simulated emergencies, directing the NRC's inspection program to ensure NRC licensees are maintaining in effect emergency plans that there is no degradation in their ability to respond to emergencies.

I attended the University of Washington, Seattle, Washington, and received a BS degree in Chemical Engineering in 1962 and a MS degree in Nuclear Engineering in 1964. While completing my graduate work, I was employed as a research assistant at the University of Washington Engineering Experiment Station; my duties involved performing analytical and experimental work on the University of Washington research reactor.

In 1963, I accepted employment with the Division of Reactor Licensing, USAEC. My first assignment involved attendance at the International Institute for

Nuclear Science and Engineering at Argonne National Laboratory for four months. Upon completion of this course, I was assigned as a Nuclear Engineer in the Division of Reactor Licensing. My initial duties included primary responsibility for the continuing review of the nuclear safety aspects of various research reactors. I subsequently participated in the safety evaluation of a number of construction permit applications for both pressurized and boiling water power reactors.

Later, as a Reactor Project Engineer in the Division of Reactor Licensing, I had primary responsibility for the safety review of the construction permit application for the Commonwealth Edison Company's Quad-Cities Units 1 and 2, for the Duke Power Company's Oconee Nuclear Station Units 1, 2 and 3, for the Metropolitan Edison Company's Three Mile Island Nuclear Station Unit 1, and for the Indiana & Michigan Electric Company's Donald C. Cook Nuclear Plant Units 1 and 2. I was assigned to the position of Technical Coordinator for Reactor Projects in October, 1968. Prior to March, 1970, I served as Technical Coordinator for both pressurized and boiling water reactors. After March, 1970, as Technical Coordinator for Boiling Water Reactors, my responsibilities included coordinating the technical aspects of all safety reviews in the Boiling Water Reactor group, providing liaison with the pressurized water reactor group and serving as administrative assistant to the Assistant Director for Boiling Water Reactors.

I was assigned to the position of Chief of the Radiological Safety Branch, Division of Reactor Licensing in July, 1971, in which position I was responsible for the review of systems necessary for the control and treatment of radioactivity

under normal and accident conditions. In January, 1972, the functions of this branch were divided and I was appointed Chief of the Accident Analysis Branch. My responsibilities as Chief of the Accident Analysis Branch included reviewing calculational models, procedures and methods developed by members of the Branch for both conservative assessment and a realistic assessment of the consequences of a spectrum of accidents for all nuclear power plants and reviewing analyses of all nuclear power reactor sites performed by members of the Branch with regard to site related hazards and compliance with the guidelines of 10 CFR Part 100. In January, 1976, I was assigned to the position of Chief of the Environmental Evaluation Branch in the newly formed Division of Operating Reactors. In this position my responsibilities included supervising the review of radiological and non-radiological impacts of operating nuclear power plants from both a safety and environmental standpoint. Branch review areas included accident analyses, site-related hazards, effluent treatment systems, off-site radiological effects, and thermal and chemical effluents.

On April 1, 1978 I was appointed Assistant Director for Engineering and Projects in the Division of Operating Reactors. In this position my responsibilities included managing the activities of the Engineering Branch, the Environmental Evaluation Branch, Operating Reactors Project Branch No. 3, Operating Reactors Project Branch No. 4 and the Standard Technical Specification Group. On June 25, 1979, I was assigned Acting Assistant Director for Systems Engineering in the Division of Operating Reactors, and managed the Plant Systems Branch and the Reactor Safety Branch. On October 25, 1979, I was designated Director of the Emergency Preparedness Task Group reporting to the Director of the

Office of Nuclear Reactor Regulation. In November, 1980, all reactor emergency preparedness review activities were combined with NRC response activities in the new Division of Emergency Preparedness in the Office of Inspection and Enforcement and I was appointed Director of that Division. In this position, I supervise the Emergency Preparedness Licensing Branch, Emergency Preparedness Development Branch and the Incident Response Branch.

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BY MR. GOLDBERG: (Witness: Grimes)

Q. Mr. Grimes, I am going to direct some questions to yo first. First, would you please describe your position with the NRC?

A. Yes, I am employed as the Director of the Division of Emergency Preparedness in the Office of Inspection and Enforcement. I am in this position responsible for NRC reviews of licensee plans for coping with emergencies, for the overall judgment on emergency preparedness the staff draws taking into account the Federal Emergency Management Agency findings and I also have a responsibility for developing the response capabilities of the NRC itself to an incident.

Q. Mr. Grimes, would you please describe your role in the development of the present emergency planning regulations?

A. Yes. I have been involved in emergency preparedness, some aspect of emergency preparedness since about 1976 although not as a primary responsibility. I think my role could be best described perhaps in conjunction with a little background on the development of the emergency preparedness regulations themselves. The emergency preparedness area was originally focused on on-site activities almost entirely and this dates from issuance of Appendix E to PAR 50, about 1970, and REG AD 1.101 in 1975. In addition, the NRC did develop a voluntary program for review of state plans by our offices, state program.

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Because of discussions during the seventies with respect to class 9 accidents and particularly the WASH 1400 document, questions arose of what the basis for-- should be for off-site planning and at this time, I became involved, I was then Chief of the Accident Analysis Branch. I became involved as a co-chairman of an NRC task force with EPA participation. It was formed in 1976 to address the issue of what should be the basis of the off-site planning.

In December, 1978, this task force issued its report, NUREG 0396 which also has an EPA designator.

This was shortly before the Three Mile Island accident, the report was put out for public comment. After the Three Mile Island accident, the comment period was extended to an additional comments resulting from the occurrence of the accident and I was then involved in developing a policy statement which the Commission issued endorsing NUREG 0396 and the planning basis desribed therein, namely the 10 and 50-mile emergency planning zone was issued in the fall of 1979.

I was at that time in the Office of Nuclear Reactor Regulation and participated in the reviews which, of the then current Emergency Plans for all operating facilities, with the objective of obtaining a prompt upgrading of those plans.

I was also involved in developing new guidance based on the Three Mile Island experience. This was issued at the Federal Emergency Management Agency in early 1980 as NUREG

0654 for interim use and comments. The comment period ran during early 1980 as did the comment period on the proposed rules issued in December 1979 by the NRC in which I was also involved in drafting.

I was involved in considering the comments received on the proposed rules and on NUREG 0654 and in developing the final rules which was adopted by the Commission and published in the Federal Register August 19, 1980.

I have, as I mentioned, been involved with the Federal Emergency Management Agency and co-chairman of the NRC FEMA Steering Committee, FEMA, Federal Emergency Management Agency Steering Committee which overviews the day to day problems that may arise in coordinating the two agency's efforts in emergency preparedness.

CHAIRMAN GROSSMAN: Excuse me, I hate to interrupt your prepared talk. That final rule that you are referring to, is that regulation 50.47?

MR. GRIMES: It is the publication in the Federal Register on August 19, 1981, included changes to 50.47 and also 50.54 and also a new Appendix E to the Commission's regulations.

CHAIRMAN GROSSMAN: I am sorry, isn't there also another section? 50.33 you said? The one that referred to the 10-mile EPZ?

MR. GRIMES: That may be.

(Brief pause.)

If I might retrieve a copy.

(Brief pause.)

CHAIRMAN GROSSMAN: I am sorry. I didn't mean to complicate it. That's fine.

MR. GOLDBERG: I believe the witness is getting a copy of tha Federal Register notice. From my perusal of that notice, that section doesn't appear, 50.33.

MR. GRIMES: I am sorry, I didn't find it.

I guess we don't have a copy of the notice itself.

MR. GOLDBERG: Yes, we do.

Maybe the witness ought to clarify.

MR. GOLDBERG: Maybe the witness ought to clarify counsel's remarks.

MR. GRIMES: The principal changes to sections included Paragraph G5033 which did refer to the emergency planning zones, 5047 which set forth the standards against which an emergency preparedness was to be measured, and 5054 which dealt with actions which would be taken if the standards were not met, and then a new Appendix E, so you are correct 5033 was the section which dealt with the emergency planning zones. I think it's also mentioned in 5054.

JUDGE GROSSMAN: Thank you.

MR. GOLDBERG: Mr. Grimes, do you have anything further on that summary statement?

MR. GRIMES: Not with respect to my involvement.

MR. GOLDBERG: I believe you were also summarizing for us the evolution of the present emergency planning rule; is that correct?

MR. GRIMES: Yes.

MR. GOLDBERG: Do you have anything you wish to add on that line?

MR. GRIMES: Yes. I think it would be useful to go through a bit of the philosophy and logic that was used in developing the standards in the emergency planning zones and to indicate the principal changes that resulted then from the Three Mile Island experience.

When the task force of EPA and NRC personnel was formed in 1976 they addressed what the basis should be for planning, and in particular they addressed some questions from state groups as to what accidents should be used to prepare emergency plans against.

The conclusion of the group was that no single accident should be singled out as the planning basis because of the wide variety of conditions and various accidents, that if one picked a single accident, even two or three accidents, one could well miss relevant points of other accidents which might occur.

So the concensus was that we should look at a consequence-related bound on the planning basis that would cover a spectrum of accidents, and in this consideration we did consider all of the design basis accidents that were then used in the licensing process, and we explicitly also considered all of the WASH-1400 scenarios, and this is discussed in Appendix to NUREG 0396.

The task force identified the emergency planning zones which I mentioned where later adopted in policy statement by the Commission, and also gave some guidance on time frames and types of radionuclides which could be considered in developing plans.

Though this report was issued prior to TMI, the TMI accident was considered by the task force when they considered the comments on the report, and was adjudged to reinforce the initial determination of the task force both with respect to

the need for planning for a spectrum of accidents and with respect to the emergency planning zone and the sizes.

There were some additional things that came out of the Three Mile Island, and I would like to go through a brief list of those starting from the plant outward. These are all things that relate the emergency preparedness improvements that we've made since that time.

First is better assurance that instrumentation is available to follow a full spectrum of accidents, and that information is made readily available to and understandable by the plant operator.

Second, a higher degree of technical understanding and technical resources on shift at all times was thought to be necessary.

Third, development of recommendations for off-site actions based on plant parameters rather than waiting for off-site consequences to occur was recommended, and this is one of the very key things that came out of Three Mile Island that one does not wait to send up monitoring teams and detect radioactivity in the environment before recommending off-site action, but rather as soon as a course of events is found to be serious and have serious potential for resulting in releases that action should be taken based on that information, and this will allow maximum lead time to take actions on behalf of the public.

The fourth was the standardization of nomenclature

regarding the seriousness of emergencies. Previous to Three Mile Island we had a very complex situation where a utility might class its emergencies A, B, C, and the state might class its emergencies 3, 2, 1 in order of severity, and there was difficulty in communicating, so one of the important improvements was a standard classification of accidents for emergency classes used by both on-site and off-site personnel and uniform across the United States.

The fifth item was the principle of notification of off-site authorities for even minor events to try to establish the credibility of the notification process, and to assure that off-site organizations were given maximum lead times. We find that we get better assurance that notification will be made if we can see that the notifications go forward for even minor events, and we believe those same notifications would fairly automatically proceed for more severe events.

One of the problems that was mentioned earlier this morning was related to the problem of how much do you think about notifying off-site authorities before you cause this -- it's really not an economic impact, it's really more of a political impact to occur, and it is something which we have tried to make as straightforward and nonjudgmental as possible by relating specific plant parameters to the emergency classes, what plant parameters that exceed what values should result in the notifications.

Of course, one cannot specify all possible combinations of plant parameters that would result in accidents, but you can cover the vast majority and then by analogy plant operators very likely make the correct judgments, and even if they make the judgment in error, they at least must carry out some kind of notification to off-site authorities even if they underclassify the event.

Now, the sixth item is the capability to notify the public in a timely manner for a serious emergency, and this relates to not having to go door to door to provide an alert signal to the public, and there are requirements now in the regulations with regard to the ability to notify the public to turn on the radio to receive information, and usually that initial information would not be to evacuate, but more likely to be to shelter or to stand by for further information and prepare to evacuate if necessary.

The seventh were centers for technical personnel and managers to receive and analyze data and to manage accident mitigation. This is partly to unload the control room of personnel, the fifty people or so that showed up at TMI control room makes this very difficult, and also as soon as possible to take off some of the burden from the operators of running both on-side and off-site events.

Initially, of course, things are set up to declare certain classes of emergencies, and certain initial actions go

forward, and because an emergency class has been declared then there is a responsibility on the plant to make recommendations for what are the appropriate actions given the in-plant conditions, and the sooner you can bring in additional technical personnel and take the burden of the interface with off-site authorities off the operators themselves, the better off you are, youbelieve the assurance of maximum attention to in-plant parameters to be.

The eighth item is the public information programs on the nature of the hazard and the appropriate actions during emergencies, including emphasis on the likelihood of a recommendation for sheltering for many events rather than evacuation.

Most importantly this is making available to people what their actions and what actions might be expected of them in an emergency in terms of turning on the radio when they hear a signal and obeying civil authorities and whatever recommendations they might make.

Ninth is improvement in decision-making capability on the part of off-site organizations and provision of resources required to carry out those decisions, and the Federal Emergency Management Agency has been given leave in developing that off-site capability further, and we rely on them for judgments on the adequacy of the off-site capabilities, although it is our final responsibility to make the licensing decision based on that.

The tenth and last item I wanted to mention are periodic exercises of all plans. This is the licensee jointly with the off-site authorities because we regard the emergency preparedness as an ongoing business, and to some extent an iterative process in defining problems in current personnel and organizations' performance and providing an opportunity for correction of those on a periodic basis.

MR. GOLDBERG: Mr. Grimes, there's been a lot of prior testimony concerning the criteria NUREG 0654, there was discussion among the Board and parties.

I wonder if you can just describe your role personally in the preparation of that document.

MR. GRIMES: Yes. In the fall of 1979 I was appointed head of a group in the NRC to develop guidance on emergency preparedness, and then when the Federal Emergency Management Agency was given the lead role in off-site preparedness, I worked with them in the final drafts of NUREG 654 which was rewritten to get in some additional items that they desired to put in on state and local capabilities, and together that was then published in early 1980.

As I mentioned, I was involved in reviewing the comments on that document jointly with the Federal Emergency Management Agency and the preparation of the final report in parallel with the final rule which was issued in the summer of 1980.

MR. GOLDBERG: Mr. Grimes, without repeating any of your prior remarks, could you just briefly describe what the relationship is between NUREG 0654 and the present emergency plan?

MR. GRIMES: Yes. The proposed rule was issued in December of 1979 before the NUREG 654 document was fully developed.

There were workshops held on the rule, and then meetings held on NUREG 654 also, so the development of the two went forward, the final 654 and the final rule went forward in parallel.

In the final rule the Commission referenced NUREG, the then current 654, and noted that a final version was about to come out.

The staff had discussed with them the fact that the final version of NUREG, or Revision 1 of 654 was largely clarification, no real substantive changes to the original interim document.

As I mentioned, the Commission has referenced 654 as the guidance to be used in developing the plans, reviewing plans against the planning standards, and in fact the final version of NUREG 654 at the head of each of the major sections has a planning standard which is identical to the standard in Part 5047 of the final regulations, so the NUREG document which will very shortly be referenced, adopted as a revision to Regulatory Guide 1.101 is a criteria document to be used as a regulatory guide,

as an acceptable way of meeting the Commission's standards for emergency preparedness.

MR. GOLDBERG: Okay. We have been asked to present testimony on the manner in which emergency plans would respond to a hypothetical accident scenario which Dr. Kaku has provided.

Before I ask you to comment on one or two aspects of that scenario, how generally are accident scenarios used by the NRC in the emergency planning area?

MR. GRIMES: As I indicated before, all of the scenarios in WASH-1400, for example, and the design basis accident scenarios were considered in developing the planning zones and other requirements such as the times for decision-making and notification.

In addition to that generic treatment, the scenarios are used explicitly in exercises of the plans. During the plant lifetime there will be many different scenarios against which the plans are in effect tested to determine whether the emergency organizations can function in an efficient decision-making situation, an efficient decision-making mode given a particular situation as postulated by the scenario.

Most of the scenarios to be used in these exercises will be such that there will be some need for decisions on the part of off-site authorities, not necessarily always in radiation release, but at least plant conditions which would involve decisions require decisions on the part of off-site

authorities, so the scenarios are indeed both an important part of the emergency, ongoing emergency preparedness at any facility, but they're not restricted to any particular set such as the WASH-1400 set of scenarios.

MR. GOLDBERG: Another document that has been relied on throughout the last few days of testimony is an evacuation time estimate prepared on behalf of the applicant.

Generally, why are those estimates prepared and what use are they in emergency planning?

MR. GRIMES: There are two principal purposes for requiring evacuation time estimates to be prepared.

The first is that during the preparation of the evacuation time estimate the evacuation analyses go forward which may identify a particular point in the off-site area which, if traffic controls for example were provided it might expedite considerably the movement of people.

The second principal purpose for the evacuation time estimate is so that decision makers know what their options are in any particular situation.

For example, if one believes that the containment may overpressurize in three or four hours because the core is melting and certain systems are not in operation, and one knows that there is an ability, a likely ability to be able to remove people from the area within one or two hours, one would certainly be wise to initiate evacuation at that time.

However, it might provide a negative indicator on evacuation also; if one had a situation where evacuation had not taken place and suddenly a containment failure was observed which released a large amount of radiation to the environment, the action would not be to remove people if the wind were blowing at five or ten miles an hour, one would know that within a few miles the radioactivity would reach near-site locations within a very short period of time, and so the action would be to tell people to stay inside until the plume had passed rather than to ask them to go out into the streets in automobiles. They would be better protected by staying inside and then if there were contamination of a particular downwind area, then they could be relocated fairly readily out of that contaminated area.

MR. GOLDBERG: Are you familiar with the accident scenario contained in Paragraph 14 of Dr. Kaku's prefiled testimony?

MR. GRIMES: Yes.

MR. GOLDBERG: I wonder if you can just briefly describe what would be the explicit NRC role in response to that.

MR. GRIMES: Yes. The NRC would be notified immediately after occurrence of a large emergency, in fact Part 5772 of the regulations requires a notification any time the emergency plan is initiated, which would include any of the four classes of events. We would expect notification immediately

after notification of the state and local authorities.

I first have to describe who is notified in the NRC. We have an operations center in our East-West Highway Building.

MR. GOLDBERG: That's in Bethesda, Maryland?

MR. GRIMES: In Bethesda, Maryland, which is staffed on a 24-hour a day basis with a duty officer who is generally a professional engineer who has some other job within the NRC at this particular time and is detailed to that job for a week at a time.

This individual receives the notification and is not authorized to do anything except pass information. He on receipt of notification of a significant event would contact, get in contact with the regional duty officer who is on call on a pager, and with the headquarters emergency officer who would be a member of the senior management of NRC.

These individuals would decide, would discuss it and collect additional information from the facility, and would decide whether or not to activate the operation center in Bethesda.

The final decision on that is left to a member of the executive team. Normally it would be the Director of the Office of Inspection and Enforcement, Mr. Stello at this time.

The executive team is composed of the Chairman of the agency or his designee, at this time Chairman Paladino, and the Director of the Office of Inspection and Enforcement, the Director

of Nuclear Reactor Regulation, the Director of Nuclear Materials Safety and Safeguards, and the Executive Director of Operations.

Those individuals and a number of other individuals, including myself who perform technical support duties to that executive team would come to the operations center, and their reaction time would depend on whether it was a daylight or working hours occurrence, or a night-time occurrence; the time for response could range from half an hour to as much as an hour or perhaps an hour and a half, depending on the weather conditions.

So the NRC would initially not play a direct role in guiding the event.

The licensee in the early part of the scenario is responsible to do that.

As soon as a decision to activate the operations center is made, at the same time the Regional Director in this case Mr. O'Reilly from Region II, would be directed to proceed to the site with a technical team from his region. Until he arrived at the site the NRC operations center when the chairman arrived essentially would provide the role of two principal functions, one providing advice, any advice we could to the licensee, and second providing recommendations to off-site authorities directly as to whether the licensee's recommendations are adequate.

Normally we would expect to be endorsing the licensee

recommendations based on what their plant conditions are, but we do have the option of recommending additional off-site action for protection of the public based on what we learned of the on-site plant conditions, so we might have a direct impact on what is done off-site, although we expect our role on-site would be that of advice.

There is one other role early in the accident that the NRC has, and that is we have a resident inspector on-site. If he reaches the control room at an early time, he would -- he's responsible to judge the general tenor and whether things are under control or not, and to report that back to headquarters, but he's also responsible to the extent possible to relieve the licensee of the communications burden with the NRC.

He would be the most likely to man the telephone to the NRC and relieve the licensee of that function from the control room.

After some period of time, the regional office team would be expected to arrive on-site, and after they had become familiar with the situation and had communicated back with the operations center, our plan calls for delegating the NRC lead responsibility to the Regional Director at the site rather than continuing to operate and give advice from the operations center in Bethesda.

We believe this on-site presence and face to face interaction to be very important in making sure that misunder-

standings and miscommunications are minimized, and we believe the Regional Director can have a better feel for the actual on-site situation than the people in Bethesda.

The responsibilties transferred would include the responsibility to recommend actions to the licensee, the responsibility to recommend actions to on-site authorities, the responsibility to make any press releases or give any press conferences that the NRC might have, and to coordinate press information with the licensee and off-site authorities from his position at the site.

He may also be given the authority to direct the licensee -- of course, the NRC has by statute a responsibility to protect the health and safety of the public, which includes the ability to direct the licensee through its management at any time. The NRC does not believe that an emergency situation is likely to be a situation where directives to the licensee are likely given the current state of planning and preparedness and the common nomenclature and common understandings of what would be done in an emergency.

However, that responsibility is there, and it's very likely that it would be used with great caution. For example, the present chairman, Chairman Paladino, has participated in two exercises with the operations center, one in conjunction with the Zion facility, and one in conjunction with the Browns' Ferry facility this summer, and in both cases he transferred

responsibility for recommendations to the Regional Director, but reserved the direction authority to himself indicating in that except in cases where the Regional Director felt is was not time to consult with headquarters, indicating that he feels that the directive authority should be used with great caution.

MR. GOLDBERG: I wonder if you can again, with regard to the scenario, if you could briefly describe what the explicit non-NRC federal responsibility would be?

MR. GRIMES: Yes.

To do that, I characterize the NRC response as being toward the technical aspects of radiation emergency, and the Federal Emergency Management Agency would coordinate the non-technical aspects. In other words, any assistance the state might need in obtaining whatever aid they might need from other federal agencies that they could not readily obtain, logistical considerations, everything from additonal funding, emergency funding, to more blankets for a reception center; it would cover a very broad spectrum and cover the entire spectrum of agencies.

The FEMA has published a master plan in the Federal Register for coordinating federal agency response, and the agencies named in that include the Department of Energy, the NRC, the EPA, HEW, and they have all agreed to work within the framework of that response plan, so we expect that the NRC would make technical recommendations when possible coordinating these to the off-site authorities on whether, for example, sheltering or

additional evacuation was appropriate based on the NRC's knowledge of what's going on, and when possible coordinating this with the Federal Emergency Management Agency so that when the recommendation is presented the NRC would give the technical recommendation and the Federal Emergency Management Agency would be prepared to say what could be done to assist the state and local authorities in carrying out the recommendation from the federal viewpoint.

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MR. GOLDBERG: Go ahead, did you have anything else to add?

MR. GRIMES: I forgot it.

MR. GOLDBERG: If you recall, you're free to inject it, I just wanted to ask you briefly to comment on a few points that Dr. Kaku made during his testimony. Do you have a copy of his prefiled testimony with you?

MR. GRIMES: Yes.

MR. GOLDBERG: The 6:00 entry postulates an outbreak of panic as the cloud moves over the ten-mile emergency planning zone. In your professional experience is that a reasonable expectation in this kind of a situation?

MR. GRIMES: No, it's not. We have spoken with a number of people on this issue and have had testimony from the Federal Emergency Management Agency for example in the Three Mile Island proceeding, which quote extensively from published reports on public behavior in large accidents of any sort, large natural disasters, and the observed public reaction in this type of emergencies where an evacuation might be required is really the reverse of panic and people tend to behave better in emergency situations than they do in some other situations. So I would not agree with the postulate of panic breaking out.

MR. GOLDBERG: Another point that Dr. Kaku made I believe was that it would be desirable, if not necessary, in order to have a satisfactory evacuation, that emergency planning

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officials, emergency response officials and transportation personnel have a full degree of understanding about nuclear accidents and the risks. Would you care to comment on that point?

MR. GRIMES: Well the degree of understanding required is directly dependent on the role played by these individuals. Certainly individuals who are expected to make measurements of radioactivity must have an understanding of what radioactivity is and be trained in sampling or monitoring technique. They do not necessarily have to understand the interworkings of a nuclear power plant. Similarly, personnel who are expected to carry out an evacuation should be principally trained, and generally are trained through their other activities, such as police or fire activities, to be capable in that particular area. In addition, certain training of emergency personnel is needed if people are sent into areas near the plant where there may be radiation. You have to be aware of the nature of the hazard and be trained to take with them appropriate dosimetry badges or dosimeters, other dosimeters which can verify their exposure after they leave the area. The Federal Emergency Management Agency does have a series of training courses available to local officials; however, it is my belief that even without formal training that for the most part the emphasis must be -- in radiation matters the emphasi for the most part must be in carrying out the normal emergency functions rather than obtaining any significant knowledge of radiation effects or plant accident

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parameters.

MR. GOLDBERG: Another question for Mr. Grimes, Dr. Kaku also made the point that it was important if not essential in order for members of the general population to respond lets say to an evacuation instruction, they have similar or comparable level of understanding of a nuclear accident and the risks. Do you ascribe to that position?

MR. GRIMES: No. The regulations do require that there be information made available on what actions should be taken by the public during an emergency situation and the most important aspect of that with the present system is to know to turn on the radio and to follow the instructions that are given. It is also desirable to make information available and to educate the public immediately around the plant of what the nature of radiation is so they know they should not expect to smell it or see it but they must rely on advice from their civil authorities as to what the best action is from them during that emergency situation.

MR. GOLDBERG: Mr. Kevern --

MR. KEVERN: Could we request a few minute break?

MR. GOLDBERG: Can I request a two minute recess?

JUDGE GROSSMAN: We'll take a five minute break.

(A short recess was taken.)

JUDGE GROSSMAN: Mr. Goldberg?

MR. GOLDBERG: Mr. Kevern, in connection with your appearance today, did you prepare a two-page typewritten scenario

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entitled Scenario - Emergency Preparedness?

MR. KEVERN: Yes, sir.

MR. GOLDBERG: I have distributed copies of this to the Board members and reporter.

You have heard the testimony of Dr. Kaku and have seen his prefiled testimony on paragraph 14 which describes his accident scenario, is that correct?

MR. KEVERN: That is correct.

MR. GOLDBERG: Does this document basically summarize some of the key timing sequences for the emergency response which -- emergency response to that accident?

MR. KEVERN: Basically yes. The staff prepared the scenario which includes the emergency preparedness responses and actions which generally correspond to Dr. Kaku's scenario.

MR. GOLDBERG: Could you basically describe what that emergency response would be?

MR. KEVERN: Yes. First, I'd like to make several preliminary points. In preparing this scenario, the staff noted first that the scenario postulated by Dr. Kaku was extremely generalized and so consequently the staff has identified general emergency preparedness responses and actions. As Mr. Grimes noted before in his testimony, the staff noted that scenarios for the periodic emergency exercises required by our regulations specifically identify events and stages such that specific emergency preparedness responses and actions and timing thereof

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can be predetermined in advance and then subsequently evaluated.

Secondly, several of Dr. Kaku's assumptions pertaining to emergency preparedness responses and actions are not valid and the staff did not interpret these assumptions as being constraints when we put together our scenario on emergency preparedness responses and actions.

Thirdly, the staff has assumed that the Applicant's emergency plan and the state and county emergency plans will be implemented. We believe this is a valid assumption and that's based upon the NRC and FEMA review of the Applicant's and state and county plans, evaluation of the full scale emergency exercise held back in May and the NRC inspections at the facility and surrounding areas, the area of emergency preparedness.

So with those preliminary points made, I would like to discuss the scenario that the staff put together.

JUDGE GROSSMAN: Yes, Mr. Bursey?

MR. BURSEY: Did I miss this being offered as evidence?

JUDGE GROSSMAN: It wasn't offered.

MR. GOLDBERG: I'll get to that in a minute, I'll have him summarize it.

MR. BURSEY: I assume at that point Mr. Kevern's qualifications for submission of this in the record will be subject to voir dire?

JUDGE GROSSMAN: Yes.

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MR. BURSEY: Thank you, sir.

JUDGE GROSSMAN: Continue, Mr. Kevern.

MR. KEVERN: If I could just briefly read through the significant parts of the scenario. Approximately 12:00 to 12:05 time frame, we envision that the event is identified per the Emergency Action Level definitions and classified as a general emergency in accordance with the Applicant's emergency plan.

The range of time, approximate range of time between 12:05 and 12:30 several significant actions would be taken. These would include notification of station management, notification of the state, notification of each of the four counties, notification of NRC.

JUDGE GROSSMAN: Excuse me. Is Mr. Kevern now testifying as to what his expectations are or is he representing that these things are going to be done, and if he is I think maybe we do have room for objection now because after he testifies that these are going to be done I think it's superfluous whether the document goes in, so let's find out what he is doing now.

MR. GOLDBERG: Mr. Kevern, by the way, has been previously sworn and has given previously sworn testimony in this proceeding. He is the principal emergency planning reviewer for the Summer project at the NRC and as his preliminary remarks indicate, what he is doing is describing what the specific emergency response would be to the accident scenario that Dr. Kaku postulated, much as Brian -- excuse me, much as Mr. Beale

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did on behalf of the Applicant and he is giving the evidentiary basis for his description of these various events and their timing and there is an evidentiary basis for all of those. I had merely distributed this I suppose more for the convenience of the Board and parties to read. I think it would be helpful to offer it into evidence, but that is the nature and substance of his testimony. If there is any valid voir dire that could be conducted prior to him giving this testimony, I don't object to it being conducted now.

JUDGE GROSSMAN: The Board isn't going to voir dire Mr. Kevern but we're pointing out that Mr. Bursey can if he wants to and you have indicated that the staff has no objections, so if Mr. Bursey wants to voir dire now he's entitled to do it. Otherwise he can wait until his time to cross examine.

Mr. Bursey?

MR. BURSEY: Thank you, sir.

VOIR DIRE EXAMINATION

MR. BURSEY: Mr. Kevern, you stated that you prepared the scenario that the staff is presenting?

MR. KEVERN: I was the lead preparer, the staff as a whole prepared the scenario.

MR. BURSEY: Are you a qualified reactor operator?

MR. KEVERN: Could you define --

MR. BURSEY: A licensed reactor operator.

MR. KEVERN: I am not currently a licensed reactor

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operator.

MR. BURSEY: Have you ever been a licensed reactor operator?

MR. KEVERN: For seven years I was an engineering officer in the U. S. Navy on board a nuclear submarine. To make the comparison with a civilian analogy, in a civilian situation I was a shift supervisor in this field for seven years.

JUDGE GROSSMAN: Mr. Kevern, could you speak up? I believe the reporter is having a little difficulty.

MR. KEVERN: I'm sorry, should I repeat that?

THE REPORTER: No.

MR. BURSEY: It was your determination that the event that is referred to at noon in your scenario as "event" is identified, that you were the one that made the determination that the shift supervisor recognized that that event necessitated the declaration of a general emergency?

MR. KEVERN: The scenario is put together based on in part my experience but mainly with respect to having reviewed the Applicant's plans and implementing procedures in the area of emergencies.

MR. BURSEY: Yes, sir, were you the one that made the determination that it took the Applicant's shift supervisor five minutes to declare a state of general emergency?

MR. KEVERN: I was the lead reviewer in making the entire review of the Applicant's emergency preparedness, yes.

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That would be one aspect of it.

MR. BURSEY: Did you make the decision that the Applicant's shift supervisor initiated the general emergency at 12:05?

MR. KEVERN: I did not make that decision, no. As I said I put together -- we put together the scenario based upon what the Applicant's plans and implementing procedures provide for and we believe that they will be implemented as stated because of our review and our inspections on site and our evaluation of the emergency exercise that was conducted.

MR. BURSEY: My question was a little simpler than that. If you were not the one who decided, then who decided that the Applicant is going to recognize the state of general emergency five minutes after the transient.

MR. KEVERN: Staff decided that was the appropriate time based upon the Applicant's plans and procedures.

MR. BURSEY: Well you're speaking collectively, if you could be specific and tell me who it was that made the decision. I'm wondering if they're qualified to assess that.

MR. KEVERN: I made the initial decision as far as putting together the scenario and I had the draft of the scenario reviewed by other persons on the staff and received their concurrence on it.

MR. BURSEY: And you say that you feel that five minutes is in keeping with the Applicant's emergency plan, is

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that correct?

MR. KEVERN: Yes, approximately.

MR. BURSEY: Is there anything in the Applicant's emergency plan that clearly mandates that in the event of transients or human failures or common load failures that would result in the loss of cooling accident, that they have five minutes to declare a general emergency?

MR. KEVERN: No, there is not a procedure that says they have five minutes in which to do that. What they do have procedures and the Applicant has essentially testified on is their specific identification of instruments, gauges, plant parameters, which permit the operators to make that identification and subsequent classification.

(Brief pause.)

MR. BURSEY: When did you prepare this scenario, Mr. Kevern?

MR. KEVERN: Last week.

MR. BURSEY: Have you seen the Applicant's emergency scenario?

MR. KEVERN: No, I have not.

MR. BURSEY: And you personally made the determination that the shift supervisor was able to determine either a loss of control or core degradation in determining the five minute reactor time?

MR. KEVERN: No, what I did was deduce from the Applicant's

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plans and procedures and my review there and the discussions and review of operators, personal interviews, etc., that an operator at the station would be able to identify as specifically spelled out in the plans the parameters or indications as stated in Dr. Kaku's scenario, that would readily identify that situation, i.e., LOCA with a loss of ECCS capability as being a general emergency and my estimate based upon what the plans state and our review would be approximately that time frame.

MR. BURSEY: Judge Grossman, that would conclude my voir dire. I would offer that Mr. Kevern hasn't laid any basis nor specific qualifications to make the assessment that this exhibit makes and I would move that it not be included.

JUDGE GROSSMAN: Okay, the exhibit hasn't been offered now but we understand the objection is to Mr. Kevern's testifying with regard to that first part of the sequence from 12:00 to 12:05.

MR. BURSEY: The nuclear physics behind the initiating of various transients that would necessitate the implementation of this plan and his choice of that time limit.

JUDGE GROSSMAN: We will allow the testimony in and we note your objection to it and we'll take that into account certainly in weighing the testimony.

Proceed, Mr. Goldberg.

MR. GOLDBERG: I guess, Mr. Kevern, you were -- why don't I first offer the document and then ask Mr. Kevern to continue his summary. I will now formally offer this two-page scenario

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on emergency preparedness, that it be received as part of Mr. Kevern's -- well let me ask you first, do you adopt this as part of your testimony in this proceeding?

MR. KEVERN: I do.

MR. GOLDBERG: I'd like to move that this be received in evidence and bound into the transcript as though read.

MR. BURSEY: I would register the objection I just previously stated.

JUDGE GROSSMAN: Mr. Goldberg, I'm not sure that I did get an answer to the question I posed to you earlier as to what the document is supposed to represent. Is this now Mr. Kevern's evaluation of what will take place or his hope that these scenarios will be followed or met? I'm not quite sure what it is that you're offering in the document.

MR. GOLDBERG: First of all, the document is merely illustrative of what the emergency response would be to the initiating event that Dr. Kaku postulated under the existing station, state and local plans and as Mr. Kevern said one obviously must assume their implementation contrary to contrary assumptions and it is merely illustrative of what would happen from emergency planning standpoint, given that initiating event.

JUDGE GROSSMAN: Okay, we'll allow that in. I'm sure there will be questions on cross examination, but proceed.

(Insert.)

Scenario - Emergency Preparedness

12:00 - 12:05

- Event is identified per Emergency Action Level definitions and classified as General Emergency in accordance with applicant's emergency plan.
- The Shift Supervisor is the Interim Emergency Director.

12:05 - 12:30

Actions of station personnel include the following:

- Notification of
  - station mangement
  - Department of Health & Environmental Control (SC)
  - Division of Emergency Preparedness (SC)
  - Fairfield, Newberry, Richland, & Lexington Counties
  - USNRC
- Initiate evacuation of non-essential station personnel.
- Recognize accident as a core melt sequence.

12:30

- Public alerting system (sirens) activated and recorded message broadcast on radio.

12:30 - 12:45

- Public notification in progress - shelter is recommended.
- Onsite emergency organization fully established - Technical Support Center is activated.
- Precautionary evacuation of 2-mile radius and downwind sectors to 5 miles is recommended by SCE&G.

12:45 - 1:00

- Evacuation of 2-mile radius and downwind sectors to 5 miles is ordered and commenced.

1:00

- State Emergency Operation Center (Columbia) operational.
- Emergency Operations Facility (SCE&G) activated.

1:15	° Potential significant release is predicted.
	° Precautionary evacuation of 5-mile radius and downwind sectors to 10 miles is recommended by SCE&G.
	° NRC confirms SCE&G recommendations on evacuation and parallels recommendations to the State.
1:30	° Evacuation of 5-mile radius and downwind sectors to 10 miles is ordered and commenced.
2:30	° NRC emergency response team arrives at Columbia, S.C.
	° Evacuation of 2-mile radius and downwind sectors to 5 miles is completed.
3:00	° State Forward Emergency Operations Center (Winnsboro) is operational.
	° Evacuation of general population (private automobiles) within 5-mile radius and downwind sectors to 10 miles is completed.
3:30	° NRC emergency response team arrives at near-site Emergency Operations Facility.
4:00	° Evacuation of balance of the public (i.e., transportation disadvantaged) within 5-mile radius and downwind sectors to 10 miles is completed.
5:00	° Major radioactive release commences.

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MR. GOLDBERG: Mr. Kevern, I don't know what entry you were in your scenario. By the way, let me ask before we continue because there were some questions about 12:00 to 12:05 entry in that scenario. Were you here during the testimony of Mr. Storz?

MR. KEVERN: Yes, I was.

MR. GOLDBERG: And you heard his describe the manner in which the Applicant would -- or their operations were capable of discerning the presence of a large break LOCA accompanied by a loss of ECCS?

MR. KEVERN: Yes.

MR. GOLDBERG: There are also initiating conditions for a general emergency, isn't that true?

MR. KEVERN: Yes, sir, that's true.

MR. GOLDBERG: Is a large break LOCA among those?

MR. KEVERN: Yes, sir.

MR. GOLDBERG: Is that initiating condition one for which a general emergency must be declared?

MR. KEVERN: The combination of a LOCA and lack of ECCS is an initiating condition that would result in the classification of a general emergency.

MR. GOLDBERG: With that qualification, your answer is yes?

MR. KEVERN: Yes.

MR. GOLDBERG: Would you then proceed I guess with the

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12:05 entry and beyond to describe the emergency response?

MR. KEVERN: Perhaps a clarification point would be that in reading the scenario of Dr. Kaku, it was generalized and it was not specifically clear as far as when certain events were happening. If the LOCA were indeed initiated at 12:00 and it was as gross as was described here, there would not be a five minute lag before ECCS was initiated, so perhaps one of the assumptions I had not stated but did assume was that it was not a -- ECCS did not come on immediately, then five minutes later was secured, it was that the entire event initiated at one point in time here, 12:00 and ECCS was immediately manned and did not function for whatever reason. I do not want to imply that at that precise instant 12:05, ECCS at that point malfunctioned and instantaneously the operator identified that. Perhaps that was the way my scenario was being read, but that was not what I intended. I hope that point is clarified.

End F.

Glgjs

Proceeding on, then, approximately the 12:05 to 12:30 time frame enumerated some of the immediate actions, plans and procedures called for. That would be notification of station management, notification of the state, notification of the four surrounding counties, notification of the NRC. Also within this approximate time frame there would be the initiation of evacuation of non-essential station personnel. And within this time frame the operators would recognize the accident as a core melt sequence.

JUDGE LINENBERGER: Sir, excuse me, but in this sequence of notifications I don't see explicitly called out any notification to utility management. Now, is the station management the same as utility management?

MR. KEVERN: Yes.

JUDGE LINENBERGER: Thank you.

MR. KEVERN: Approximately 12:30, the public alerting system would be activated. That is the sirens in the case of the Summer Station. And recorded broadcast would be put out on radio.

At approximately 12:30 to 12:45, public notification would be in progress and initially shelter would be recommended. Let me point out that in a general emergency situation, an instantaneous situation of going from normal plant operation directly to a general emergency, the guidance is that shelter be initially recommended, as Mr. Grimes testified to.

Also within that time frame, the on-site emergency organization would be established as the technical support center.

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There would be a recommendation by the Applicant of precautionary evacuation of the two-mile radius and downwind sectors to five miles.

Within the approximately 12:45 to 1:00 time frame, evacuation of the two-mile radius and the five-mile downwind sectors would be commenced.

At approximately 1:00 the State Emergency Operation Center in Columbia would become operational, and the Applicant's Emergency Operations Facility would be activated.

At approximately 1:15, the assessment would be made that given the scenario that Dr. Kaku had proposed that a potential significant release would be anticipated or predicted. There would be a precautionary evacuation recommended by the utility of a five-mile radius and downwind sectors to ten miles distance. We would have the Nuclear Regulatory Commission confirming the utility's recommendations on evacuation, and the NRC would be paralleling those recommendations to the State.

At approximately 1:30, evacuation of the five-mile radius and the ten-mile downwind sectors would be commenced.

At approximately 2:30, the NRC emergency response team from Region 2 in Atlanta that Mr. Grimes testified to would be arriving at Columbia. At this point in time approximately, evacuation of the ten-mile radius and downwind sectors to five miles would be completed.

At approximately 3:00, the State Forward Emergency

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Operations Center in Winnsboro would become operational. Also, evacuation of the general population--that is, the segment of the population that owns private automobiles--within the five-mile radius and the ten-mile downwind sectors would be completed.

At approximately 3:30, the NRC emergency response team from the region would arrive at the Applicant's Emergency Operations Facility.

At approximately 4:00, evacuation of the balance of the public--that is, the segment of the population, the residents who did not have private automobiles but would require bus transportation--would be completed within the five-mile radius and downwind sectors to ten miles.

And then in completing the scenario proposed by Dr. Kaku as I read it, or as the staff interpreted it, at 5:00 the major radioactive release would commence.

MR. GOLDBERG: Mr. Grimes, did you review the scenario that Mr. Kevern just described?

MR. GRIMES: Yes, I did.

MR. GOLDBERG: Do you join in adopting that as the staff testimony of what the emergency response would be, given the postulated scenario by Dr. Kaku?

MR. GRIMES: Yes.

MR. GOLDBERG: I have no further questions of these witnesses, and they're available for cross-examination.

JUDGE GROSSMAN: First, I'd like to thank you for having

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put on some of that testimony by Mr. Grimes, which really isn't evidence in the case but apparently addresses the Board inquiries into the background for the NUREG and the regulations; and it's basically a staff position that would not, of course, be heard in a court of law, but something that we did desire.

MR. GOLDBERG: Let me explain that. It is sworn testimony, and to the extent that it bears on the contested issue, which I concede little doesn't, I see it as perfectly valid testimony.

JUDGE GROSSMAN: Well, now, we ordinarily do not hear nor does a court here testimony on staff interpretations or parties' interpretations of the law. And we ordinarily do not go beyond the adoption of regulations and the law. What is on the face of the regulations and can be implied from them are things that we take into account when we interpret it and write our decision.

Now, we've gone beyond the adoption of those things, and I think the Board did express some concern about the staff position and you did put it on. But we will make our own interpretation of the law, notwithstanding what the staff interprets the law to be.

MR. GOLDBERG: Well, let me say, by the way, that Mr. Grimes is not here to interpret any regulations or any law. Mr. Grimes, I think, described his role in the preparation of the rules. He's the Co-Chairman of NUREG 0654, and to the extent that that's been the subject of testimony and some construction, it's entirely relevant and valid. He's not here to argue legal points.

Now, there also was testimony by Dr. Kaku. Much of his

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scenario centered around the status of emergency planning at the time of TMI.

Mr. Grimes has given very relevant testimony to the progression of emergency planning since TMI as relates to the response of the particular scenario here that's been postulated.

JUDGE GROSSMAN: Well, Mr. Goldberg, we're not going to have an extended argument. I'll just make the Board position clear on that. As far as what Mr. Grimes' task force may have done that went into the adoption or promulgation of 50.47 or 50.33, it's really not evidence in the case. And it is something that is of interest to the Board, but is not something that we're going to rely on in interpreting 50.47. We do not go beyond regulations that way by having people say "I was there when Congress enacted this" or "the Commission promulgated a regulation." That just is not the way regulations in the statute are interpreted.

That is what the Board's view is, and we don't need any prolonged argumentation on that.

Now, Mr. Bursey, you can proceed with your cross-examination.

MR. KNOTTS: Judge, may I speak very briefly on the last point so our position will be on the record?

JUDGE GROSSMAN: Certainly.

MR. KNOTTS: We would agree generally with the staff, although we would not dispute the proposition with the Board that to the extent that Mr. Grimes' testimony might be viewed as

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testifying as to what the law is it's not to be accorded evidentiary weight.

JUDGE GROSSMAN: Thank you, Mr. Knotts. And if you can find something else that's in there with regard to the task force, we'll see it, I suppose, in your proposed findings.

Mr. Bursey, you may proceed.

MR. BURSEY: Yes, sir. I was going to ask if it might not be a good time to break for lunch and let me begin cross-examination after lunch.

JUDGE GROSSMAN: Let me ask you how much time you think you're going to be taking on cross-examination.

MR. BURSEY: Less time than we did with the Company witnesses. Thirty minutes to an hour.

JUDGE GROSSMAN: Mr. Bursey, we will take a lunch break, and we're going to set a time to come back. But in view of the fact that you were here eighteen minutes late this morning and that has been a repeated occurrence, we're going to start at the time we say. And if you're not here and it's your turn, which it is now, you're going to lose your chance at cross-examination. Is that clear?

MR. BURSEY: Yes, sir.

JUDGE GROSSMAN: Is 1:15 agreeable to all the parties? All right, then.

(Whereupon, a luncheon recess was taken at 12:25 p.m., the hearing to resume at 1:15 p.m.)

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JUDGE GROSSMAN: Mr. Bursey, are you ready to proceed?

MR. BURSEY: Yes, sir.

Mr. Grimes, you mentioned in your testimony that there are standards for adequacy that you weighed in the utility's emergency plans against the standards of adequacy, assessed both the plan and the feasibility of implementation of the plan. Is that right?

MR. GRIMES: That's correct.

MR. BURSEY: And in assessing the feasibility of implementation of the plan, is there some standard for assessing the capability of local and state officials?

MR. GRIMES: No. Our inspection process on implementation of the plan relates to the on-site or the utility plan, and we rely on the Federal Emergency Management Agency to provide us a finding with respect to the off-site plan and the capability to implement the plan. Of course, we also have contact between the NRC reviewers and the FEMA reviewers and observe some of the interfaces during the exercise. So, we're generally aware of what FEMA is doing in the area, but we do not duplicate the reviews in the off-site area.

MR. BURSEY: Do NRC regulations require the Applicant to educate or assess the local officials to the accident impacts?

MR. GRIMES: Could you repeat that? You said educate or assess?

MR. BURSEY: I'll just rephrase it. Is there any rule

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that requires the Applicant to educate the local emergency planners what they could anticipate to encounter in a PWR event?

MR. GRIMES: The licensee is responsible to provide training for those individuals who may have to come on site in the course of their duties, such as fire people. And indirectly they are, I suppose, responsible in that if the Federal Emergency Management Agency does not make a positive finding, then the license would likely not be granted unless the utility could show that there were some sort of compensatory measures. So, the utility has an interest in seeing that adequate off-site preparedness is carried out, but the NRC does not have regulatory authority over off-site officials. So, with respect to off-site preparedness, relies on the Federal Emergency Management Agency for the finding and then gives that great weight in the finding as to whether a license should be granted.

So, there's no direct responsibility of the licensee to train specific off-site people, but there is an indirect interest on the part of the utility to see that, for example, resources for a notification system or communication system are in place.

MR. BURSEY: You do have, though, a mandate for off-site public notification that the Applicant must adhere to, is that correct?

MR. GRIMES: No, it just says the Applicant must demonstrate that it is in place, and the regulations specifically flag that item because it is a rather large resource item and the

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Commission wishes to make clear it's the licensee's responsibility to demonstrate it, although it may well not be purchased by the licensee in some cases and would be activated by off-site authorities in the actual event of an emergency.

MR. BURSEY: It sounds like you're referring to hardware such as a siren.

MR. GRIMES: Yes.

MR. BURSEY: What about software, such as the emergency brochure that goes out to people living in the ten-mile zone?

MR. GRIMES: The utility's responsible, again, to demonstrate that there is something available. And depending on the location situation, that may be distributed by the utility or there may be an agreement by which the State, for example, provides the distribution of the information. If the information is distributed, then the requirement is met.

MR. BURSEY: Is there a regulatory standard against which to weigh the adequacy of the emergency brochures?

MR. GRIMES: There is no detail in the standard. However, the NRC and FEMA do review the information and provide comments to the utility and to off-site authorities as appropriate.

MR. BURSEY: Does their review include considering if the brochure understates or overstates the potentiality of impacts?

MR. GRIMES: That would be a comment. I have, in fact, seen a comment to that effect in some cases. Specifically commented that too much of the brochure was devoted to minimizing the

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potential of the accident rather than describing the actions which individuals should take in the event of an emergency.

MR. BURSEY: In a memorandum from FEMA to you, it was brought to your attention that there were some inadequacies in the brochure. Are you familiar with that particular document?

MR. GRIMES: I don't recollect it at the present. What you've handed me is a May 21, 1980, memo to myself from John Dickey regarding comments on the public information brochure for V. C. Summer. I'd have to ask Mr. Kevern whether this has yet been transmitted to the licensee.

MR. KEVERN: It has been transmitted. The information there has been provided to the Applicant.

MR. BURSEY: Well, Mr. Grimes, item 2 there is the Nuclear Regulatory Commission has been deferred to by FEMA on a question of the utility overstating the level of cleanliness. I assume they mean degree of radioactivity. Is this an issue where you have some type of statutory authority to regulate?

MR. GRIMES: No. If we did disagree there, we would comment on that matter to the utility, and I suppose that in an extreme case it could find the brochure unsatisfactory if there were gross errors of fact.

I guess I'd like Mr. Kevern to speak to the specifics of his review of this item.

MR. KEVERN: This discussion was brought out in the previous testimony, in fact the previous session. Staff and FEMA

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did perform a review of the Applicant's brochure. The FEMA review comments are as stated in this memorandum of May 21st from FEMA to Brian Grimes. The NRC staff did an independent review and had comments, all of which have been provided to the Applicant. And we have received assurance that the comments will be incorporated in the forthcoming revision to the information provided by the Applicant.

MR. BURSEY: My question was more of regulatory authority for Mr. Grimes. Your answer is that you don't have any regulatory authority to the specific content of the brochure?

MR. GRIMES: Well, if the brochure was factually inaccurate and it could be determined to be a major deficiency of the plan, if it gave misleading information or particularly if it would cause individuals to take the wrong actions in an emergency situation, it could be deemed a major deficiency and for a plant which did not yet have a license the staff could take the position that a license could not be issued, or for a plant that was in operation we could start a four-month period in which the deficiencies would have to be corrected. That would be for very major things that would impede the emergency response and meet the test of not being able to make a reasonable assurance finding on the state of preparedness.

The typical case is we find items which would be better stated a different way and which can't wait until the next revision of the particular brochure.

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MR. BURSEY: So, were the brochure in your estimation to underplay the effects of a significant accident to the extent as to give the public a false sense of confidence, that would be a significant deficiency?

MR. GRIMES: No. What I said was to the extent that we could not make a reasonable assurance finding that appropriate actions would be taken during emergency.

MR. BURSEY: You mentioned the siren system for public notification. Are there any regulatory authorites that would require the sirens to have an alternative source of power to the standard electrical alternating current?

MR. GRIMES: No.

MR. BURSEY: Do you know of any siren systems in use that do, indeed, have such an alternate souce of power, such as solar charged batteries?

MR. GRIMES: I'm not aware of solar charged batteries, but there are two different types of siren systems. One, electro-mechanical, which relies on AC power source; and one electronic, which can be run from batteries which are continuously recharged by an AC power source.

In the case of the electronic siren system, they could operate for some period of time without an AC power source.

MR. BURSEY: Would you think that that would be advisable as the major means of public notification that they have an alternative power source?

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MR. GRIMES: No. There are advantages and disadvantages to the various types of siren systems. We considered whether a backup source of power was necessary and determined that it was not necessary for the siren systems, mainly because of the low likelihood first of coincidence of loss of power event and accident; and second, accidents which might be initiated by a long-term loss of AC power plus additional failures within the plant would be more slowly developing accidents and one would have more time to use alternate means to alert the public.

MR. BURSEY: You mentioned some experience with the evacuations for natural disasters.

MR. GRIMES: Yes.

MR. BURSEY: Have you ever had any experience where the evacuations were in the event of a potential core melt?

MR. GRIMES: No.

MR. BURSEY: Do you think there's significant differences between an evacuation that would be precipitated by a potential core melt and the natural disaster?

MR. GRIMES: It would depend on the natural disaster.

MR. BURSEY: Say hurricane?

MR. GRIMES: A hurricane would be a more slowly developing and usually predictable item. A flash flood, for example, or a dam failure would not be. The closest analogy in the non-nuclear area, of course, is the chemical hazard, where large populations have been evacuated in the face of chemical accidents.

MR. BURSEY: Has there ever been an evacuation of a significant amount of people during a potential core melt?

MR. GRIMES: No.

MR. BURSEY: Do you feel that there are definite fears and uncertainties associated with radiation or nuclear accidents that might not be associated with a chemical accident or hurricane?

MR. GRIMES: There may be in certain individuals, but I could not say that they would make a difference in an emergency situation.

MR. BURSEY: But you cannot say they wouldn't?

MR. GRIMES: I think based on all the experience with other large emergencies, including emergencies which involve, say potential releases of chemicals where the effects are not directly known--for example, one does not need to inform the public of the particular chemical that is being released to ask them to evacuate from an area. So, there is a certain unknown effect there.

MR. BURSEY: Are you familiar with the evacuation time assessment that was done by Wilbur Smith?

MR. GRIMES: For the Summer Station?

MR. BURSEY: Yes.

MR. GRIMES: Only generally. I have not reviewed it in detail.

MR. BURSEY: Were you aware that Wilbur Smith & Associates was removed from a contract doing the evacuation assessments at Three Mile Island?

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MR. GRIMES: No, I was not.

MR. BURSEY: Mr. Kevern, do you have personal knowledge of the Wilbur Smith & Associates dealings with the evacuation assessments at Three Mile Island?

MR. KEVERN: Three Mile Island, no, I do not.

MR. BURSEY: Mr. Grimes, does the Commission consider sheltering in the event of a postulated PWR-3 like the scenario we had before us, or is the option of sheltering looked upon more favorably now than it was two years ago?

MR. GRIMES: Before Three Mile Island?

MR. BURSEY: Yes, sir.

MR. GRIMES: I would say more consideration has been given to all the options, and I think we put more emphasis on being able to make an intelligent choice at the time of the emergency with respect to the particular option used. And part of that involves getting more information on the evacuation times, and part of it involves a recognition that sheltering is always better than being outside and it is the appropriate immediate action to take while the people are figuring out what the optimum action would be in a particular case.

MR. BURSEY: At 12:30 in your scenario, shelter is recommended and a precautionary evacuation.

MR. GRIMES: Well, I think Mr. Kevern characterized that as a sequential between approximately 12:30 and 12:45. The initial recommendation probably by recorded message would be for

people to stay inside; and when a specific decision is made for evacuation--which could have been even before the shelter is recommended and thereby eliminating the need to recommend shelter, but more likely sometime a few minutes after that or sometime after that--then there would be a sequential upgrading of that recommendation to stay inside and likely prepare your household for an evacuation if necessary, then followed by an evacuation recommendation within certain sectors and distances.

MR. KEVERN: I'd like to clarify a point there, please. The first entry there, in the 12:30 to 12:45 time frame, shelter is recommended. That is the broadcast that's being made on the radio. That is the recommendation to the public that is being broadcast. The third part there under that same time entry is the recommendation being made by SCE&G to the county officials. So, it's two different situations. The counties are being recommended to add this evacuation by the Applicant, and in approximately that same time frame, preceded by some two minutes here is what's actually being broadcast to the public at that time.

I'm trying to illustrate the decision process that's being made, in that the Applicant assesses the situation and makes its recommendations to the county and also to the state, and simultaneously or beforehand there is actual action being taken and information being broadcast to the public.

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BY MR. BURSEY: (Witness: Grimes)

Q. Mr. Grimes, you mentioned there is a duty officer in some office of yours in Washington?

A. Yes.

Q. And what is that office?

A. Well, it is called an Operations Center, and it is the location where the NRC headquarters response and analysis takes place. It is manned 24 hours a day, as I said, 24 hours a day by the duty officer to receive messages?

Q. He is on duty for a week?

A. He is on duty for one shift for approximately a week, so there would be three duty officers to man it around the clock. I am sorry if that was not clear.

Q. I was going to suggest that that would be more tiring than the hearing.

And you said Mr. Stellar would make decisions, the head of the Executive Committee?

A. He is the head of the Office of Inspection and Enforcement and a member of the Executive Committee. He would be the usual individual to receive the information and decide to activate the center, the center would be almost automatically activated for any site area emergency or general emergency, as the head of the executive team is the Chairman of NRC who would be responsible for decisions taken during the emergency by the NRC headquarters staff.

Q. You also said that the expect the on-site rules be that of advice, advisory; what else could it be?

A. Well, there is a residual authority for the NRC to issue orders to the licensee and it's highly unlikely that those orders would be issued--well, they certainly would not be issued without detailed consultation with the facility management and most likely the form or reason for those orders would be to assist the utility in making the decision.

For example, if there were a low level of activity in the containment building and the pressure were at say 10 or 20 pounds but was expected to rise to some higher pressure at a later time, the appropriate decision might be to release that small amount of activity to give the plant more margin to later build up pressure and hold in whatever later major releases there might be to the containment. In that event, it might require exceeding some of these technical specifications and an order from the NRC in consultation with the utilities to proceeding with that release might make clear the legal status of the utility, although the utility is responsible to take whatever action is necessary to safeguard the health and safety of the public. Nevertheless, an order might assist in clarifying responsibilities and expressing NRC's agreements with a decision to release a minor amount of radioactivity for example to build more assurances that there would be no later large amount of release.

Q What is this authority a residual of?

A NRC and again, I am not a lawyer, but the statute the Atomic Energy Act and NRC is charged with checking the-- not issuing licenses or letting licenses continue unless there is reasonable assurance that the health and safety of the public is protected. With that comes the authority to order licensees to take specific actions or withdraw licenses, that sort of thing so that there is an authority to take legal action, but again, I am not sure but that is my understanding of what the situation involves.

Q Is that what you referred to as directive authority?

A Yes.

Q And then that directive authority gives you the capability of making decisions unilaterally should the circumstances warrant to take certain technical measures.

A To order the licensee management to take certain action.

Q Does that also give you the authority to order an evacuation?

A No, we have no authority off-site. We could and the scenario indicates we would be in contact with the state and parallel with the licensee and if the licensee had not recommended evacuation in a situation of this sort, may have the information, the basic information that we had a loss of coolant accident, the emergency core cooling systems were not

working, that there is obviously a core melt in progress, we would certainly advise the state in this situation in our view that evacuations were appropriate, yes. However, the final decision is with the off-site authorities, not with the NRC. The NRC has no authority to order an evacuation.

Q. You mentioned that you felt that evacuation personnel should be trained for the nature of the hazard expected. Would you include an understanding of the magnitude of the consequences part of that understanding?

A. Well, I suppose it is important for the emergency workers to realize that certain levels of activity, radioactivity can be fatal for example. That to me is the range between not harmful and very harmful to that individual and he has to recognize that in certain situations there may be life threatening doses of radiation but by the same token, he would also know that he is not going to be ordered into it, a life threatening situation, so it is the same as many emergency situations, the emergency worker knows by the nature of his job that there are certain situations that can be life threatening to the worker.

Q. Do you think it would be helpful to a County Emergency Plan, lets say Fairfield County, the host county, to understand and to be on alert for potential situations that could result in a large number of fatalities?

A. I would say that would enhance his dedication to

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the job where he would have the knowledge to perform a specific task called for under the plan. I don't believe I could say it is a prerequisite to his doing the job.

(Brief pause.)

Q. On page 2167 of the transcript, Mr. Douglass, who is a County Director of the Office of Emergency Preparedness of Fairfield County, the host county, states that "I don't think there would be that type of release that would be the cause of any deaths".

A. Well, I think his thought appropriate. I don't believe there will be one either at this facility, but there are certain low likelihood events that make it not impossible. As to the overall off-site preparedness, the capability of course as I indicated before where we would rely on the judgment of the Federal Emergency Management Agency as to whether these individuals and organizations are capable and have performed in the exercise.

Q. But if that were a statement that evidenced his lack of understanding of potentiality of fatality, then you would see that as an inefficiency in his education?

A. I said I could not determine it to be a prerequisite for his performing his functions. It seems to me that it is a desirable thing to recognize that there is an ultimate potential to have very severe consequences.

Q. In your scenario, I believe you said that you assumed

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state and local plans will be implemented, is that correct?

A. That is correct.

Q. And you also apparently assume that the applicant would implement their emergency procedures, is that correct?

A. That is correct.

Q. Did you also assume a hundred percent effectiveness of the application of these plans?

A. I am not sure I understand what you mean by a hundred percent application. I would expect, I assume that the plans, procedures would be implemented, procedures would be carried out. The steps are rather straight forward. I assume those actions would be taken as specified. Is that what you mean by 100 percent, that some steps would be deleted, or could you clarify?

Q. For the steps to be effective, for instance, there is an assumption on your part that within five minutes the event is identified, a warning precipitates a general emergency. Is that correct?

A. Within the approximate time frame of five minutes, yes.

Q. And were you considering a guillotine break as the initiating accident?

A. I was not assuming any specific event. I was assuming what was given in Dr. Kaku's scenario, a large LOCA combined with failure of the emergency core cooling system.

Q. Would you agree though that there are some transients that could initiate a LOCA that would be more difficult to detect than the five minutes?

A. I believe I would--let me state now, a LOCA combined with a loss of emergency core cooling system, regardless of what initiated that, the indications are going to be somewhat straight forward.

Q. The efforts to, one, assure loss of the ECCS and, two, to mitigate that loss, all of those efforts would be exhausted five minutes after the initiation of an event?

A. That was a question?

Q. Yes, that is a question.

A. Yes.

Q. Another example of your assumption, a hundred percent effectiveness I believe, sir, could be seen in the public alert system being activated and the public notification being in progress instantaneously at 12:30?

A. I would not say instantaneously, given the bounds as I said generally, the rather general bounds of Dr. Kaku's scenario, there was no mention of loss of electrical power within the total 10-mile zone, therefore, I assume that the system would function as designed.

Q. Then all of the sirens would go off?

A. Uh-huh.

CHAIRMAN GROSSMAN: Didn't you just ask a question?

MR. BURSEY: I am sorry?

CHAIRMAN GROSSMAN: Didn't you just ask a question? If you did, let him answer it.

MR. BURSEY: I did and he said uh-huh.

MR. GRIMES: I am sorry, I was waiting. I thought you were still asking a question. I assume that the public alerting system did function as designed, yes.

BY MR. BURSEY:

Q. And the EBS would broadcast upon being informed of the order to broadcast?

A. Yes, upon demand and as initiated, the EBS would function. I might point out, I made those assumptions in trying to follow along with Dr. Kaku's scenario that made no contrary assumptions and so I could maybe have created a great number of scenarios of Emergency Preparedness responses and actions given background on a different initiating situation, but without belaboring the issue or burdening the record, I chose to take what was anticipated to result in the scenario as it was entered into the record.

Q. Yes, the scenario you chose was one of a hundred percent functionality of the EBS and public notification and the applicant following the rule book, a hundred percent effective response. You could have chosen one that was less effective. You could have--if Dr. Kaku's scenario was vague, you could have made assumptions. The assumption you made is

that everything works, is that correct?

A. I assumed that the applicant would implement his plan. One hundred percent effectiveness is somewhat of a confusing term there in that there are the plans, they are the procedures to carry that out. There is more than one individual responsible for doing everything. There is back up individuals and so that in postulating this, I might point out in my timing I did not get down to the minute. I tried to generalize and work in quarter hour increments, except for the initial identification and so I would say these are approximate times and the fact that procedures would be carried out, based upon the NRC assessment, they would be carried out and so it might be a slip up on one operator that would require another operator to remind him of a situation or a step that was not followed, in which case it may take a slight additional time. As far as the hardware with respect to the sirens and the EBS system, yes, I assumed given no information to the contrary they would function as designed.

Q. You were aware when you drew this scenario that the only test of the Emergency Broadcasting System involving the applicant resulted in--there was a 40 minute delay in broadcast, weren't you?

A. I was aware of the results of the May 1 exercise, yes, and at that point in time, there was not a 40 minute delay due to hardware problems, there was a difference of opinion

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on the part of the evaluators and the players in that exercise as to when the EBS system was to be initiated. Once it was initiated, there was not a delay at all.

Q. I think that that delay may have been characterized as confusion, but lets just use that as one example of a potential for time delay in your scenario. You will agree with me, there are many areas where the time sequences in your scenario could slip?

A. Equally, there are situations here where time could be more rapid as I have indicated.

Q. You don't believe in general there is a greater margin for error than for higher success?

A. Would you ask that question again, please?

Q. Then you have the accident recognized in five minutes and the evacuation that was going out within 30 minutes, the EBS working on demand, the evacuation coming off very smoothly at the times stated in applicant's time assessment, that is a pretty well run emergency situation and I suggest to you, sir, there is a greater probability for error than there is for improvement, isn't there?

A. That is possible, I would say that the scenario I put together is based on the NRC assessment of the capabilities of the applicant carrying out the emergency preparedness procedures.

Q. How did you determine at 1:15 that there would be

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a potential significant release?

A. Dr. Kaku's scenario states at 1 o'clock approximately 50 percent of the core is turning molten and the temperatures within the core are going beyond 5,000 degrees, etc., that the core is slipping into the plenum -- and there is many indications that there is a problem beyond the control of the plan and the operator action or the systems actions to mitigate up to this point and fifteen minutes later having already established that the licensee or the applicant's technical support center would have been activated and additional personnel would be on hand and that there would be a quality number of personnel making an assessment of the situation, I believe 15 minutes was a rather conservative time for individuals who make a determination that a potential, the potential exists as there being a release.

MR. BURSEY: I have no more questions.

CHAIRMAN GROSSMAN: Mr. Knotts?

MR. KNOTTS: I have just a couple of questions.

Mr. Kevern, you heard Mr. Beale's testimony in this proceeding?

MR. KEVERN: Yes, I did.

MR. KNOTTS: And you saw the scenario he prepared?

MR. KEVERN: Yes, I did.

MR. KNOTTS: I note some differences in detail between your testimony and Mr. Beale's testimony and I simply

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want to ask you whether you find any such differences in detail to be significant or whether on the other hand you think you generally agree with Mr. Beale's testimony?

MR. KEVERN: I believe the staff's scenario is in general agreement with the applicant. In putting this scenario together, we tried to address what we thought would be all items of interest. For example, the entry at 1:15 where there is a prediction, an assessment on the part of individuals trying to point out how the sequence of events were going to be rather than just the key points of when the evacuation would commence and when it would be terminated or completed, when it would be completed. So in that respect, there is more detail in the staff's scenario, but the staff's and Mr. Beale's are in general agreement.

MR. KNOTTS: You referred in responding to one of Mr. Bursey's question, Mr. Kevern, to the activation of the local county emergency plans. Would that involve activation of county emergency operation centers of some sort?

MR. KEVERN: Yes, it would, the emergency operation centers.

MR. KNOTTS: And where approximately in your scenario would that take place?

MR. KEVERN: Approximately at the time at the state EOC is activated, approximately 1 o'clock.

MR. KNOTTS: Thanks very much, Mr. Kevern.

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Let me see. In answering one of Mr. Bursey's questions, Mr. Kevern, you were asked about efforts to restore cooling or stop the accident or words to that effect and I want to follow up on that question if I may, sir. You didn't assume in preparing the scenario or in your testimony today, that efforts to restore cooling would be stopped just because an emergency was declared, would you?

MR. KEVERN: I did not assume that actions on the part of operators was terminated because of the classification of emergency, no.

MR. KNOTTS: Nor did you assume the converse, that is that the declaration of an emergency otherwise required to be made would be delayed because some action was continuing to restore cooling to the core or otherwise recover the situation?

MR. KEVERN: No I did not make that assumption.

MR. KNOTTS: In those respects then, I take it you would agree with what Mr. Storz testified to in that regard, if you heard that?

MR. KEVERN: Yes, I heard that, Mr. Storz testimony and yes, it is expected that the actions will be taken parallel.

MR. KNOTTS: Tell us if you can, Mr. Kevern, if in your opinion, going back to the May 1 exercise, assume tjat a general emergency had been declared early on in that exercise can you tell us whether it is your belief that the state could

and would have implemented the Emergency Broadcast System in the required time frame given a general emergency?

MR. KEVERN: Yes, it is the staff's belief that the state would have implemented the EBS system when it was appropriate. There was some confusion at the May 1 exercise as to when the EBS system should be initiated. It is very clear in a scenario such as we are discussing here of Dr. Kaku's that there is no question that the EBS system is to be initiated immediately.

MR. KNOTTS: I take it that you base that conclusion on when the state actually activated the Emergency Broadcast System in the exercise once it was clear that that was what they were supposed to do?

MR. KEVERN: That is correct.

MR. KNOTTS: In the steps that you show with two bullets between 12:05 and 12:30, that is to say the sub items regarding notification, I take it they are not necessarily arranged in sequence that the notifications would occur, that is just a list?

MR. KEVERN: No, there was no attempt to make those in sequence.

MR. KNOTTS: I have no further questions.

CHAIRMAN GROSSMAN: Mr. Wilson?

MR. WILSON: Mr. Kevern, as to the confusion that you mentioned that existed prior to the activation of the EBS

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system on the May 1 exercise, do you know whether or not since May 1 there has been clarification of procedures so as to avoid such confusion?

MR. KEVERN: I am aware of the state's response to the FEMA evaluation. There was a concern that it was not implemented, so that the EBS was not initiated in a timely fashion, yes.

MR. WILSON: And what was the state's response?

MR. KEVERN: The response was that in essence the state would modify its procedures to initiate EBS immediately upon either a site or general emergency existing.

MR. WILSON: Do you know whether or not those modifications have been made or proposed at this point?

MR. KEVERN: I would have to refresh my memory. As I recall, a commitment was made whether the procedures has now been modified at this point, I am not aware.

MR. WILSON: On the second page of your scenario, Mr. Kevern, I guess it is more curiosity than anything, I note at the 3:30 point you have the NRC emergency team arriving, I assume from Atlanta, is that right?

MR. KEVERN: That is correct.

MR. WILSON: That is some approximately three and a half hours after the initiating of the event at the site, is that right?

MR. KEVERN: I have them arriving in Columbia at

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2:30 and I arbitrarily provide an hour of transportation time from the airport to the EOF.

MR. WILSON: What changes, if any, would be made as far as this estimated arrival time for the NRC team should you have to say get everybody out of bed as opposed to taking them straight from work during regular working hours?

MR. KEVERN: The time would be increased by thirty to forty-five minutes.

MR. WILSON: As I understood your earlier testimony, is their function primarily one of support, technical support to the emergency response team, Mr. Grimes?

MR. GRIMES: If I may, the function is support to the extent we can. We also have a function of giving advice if we see need for that advice and provide a general overview of the adequacy of the licensee's response and to so advise the off site authority's of the NRC's view of that response, whether adequate off-site action has been recommended.

MR. WILSON: Mr. Kevern, back to the site team or the emergency response team from the NRC authority to get to Columbia, are you envisioning commercial connections, flight connections being used by the team or what?

MR. KEVERN: The Atlanta Regional Office has arrangements for several charter services to provide charter aircraft on short notice.

MR. WILSON: Thank you Mr. Grimes and Mr. Kevern,

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that is all I have.

CHAIRMAN GROSSMAN: Mr. Grimes, is it the staff's opinion and thought that the Commission in promulgating regulation 50.47 and referring to NUREG 0654 as a note to it was giving the staff a blank check or issuing a document that has regulatory authority?

MR. GRIMES: There was discussion before the Commission as to how NUREG 0654 was to be used and the position taken by the staff and agreed to by the Commission was that it be treated as a regulatory guide, in other words, an acceptable means of meeting the requirements.

CHAIRMAN GROSSMAN: Is there a document in which the Commission has indicated that it would have the effect of a regulatory guide?

MR. GRIMES: I am not aware of a written document. It would be some place in the transcripts of the Commission discussion I suppose, issuance of 0654 as a regulatory guide is in at the present time by the staff.

CHAIRMAN GROSSMAN: I am not sure I understand that. You mean that the Commission took a vote in the hearing, in a particular hearing that voted to give that the authority of a regulatory guide?

MR. GRIMES: No, during the discussion on what weight the 0654 would have during approval of the rules, there were questions to the staff as to what weight would this document

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have. The staff responded to the Commission that it would be given the weight of a regulatory guide. The Commission then went forward and approved the rule with those references to 0654 in the document, that is the sequence of events.

CHAIRMAN GROSSMAN: If I understand what you are saying now, it is the staff who said it would have the authority of a regulatory guide and the Commission took the action of referring to NUREG 0654 in a footnote to regulation 50.47, that footnoot did not say anything about NUREG 0654 having any authority of a regulatory guide, is that correct?

MR. GRIMES: That is correct. They had the footnote in front of them when they discussed this with the staff. I would point out that regulatory guides are issued by the staff, not by the Commission so that there is no--the staff position is that it accepts someone in meeting a regulatory guide as meaning the staff would take a favorable position on those requirements, on meeting those requirements so that it affects what position the staff takes on the matter of meeting the standards.

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JUDGE GROSSMAN: That was my next question as to whom NUREG 0654 represents Commission authority, and I believe there is some statement at the beginning of NUREG 0654 as to who that represents authority for. Isn't that correct?

MR. GRIMES: Well, it says -- and we can consult the document -- I believe it says the staff will use this in the review, and the Federal Emergency Management Agency will review it and use it in their review, and that, as say, the staff is treating the document as a regulatory guide, with the other proviso that at the head of each major section there is a planning standard which happens to be identical to the standard in 5047, so each of those standards are contained in the regulation. The detailed critera, however, need not necessary all be met to achieve an adequate response to the standard.

JUDGE GROSSMAN: Well, my questions aren't directed towards whether you followed the regulatory pronouncements of 50.47 either to the extent as you have indicated you have by adopting the former 50.47 to some extent, but whether by doing anything like that you have given yourself, you have enhanced the authority of NUREG 0654 to the point where it resembles something like a regulation.

Does the staff take that position?

MR. GRIMES: Without getting into the legal ramifications, I would say it's my belief that we treat it as a regulatory guide, and to the extent that regulatory guides

have force to the same extent the detailed criteria of 654 would have force.

JUDGE GROSSMAN: Okay. In this case you indicate in the foreword in the NUREG 0654 that the purpose of this guidance, and I'm quoting this -- the purpose of this guidance and upgraded acceptance criteria is to provide a basis for NRC licensees, state and local governments, to develop radiological emergency plans and improve emergency preparedness.

Now, it appears to me as though you have --

MR. GRIMES: Also the last sentence says what I said a few minutes ago, that it will be used by reviewers in determining the adequacy of the state, local and nuclear power plant licensee emergency plans and preparedness.

JUDGE GROSSMAN: That's correct.

Now, is there anyone else other than who you've mentioned here to whom NUREG 0654 is directed?

MR. GRIMES: I take it you mean to the Hearing Board.

JUDGE GROSSMAN: Yes. I want to know if you're directing us also, even though you haven't told us that here.

MR. GRIMES: I don't believe the staff directs the Hearing Boards, and it's my understanding that the force of the footnote was equivalent to regulatory guide.

JUDGE GROSSMAN: Well, we've also had some discussion, and I assume you have reviewed some of the transcript relating to the discussions we've had with Dr. Taku and Mr. Goldberg with

regard to what we can and cannot consider in this proceeding with regard to emergency plans, primarily talking about accident sequences, and there are statements in NUREG 0654 indicating that to whomever this represents guidance that accident sequences should not be considered to a certain extent.

MR. GRIMES: I think the statement of consideration for the August 19th rule and also the policy statement that was issued with respect to 0396 in the fall of 1979 expressed the view that no single accident scenario should be singled out as the basis for emergency plans, that the plans should cover the spectrum of these accidents, and the way to do that is to prepare detailed plans preplanning for certain zones, for certain aspects of the -- of preparedness.

I guess I view no harm in evaluating what would happen in a particular scenario, but I don't see too much value in the exercise in that even if no harm to the public results in a specific exercise or in a specific scenario. It does not show that for all scenarios no harm would result, for example.

JUDGE GROSSMAN: I see. So I take it your position is we shouldn't promote any particular scenario like Dr. Kaku's as being exclusive and the only one which we ought to concern ourselves with when we are considering the efficacy of an emergency plan?

MR. GRIMES: Yes, and further that the -- my understanding of the intent of the Commission and I assisted in

drafting the rule and the policy statement on 0396, was to avoid case by case discussion in great detail of, for example, emergency planning zone sizes or site-specific considerations or reactor-specific considerations which might bear on how much emergency planning is required.

Rather the approach, the generic approach was taken saying this is the area for which to plan, these are the kinds of standards that you must meet, and in addition here's the staff's detailed criteria that they're going to use to measure against these standards.

JUDGE GROSSMAN: I take it you also don't see any harm in considering the consequences of this generic class of accidents when you determine the efficacy of the emergency plans.

MR. GRIMES: Again, I think I said I see no harm, but I see no real value in doing it either.

JUDGE GROSSMAN: Well, to the extent you see no value in doing it, it's because by considering any particular accident we may be deregating or denigrating any other possible accident that might happen; isn't that basically your position?

MR. GRIMES: In addition that all of these, for example, WASH-1400 sequences were considered in deriving the bounds for the planning effort, and so that they have already been taken into account in a generic way, and we need not spend great resources going through it in each case.

JUDGE GROSSMAN: I don't want to spend any more resources on this.

(Laughter.)

JUDGE GROSSMAN: Now, it appears to me from some testimony I heard this morning, and from your testimony that you and the applicant are not in full agreement as to your powers to direct certain actions.

Let me ask you, how good do you think your authority is to direct the management if the management doesn't accept your authority to do so?

MR. GRIMES: Well, there is no direct enforcement power. For example, we would not be able to walk in and take control of the plant just because we do not have trained people to do that, and that is one obvious constraint.

If the management of the utility refused to follow an order issued by the NRC, they would be in willful violation and would have to, you know, withstand whatever subsequent enforcement or prosecution or whatever resulted, but there would be no immediate way in which the NRC could force a particular result.

JUDGE GROSSMAN: Isn't there any way that as a condition of granting a license that you could resolve the question of whether you have the authority?

MR. GRIMES: I think it's clear we do issue orders, and there is nothing about emergencies that would change our regulations or our authority to issue an order. I don't see

the difference from that standpoint between a non-emergency or an emergency situation.

JUDGE GROSSMAN: Well, it may not --

MR. GRIMES: Even with prior agreement that licensees would follow our orders, they could still refuse to follow the orders.

JUDGE LINENBERGER: Let me spend a couple of the Chairman's unspent resources here.

With respect to your discussion with Judge Grossman just now about a nonspecific ensemble of accident sequences, I should like to understand how it is that it is practical for reviewers following the guidance of 0654 to make a determination, for example, that these particular sites in a region surrounding that site for which a plan has been prepared have adequate medical facilities, let's say.

Is seven beds in the state enough? Should it be 25?

Without getting a little bit specific about accident events and event sequences, how is a judgment made about the adequacy of --

MR. GRIMES: That particular item, the beds, the seven some place near the site would be adequate in our view for the following reason, that we believe the medical facilities should be addressed based on people who are both injured and contaminated.

In other words, these are people that are injured from

other sources than radiation and are also contaminated and require special handling in a medical facility should be assured that somebody in the plant who gets injured, falls off a ladder during the accident and is contaminated, has a facility nearby to be taken for, particularly for immediate life-threatening injuries from that fall off the ladder.

JUDGE LINENBERGER: You have excluded here in your comments, or at least I seem to think you have, people who are internally contaminated or overexposed.

MR. GRIMES: Well, the overexposure problems would take many hours, even days to develop.

For example, if someone is exposed to 200 rems or 250 rems or 300 rems, the time scale is not a few minutes to get them to a medical facility, it's more on the order of 24 or 48 hours to make sure that they are put in a facility with capabilities to deal with the consequences of that exposure to radiation, so I think for severe radiation exposure we're looking at longer time scales and the availability and transportatio to almost any facility in the nation.

There are also matters of say fall-out from a cloud from a very severe accident where individuals evacuating might be contaminated,for example. In that case one would direct them not to a medical facility, but to a relocation center to be monitored, and one would arrange for their clothes to be washed, they would be showered, so we think the principal focus should

be on injured contaminated people for nearby medical facilities.

JUDGE LINENBERGER: Well, you have in a sense given me sort of almost a medical philosophy here, but I haven't -- I don't think I've heard you say how it is decided when you review an applicant's and the state and local plans that are associated with that particular applicant, how you decide whether there are adequate medical facilities available since you're not looking at any kind of specific sequence of accident events on which to judge the need.

MR. GRIMES: No, and we did not -- perhaps we should have put in something more explicit than 0654. What we did was follow previous practice in that area which was to look at the medical facilities for injured contaminated individuals and make sure that there was a hospital nearby that had the capability of handling these sorts of injuries, and certainly the capability to handle half dozen of these injuries has been deemed adequate on a case by case basis. That would just be the history of the reviews we've done.

JUDGE LINENBERGER: The 0654, Part I, clearly says that although the full exposure EPZ will be approximately a ten-mile radius, that in general the planning should be capable of accommodating events that may well require evacuation beyond the exposure EPZ.

MR. GRIMES: What we say is thatthe planning basis developed --

JUDGE LINENBERGER: May I -- Okay. I'm going to get to a question for you.

MR. GRIMES: Okay.

JUDGE LINENBERGER: Now, since one must judge a plan in terms of its ability to evacuate under some accident sequence consideration, evacuate personnel beyond ten miles, I don't understand how you go from that guidance in 0654 to a determination that seven beds in a medical facility is enough. It seems like it makes sense --

MR. GRIMES: I guess we have a difference in premise of what 654 says in that regard. What we indicated was that the preplanning within the ten-mile, approximate ten-mile area would form a response base which could be expanded as necessary, and the overall philosophy was that this would not assuredly cope with all core melt accidents, and even the best emergency plans at any site can't preclude fatalities from extremely low probability, but that this degree of planning would cope with the responses needed for even most core melt accidents, and the base that you develop in preplanning for ten miles does give you some inherent capability to react better outside ten miles.

JUDGE LINENBERGER: I presume then that it is that kind of, same kind of philosphy that, or orientation of thinking let's say that makes it not inconsistent that the evacuation EPZ be ten miles, but the assembly of or ensemble of accidents is such that you recognize you may have to do some evacuation outside

the ten miles.

MR. GRIMES: Yes. The preplanning for the extremely low probability accidents is more directed to the area in which one would expect fatalities and might be able to reduce the most extreme effects of those extreme accidents.

JUDGE LINENBERGER: Several times in your discussions and those of others -- and I direct this to the panel and not to an individual -- reference has been made to the emergency broadcast system and the importance of people listening to their radios.

I just don't think I have ever heard anybody say what kinds of things will be done to let people know they ought to be listening to their radios, and I'm thinking about many households where the TV set is the primary noisemaker in the house, and a siren two or three miles away won't drown out the TV set.

I don't ask you about the Summer area specifically, but from NRC's point of view do you consider it important to have occasional spec or frequent TV announcements that say "Go to your emergency broadcast radio channel for important information."

MR. GRIMES: Yes, we would expect that the broadcast of information would not be limited to the radio, but that the television would also be used to get information out.

JUDGE LINENBERGER: You say you would expect that. Do you demand it, do you require it, do you ask for it, or do you just expect it?

MR. GRIMES: I don't think we have an explicit criterion that calls for it, and I have not reviewed this specific case, the cases that I'm aware of do involve that, and certainly once the message goes out on the radio and becomes not just a matter of informing the public to take protective action, it also becomes a news event which is almost automatically carried on many stations.

JUDGE LINENBERGER: Okay. Mr. Kevern, with respect to your sequence of emergency preparedness events, I can't tell whether this is something that you would like to see happen as a sequence of events, something that your office thinks is important to have happen as a sequence of events, something that having reviewed the applicant's plans you know will happen as a sequence of events, or something that you have heard from the applicant as a commitment that this indeed will be the sequence of events.

Now, which of those numerous categories of characterizations does this piece of paper fall in? How do we know the applicant is going to do anything like this at all?

MR. KEVERN: Judge, it's a combination of your latter two items. It is the strong expectation of the staff that this is a realistic scenario, and I base that upon the staff and FEMA review of emergency plans of the applicant, the state and the counties, the evaluation of the full scale emergency exercise which is a requirement, and the applicant, state and counties to

carry out, many inspection hours or man hours of NRC inspectors' time on site reviewing procedures, personally interviewing corporate and station management and shift supervisors and operators, the previous testimony of applicant, essentially all aspects of NRC's review process, so having accomplished that review we feel that this is a valid reasonable expectation of the sequence of events.

JUDGE LINENBERGER: All right. To what extent -- you say you feel this is valid and reasonable -- to what extent have you reviewed the applicant's plan to determine whether -- his approved plan, I think it's approved, I'm not sure --

MR. KEVERN: It is approved.

JUDGE LINENBERGER: -- his approved plan, to what extent have you reviewed that to detemine whether or not he can deviate from what you have generated here in any substantive way that you would not care to have him deviate? Have you made such a review to see if his own plan doesn't give him liberty to deviate in a way you wouldn't like?

MR. KEVERN: No, my -- Well, one of the premises, rather one of the items I delineated was the review of the plan and the applicant's procedures.

Now, I personally was the lead reviewer of this applicant's plan and procedures, I personally read every word of every page of his plan, and practically every word of his procedures along with other staff members and consultants, and

I derived this scenario from my knowledge of the applicant's plan and procedures. It's not something I wish would happen, it's not something that I know that we require and therefore I hope will be performed, I base this scenario upon my knowledge of the applicant's plans and his capability -- at least our assessment of his capability in carrying them out.

JUDGE LINENBERGER: Okay. One final thing.

Going back to the very initial event or entry in your sequence based on-- I believe you said you had some experience in the nuclear Navy --

MR. KEVERN: Yes, sir.

JUDGE LINENBERGER: Based on that experience, do you consider that the person who is responsible for identifying the type of event that is taking place in order to determine and classify the kind of emergency such as is being done in the time from 12:00 to 12:05, is it important for that person to be versed in, schooled in, trained in reactor theory?

MR. KEVERN: Well, basic understanding of reactor theory is appropriate, yes, sir.

JUDGE LINENBERGER: It is appropriate. Is it a requirement?

MR. KEVERN: I'm not sure I follow. You mean is it a requirement for a licensed operator?

JUDGE LINENBERGER: Aye, you have me there. I don't know. Is it a requirement?

MR. KEVERN: It is a requirement for licensed operators.

JUDGE LINENBERGER: Okay. The thing I was getting at is the extent to which the emergency plan is keyed or -- excuse me -- the operators operational plans are keyed to control room conditions or readouts such that no reactor kinetics analyses needs to be made, if he just sees certain conditions or so he then knows which kind of event he's dealing with and which kind of emergency he ought to be declaring? Is it that straightforward?

MR. KEVERN: Yes, it's very clearcut, and precisely for the reasons you're mentioning that we do not want to develop theoreticians in the control room and have them sit there and analyze the situation, we want to have immediate response actions taken, and we want to have identified an easily identifiable and obvious indications of what plant conditions are or are leading to, and it is a basic requirement for a licensed operator to have some knowledge of reactor theory, but that is part of his general background and training.

As far as identifying the accident situation and specifically the scenario we're dealing with here, it's very straightforward.

JUDGE LINENBERGER: He does not need to sit and meditate about Dopler broadening or fusion theory or anything like that before he gets to this?

MR. KEVERN: No, sir.

JUDGE LINENBERGER: Thank you very much. That's all I have.

JUDGE GROSSMAN: Mr. Grimes, I wasn't going to expend any further resources on that area of how you determine the adequacy of emergency plans because it appeared to me that in your direct testimony you were indicating that you considered consequences of accidents in a generic sense in determining the adequacy, and I though that in a sense you had affirmed that in answer to my questions, but then when Judge Linenberger asked you a question it appeared to me as though instead of considering the consequences of generic classes of accidents in determining the adequacy of a plan you reverted back to what you had considered to be adequate plans before NUREG 0654, and I just want to put that to rest now.

Is that really the basis for determining whether let's say seven hospital beds are enough, the fact that in some previous plans you approved seven hospital beds, or do you take into account consequences of groups of classes of accidents?

MR. GRIMES: It's the latter, and I did not mean by referring to previous practice to say that was the basis for using that, but only that it was consistent with previous practice and we did not feel the need at the time to elaborate in this document.

Obviously it has come up in a couple of different situations that the question has been raised, and I think when

the document is revised again it might be appropriate to put some more explicit guidance in 654. It was not a controversial issue specifically at the time we wrote 654 because it was a generally understood rationale, but I think perhaps some more specific guidance -- and that rationale was not changed by evaluation of the consequences. In other words, the requirement was not changed by a look at the spectrum of consequences.

JUDGE GROSSMAN: Do you agree with the statement I made as to what I understood your testimony to be?

MR. GRIMES: Yes.

JUDGE GROSSMAN: Okay.

JUDGE HOOPER: I have one somewhat trivial question, but I guess it's something that I'm sort of curious about, and it goes to planning procedures and notification to the public.

As I understand Mr. Bursey lives somewhere around that sector there, and he lives somewhere around the end of that red, the solid red piece on the board -- this is what he described yesterday -- he may even live in the sector of the plume.

Mr. Bursey has also been very -- it's been brought up many times his concern about infirm people and the people who have no form of transportation.

My question to you, either one of you please who can answer this, is that in your broadcast and in your plans do you really tell the public something about that plume, its directions and so on, and do you give instructions about if a

person wanted to get out of there from Mr. Bursey's house, rather than waiting for an hour for a bus the best thing to do is to walk a mile in the proper direction?

Now, you see, if he's living in that red there's probably less than a mile on a road they could pretty much get out of a high intensity plume.

Does this sort of thing enter into any of your thinking in emergency planning?

MR. GRIMES: In general, if we have time to for example bus people without transportation we prefer to do that. Those are likely to also be the people that are going to have difficulty walking in many cases.

If we got into a situation where, for example, a plume had passed overhead and people were still there and we knew there was a contaminated area, then the proper thing might, the quickest thing might be to ask them to walk in a particular direction because we know the exact extent of the plume.

It's a little difficult in ten miles from the plant to pinpoint within a mile where the plume is going to end up. That's why we have more than one sector.

JUDGE HOOPER: What about two miles or one mile from the area? I'm not talking about areas where there are going to be low dosages and so on, I'm talking about critical areas where people are going to get killed. I'm also talking about a short time afterwards, and it seems to me here today we had a lot of

circumstances where buses were running around picking up people and we never knew -- someone said "Well, we don't know if we can get everybody."

It seems to me in emergency procedures if the public is told which way to walk in a given zone as a final precuation it might be the best way to get people out. Walking a mile might mean twenty minutes, waiting for a bus may mean an hour or an hour and a half, and I wonder whether this has really been thought about.

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MR. GRIMES: Mr. Kevern points out that we thought we were starting out in the ten-mile area, but close in to the plant moving one mile in a particular direction under some circumstances might be an adequate thing to do under very low wind conditions such as occurred at TMI, there was really close in to the plant no real good downwind direction.

JUDGE HOOPER: I'm aware of this, I'm aware of it, also I know enough about meteorology to know that very --

MR. GRIMES: Under certain circumstances the need might be a fall back position but I'm not -- the deconsion maker would have to make a call at the time because it's not obvious to me that I wouldn't prefer a roof over someone's head with a plume going over to perhaps 20-50% chance of me guessing the direction wrong and having him without a roof over his head. It's just not an obvious choice.

JUDGE HOOPER: Depends on the roof.

MR. GRIMES: Yes.

JUDGE HOOPER: That's all I have.

JUDGE GROSSMAN: I guess it's Mr. Goldberg's turn on redirect.

REDIRECT EXAMINATION

MR. GOLDBERG: Mr. Grimes, I just wanted to follow up on one or two questions that Judge Grossman asked. Do you have a copy, by way, of the August 1980 statement of consideration which accompanied the present emergency plan?

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MR. GRIMES: No.

MR. GOLDBERG: As I recall your testimony you were co-chairman of the steering committee, were you not, that prepared NUREG 0654?

MR. GRIMES: Yes, the EPA -- the NRC/FEMA steering committee.

MR. GOLDBERG: Was it also your earlier testimony that you contributed to the preparation of the present rules themselves?

MR. GRIMES: Yes.

MR. GOLDBERG: Isn't it true that the 16 planning standards which presently appear in Section 50.47 of the Commission's rules are essentially a restatement of the 16 planning standards and evaluation criteria contained in 654?

MR. GRIMES: The two are identical.

MR. GOLDBERG: And I think we were talking here about what weight you would attach in NUREG 0654 and without belaboring the point, I wonder if you can look at the August 19, 1980 statement of consideration which appears in the Federal Register, a copy of which I have handed you and I'd just like to ask you to comment on a statement which appears under Roman Numeral VII. We don't have the same pagination, I have the Federal Register notice and you have the notice that was sent by the Agency that is entitled effective date of rules and other guidance.

MR. GRIMES: Yes.

MR. GOLDBERG: Will you please read the next to the

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last two sentences -- well why don't you just read that whole section if you would.

MR. GRIMES: "Prior to publication of these amendments two guidance documents were published for public comment and interim use. These are NUREG 0610, Draft Emergency Action Level Guidelines for Nuclear Power Plants (1979) and NUREG 0654/FEMA-REP-1, Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants for interim use and comments, January, 1980. It was expected that versions of these documents revised on the basis of public comments received will be issued to assist in defining acceptable levels of preparedness to meet this final regulation. In the interim, these documents should continue to be used as guidance."

MR. GOLDBERG: Do you have a comment on that statement in the statement of consideration? Do you feel that substantiates your position about the weight you feel should be attached to that NUREG 0654 for evaluating emergency plans under our present regulations?

MR. GRIMES: Yes.

MR. GOLDBERG: If you want to elaborate, now might be a good time.

MR. GRIMES: The Commission had in mind using these documents as guidance as described to them by the staff; however, as I indicated absolute conformance to each sub-criterion of the

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criteria items is not required but the philosophy expressed in introductory parts of 0654 was the same as the philosophy expressed in both the earlier policy statement by the Commission on 0296, the planning zones, and the policies expressed in the -- with respect to spectrum of accidents and this sort of thing in the supplementary information of the propsed rule.

MR. GOLDBERG: May I have a moment?

(Brief pause.)

MR. GOLDBERG: We have no further questions.

JUDGE GROSSMAN: Mr. Bursey.

RECROSS EXAMINATION

MR. BURSEY: Mr. Grimes, do you feel that it is challenging the rules to discuss in licensing proceedings, the physiological impacts of PWR-3 outside the ten mile.

MR. GOLDBERG: I object to that question, it calls for a legal conclusion.

JUDGE GROSSMAN: Well if I were to -- yeah, we're going far afield. We've allowed --

MR. BURSEY: I didn't open the door.

JUDGE GROSSMAN: Yes, I know. We've allowed a lot of legal conclusions but basically because the Board wanted to hear what the staff's position was, not because we're accepting it as a basis for interpreting the regulations, and we just really don't care to hear anything further on that, we don't care to hear the staff's position on that and so it is outside

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the scope of the hearing and we aren't going to allow it.

MR. BURSEY: Mr. Grimes, Judge Hooper's question to you about leaving the house perhaps on the advice of something one would hear on the Emergency Broadcast System, in a sense do you feel that's bad advice?

MR. GRIMES: No, I'm saying I can't in advance say it will be good advice, it will have to be determined by the individuals involved in making the recommendations at the time. It has a potential for, if one is very sure that there will not be exposure for a certain period of time and that the exposure is going to be in a particular narrow area, then -- and it appears to be a more efficient way of protecting people, then it could be chosen as an option but I can't in advance say that it would be desirable.

MR. BURSEY: You made some preliminary remark about the wandering of the wind, is there some determination of some scale that you're aware of that could tell us with what frequency one would expect a plume to shift?

MR. GRIMES: Well generally wind directions change at least one sector on the average of -- on the average again I emphasize, about every two hours but under certain meteorological conditions wind can persist for days or it may be minutes or we may be essentially under light, breezy conditions with essentially no downwind direction.

MR. BURSEY: Thank you, Mr. Grimes, that's all.

JUDGE GROSSMAN: Mr. Knotts?

MR. KNOTTS: I don't think I have the question that I thought I had. I pass.

JUDGE GROSSMAN: Mr. Wilson?

MR. WILSON: No further questions, Mr. Chairman.

JUDGE GROSSMAN: Thank you, gentlemen. Thank you, Mr. Grimes, Mr. Kevern.

(Witnesses excused.)

MR. KNOTTS: Applicants are about to recall the panel on lowering the reservoir, so-called -- Messrs. Nichols and Moore, and while those gentlemen are coming up to the table, I wonder if we might have two minutes or so.

JUDGE GROSSMAN: Certainly.

(A short recess was taken.)

MR. KNOTTS: Applicant has recalled Mr. Moore and Mr. Nichols who were previously sworn and I will ask the gentlemen, so that the reporter knows who is who -- something like that, who is who -- that they state their full names for the record.

Whereupon,

THOMAS C. NICHOLS, JR.
WILLIAM EDWIN MOORE

were recalled as witnesses by and on behalf of the Applicant, and having been previously sworn, were examined and testified as follows:

DIRECT EXAMINATION

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MR. NICHOLS: My name is Thomas C. Nichols, Jr., N-i-c-h-o-l-s.

MR. MOORE: My name is William Edwin Moore.

MR. KNOTTS: Mr. Nichols, it's my understanding that you have some clarifications or corrections to make on your testimony which was previously received following transcript 3783. Can you tell us what those corrections are?

MR. NICHOLS: On the Supplemental Testimony, page 2.

MR. KNOTTS: Is that the short page?

MR. NICHOLS: No, page 1 and 2 are the regular testimony, it's the supplemental testimony attached to that.

MR. KNOTTS: Oh, Appendix A to the --

MR. NICHOLS: Yes.

MR. KNOTTS: All right.

MR. NICHOLS: Second page, supplemental testimony concerning analysis of cost to drain the Fairfield pump storage facility, Monticello Reservoir and refill. That's the title of the supplemental page.

MR. KNOTTS: Very well, sir.

MR. NICHOLS: Page 2, change 290 megawatts to 277.

MR. KNOTTS: Hang on a second, Mr. Nichols.

MR. NICHOLS: Page 2, change 290 megawatts to 277.

MR. KNOTTS: Okay. That would be the fifth bullet on the page, if you will, is that right?

MR. NICHOLS: Yes.

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Now page 5 of that same section. In the second paragraph in the middle of the page, change the second sentence to read "It should be noted that during March, April and May a minimum flow of 1000 CFS or actual river flow, if less, must be maintained in the Broad River below Parr due to the fish run."

I can state that slower.

MR. KNOTTS: If you would, please.

MR. NICHOLS: Change the second sentence to read "It should be noted that during March, April and May a minimum flow of 1000 CFS or actual river flow, if less, must be maintained in the Broad River below Parr due to the fish run."

MR. KNOTTS: Below Parr?

MR. NICHOLS: Yes, sir.

MR. WILSON: Could I ask Mr. Nichols to read that one last time please?

MR. NICHOLS: Yes, sir.

"It should be noted that during March, April and May a minimum flow of 1000 CFS or actual river flow, if less, must be maintained in the Broad River below Parr due to the fish run."

MR. WILSON: Thank you.

MR. KNOTTS: Does that complete the corrections, Mr. Nichols?

MR. NICHOLS: Yes, that completes the corrections.

MR. KNOTTS: Thanks very much. Mr. Chairman, I could use some guidance on what is the best way to proceed with that

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correction. Would it be helpful, do you think, if we tore out the two pages or took the two pages that have been corrected and had them bound in the transcript or should we just have an additional exhibit reflecting the corrections, which is what we did with the last corrections.

JUDGE GROSSMAN: I think the last would be best.

MR. KNOTTS: Okay, that would be Applicant's 40 and we would now offer it. What we are offering is Mr. Nichols previous complete testimony, that is to say, two pages Testimony of Thomas C. Nichols, Jr. concerning Drain Down of Monticello Reservoir Between Elevation 420.5 and 375.0 plus Appendix A thereto which is the one that the corrections appear in headed Supplemental Testimony.

JUDGE GROSSMAN: Any objection, Mr. Bursey?

MR. BURSEY: No, sir.

JUDGE GROSSMAN: Admitted.

(The document was marked as Applicant's Exhibit 40 and received in evidence.)

JUDGE GROSSMAN: Did you have any further questions?

MR. KNOTTS: I did not, sir, they're available for the Board's questions. I think that's where we were.

JUDGE GROSSMAN: I think so. We have very few questions, I do, and I don't believe anyone has much more.

All of your testimony so far relates to basically

J10pw

emptying the reservoir going from -- down to 375 feet. I am more concerned about the possibility of a partial evacuation of the reservoir and I don't think any of that has been addressed here. For example, taking a reservoir down to perhaps 405 feet or 410 feet. Now first of all, what is the lowest you can take the reservoir down to without any ill effects. Mr. Nichols?

MR. NICHOLS: The normal operating cycle operates at 425 down to 420.5, this is a drop of four and a half feet. The lowest that you could go without possibly inflicting damage on the dam is based on the level of riprap and that would be down to a level of around 418, but any draw down below the 420.5 would require the permission of the Federal Energy Regulatory Commission, which probably might could be secured. The riprap, and Eddie may correct me on this, is down to a level of around 315 or 314 --

JUDGE GROSSMAN: 414, is that what you meant?

MR. NICHOLS: Yeah, I beg your pardon, 414 or 415 and the reservoir can only be drawn down to about 418 I guess without damage to the surface of the unrerapped portion of the dam below that.

JUDGE GROSSMAN: Now if I understood correctly from what you had indicated earlier, the danger of going below the riprap, is that below the riprap, 414 or 415?

MR. NICHOLS: No, the riprap extends around 414 or 415, Eddie Moore might be able to comment more accurately on that.

J11pw

JUDGE GROSSMAN: Well now if I understand correctly it was a wave action on the riprap or what's below the riprap, what is it, on the riprap?

MR. MOORE: Below the riprap.

JUDGE GROSSMAN: The riprap would withstand the wave action of course. Now why is it that you have this problem with wave action in emptying the reservoir when you impounded the reservoir to begin with and you started from 375 or thereabout and you managed to get up to about 425? Mr. Nichols?

MR. MOORE: Wave action was a concern when we were filling the reservoir. We fill that a rate of approximately three foot a day as we approached the riprap. It was at a faster rate when the water was down much lower than that and at one point during the filling operation we had to actually stop filling because of some power availability and we were very much concerned that the wave action was going to undermine the riprap and cause it to drop. It actually started to doing this but Mother Nature prevailed and we had a hard freeze, froze the soil, we had an ice sheet on the soil and an ice sheet on the rock and the wave action stopped and fortunately it stayed that way until we could pump on up.

Now the condition of the soil when we initially filled the reservoir was quite different than the condition of the soil if we drain the reservoir. When we filled the reservoir it was damp from rain and one thing and another on the outer surface

J12pw

as it was being filled but it wasn't saturated the way it is now and the soil is going to be much easier to move with the force of the wave action as it hits against it now if we draw down than it was when we brought it up.

Did I answer your question?

JUDGE GROSSMAN: Okay, I'm just thinking about it for awhile, yes, it seems to answer the question. So you are just saying now once you fill a reservoir which has an earthen dam that's basically the problem, that you can fill it perhaps but you can't empty it.

MR. MOORE: Not below the riprap.

JUDGE GROSSMAN: Well I don't see any profit in going further on this. From what you're saying, 415 appears to be the limit of lowering. Now is there any problem with lowering down to 415?

MR. MOORE: 418.

JUDGE GROSSMAN: Well there's a few feet discrepancy here I believe the riprap goes to 415 or 415 and we hear 418. Mr. Nichols, do you have an explanation?

MR. NICHOLS: Let me clarify. The Federal Energy Regulatory Commission says that if you draw down below 418 that the wave action may lap under the riprap and cause undermining of the riprap, so they have set that level at 418 instead of the level exactly where the riprap ends at 414 or 415.

JUDGE GROSSMAN: Who has set this level now?

J13pw

MR. NICHOLS: The Federal Energy Regulatory Commission.

JUDGE GROSSMAN: And they have done that with the problem of riprap in mind, is that it? And do they have a document which they issue which indicates both the level and the reason for doing this?

End J.

MR. MOORE: Yes, the license for the project.

Klgjs

JUDGE LINENBERGER: Have either of you gentlemen been advised by anybody the extent of the lowering that would need to take place in order for there to be the potential for meaningful seismological observations in the area around the reservoir? Now, I'm not asking you gentlemen to make a judgment about seismicity, but have there been discussions with you of how much lower would be significant to the purpose of further seismic observations?

MR. NICHOLS: It has not been discussed with me, sir.

JUDGE LINENBERGER: With you, Mr. Moore?

MR. MOORE: No.

JUDGE LINENBERGER: So, as far as you gentlemen are concerned, to your own personal knowledge you're not aware of whether five foot lowering versus fifty foot lowering or complete drainage, let's say, is adequate for the purpose of further seismic observation?

MR. NICHOLS: That's true, sir.

JUDGE LINENBERGER: Has anybody discussed with you gentlemen how long the reservoir might have to be lowered in order to do any kind of meaningful study with respect to further seismic analyses?

MR. MOORE: No.

MR. NICHOLS: No, sir. I merely assumed two weeks in my testimony, but it was an arbitrary two weeks.

JUDGE LINENBERGER: I was going to ask you about the two weeks.

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MR. NICHOLS: That two weeks was assumed because the seismic activity peaked during the two-week period. After the filling of the reservoir we had more seismic activity during that period, and I merely assumed maybe two weeks was sufficient. But that's the only basis of my assumption. It was a mere assumption.

JUDGE LINENBERGER: I have nothing further.

JUDGE GROSSMAN: You're aware of the fact, aren't you, that Dr. Talwani has done considerable work with regard to the effects of filling a reservoir on the seismicity?

MR. MOORE: Yes.

MR. NICHOLS: Yes, sir.

JUDGE GROSSMAN: But he hasn't discussed with you the question of whether there ought to be any emptying of the reservoir?

MR. NICHOLS: Not to me personally, sir.

MR. MOORE: Nor with I.

JUDGE GROSSMAN: I have no further questions.

JUDGE HOOPER: I have none.

JUDGE GROSSMAN: I thank you gentlemen for sitting in the hearing room for so many days for ten minutes of testimony. Thank you very much.

MR. NICHOLS: Thank you, sir.

JUDGE GROSSMAN: I guess that concludes the hearing now, and all we have left is the seismicity question.

MR. KNOTTS: As I did at the close of the last session of

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the hearing, Judge, I would like to propose that we close the record on emergency planning and that we go forward with the proposed findings in a manner so that we make as much progress as we can. I would propose the usual schedule, and given the uncertainty about when the hearings will be held on seismic matters I would propose that we cross the bridge of being actually in a hearing while somebody's time is running for proposed findings when we get to it. But I think we should anticipate that extensions might be needed for ourself, Mr. Goldberg or Mr. Bursey to account for days actually in the hearing when the time is running, on proposed findings on emergency planning. I don't think we can be any more specific than that since we don't know exactly when the hearings are.

JUDGE GROSSMAN: That's correct. Mr. Bursey?

MR. BURSEY: I think it really premature to close the record on the emergency considerations prior to the testing of the emergency siren system and prior to the ascertainment, at least by myself, of the changes that were volunteered on the part of the Applicant and the changes that were observed as perhaps necessary on the part of the State. I think that it is premature to close the record, and I don't see the necessity of rushing to close the record on this point, certainly, as long as the seismic issue is outstanding.

JUDGE GROSSMAN: Well, I don't want to connect up the seismic issue. I think the Board can take a stand on that that we

K4gjs

won't let that influence us, but we would like to hear further from the parties on why the record ought to be closed if there are still things that are outstanding with regard to emergency planning which the licensing board may be required to approve.

MR. KNOTTS: I don't believe that there is anything that's outstanding in a hearing context that the licensing board is required to approve. Even assuming that the matter of the precise contents of the brochure is something that the Board would wish to concern itself with--and I think Mr. Bursey will argue that the Board should concern itself with that--the Board's remedy and his remedy is perfectly effective if our commitments to correct the brochure are considered to be a premise or a part of our application.

Secondly, as to sirens, there hasn't ever been anything in the contention about arrangements with local officials having to do with the testing of the sirens. So, I don't think that's before the Board at all. We are supposed to have an operable siren system, as I understand it, or as best I understand it, for licensing, and we're committed to that. And if we don't do it, we'll be self-executed, so that there's no great concern.

Now, I don't want to tell Mr. Bursey what to do, but after the record is closed if at some time he thinks the matter is still pending, at some time he thinks there's something new and dramaticly important that would change the outcome, he can always move to reopen the record.

K5gjs

JUDGE GROSSMAN: Mr. Goldberg?

MR. GOLDBERG: Yes. We believe that we're in a position to close the record on contested contention number eight.

JUDGE GROSSMAN: What's the expectation with regard to the brochure? What are we waiting for?

MR. KNOTTS: I don't think we're waiting for anything. We had a panel with Ms. McSwain and Mr. Peale and Dr. Baehr, I think it was, who explained what changes were in the process of being made in the brochure.

MR. BURSEY: Judge Grossman, some of my most substantive criticisms of the brochure, for instance, were addressed by the Applicant and by FEMA and by the NRC as needed changes. There is no mechanism with which I can enforce that. Neither can the Board. I'd like to see the changes. I'd like to see them implemented. If everybody agrees with the idea, let's get it done.

As far as the sirens go, I don't see how Mr. Knotts cannot see the sirens as some kind of critical link between the Applicant and local officials and the public. We have no idea if they're going to work. I asked for a map of the sirens and the decibel level map, some type of audio projection of the decibel levels, and I believe that Mr. Knotts or Mr. Mahan offered it. I haven't gotten it yet. So, I feel that there's still some issues that were we to keep the record open could be perhaps resolved either one way or the other prior to the Board having to make a ruling on this contention.

K6gjs

JUDGE GROSSMAN: Mr. Knotts, did you get any supplemental information, or Mr. Mahan, with regard to timing?

MR. KNOTTS: As far as the brochure is concerned, it's my understanding that the Applicant is still on target to have the revision out early in November to the brochure.

And as far as the sirens are concerned, I don't recall what Mr. Bursey is talking about, but I do recall very mechanically checking and having it verified by a paralegal that we've gotten out the responses to the Interrogatories, which we voluntarily undertook to respond to back in November of 1980.

JUDGE GROSSMAN: Well, it seems to me as though we've had the hearing on matters before us, and that whatever criticisms you have, Mr. Bursey, you can put in your requested findings, as to what you want the Board to find on the basis of the existing brochure.

But I also want to make it an obligation of the Applicant to keep all the parties informed as to what is happening with regard to the particular item of brochure and the item of the siren, whatever.

MR. KNOTTS: I think I haven't given you any kind of report on the sirens. I don't recall whether the evidence has-- is it seventy-five percent?

MR. BEALE: Yes. We're planning on testing on December 1.

MR. KNOTTS: The installation of the siren, as I understand, is proceeding. The installation is about seventy-five

K7gjs

percent complete. The testing of the system is scheduled for around December 1 of this year.

MR. BURSEY: Could I ask the Board for assistance in procuring from the Applicant the map of the sirens and the decibel level map and the revised copy of the brochure?

JUDGE GROSSMAN: You're committed to supplying Mr. Bursey with those as soon as they're available, is that right?

MR. KNOTTS: We're perfectly willing to provide them.

JUDGE GROSSMAN: That's fine. So, why don't we then set the limits for the briefing, closing the hearing now on what we have and set a schedule that's comparable to the one we had set earlier with regard to the other closed issues.

MR. KNOTTS: Right. It's thirty days for us, forty days for Mr. Bursey, fifty days for the staff and fifty-five--that's not right because five days runs for the reply. But the intervals are thirty, ten, ten and five. Is that right? As provided in the rules.

JUDGE GROSSMAN: Adopt the schedule as provided in the rules. Are the rules still the same, by the way, Mr. Goldberg?

MR. GOLDBERG: Yes. I believe Mr. Knotts correctly characterized them as being thirty, forty and fifty.

MR. KNOTTS: Plus five days for reply. I think I finally got it right that time.

JUDGE GROSSMAN: There's a proposal to change that to simultaneous, but that's not adopted, is it? That's fine, let's

K8gjs

not complicate it.

MR. KNOTTS: At some later point, if the proposed findings were on the critical path for the ultimate decision, I think we would be urging a highly expedited schedule.

JUDGE GROSSMAN: We're closing, then, the record on the emergency planning as of today, so that all the times run from today.

MR. KNOTTS: Right.

MR. BURSEY: I guess I can get what those times mean from one of the parties?

MR. KNOTTS: Sure.

JUDGE GROSSMAN: Fine.

MR. KNOTTS: One other thing, Judge. The date that was mentioned for a possible seismic hearing by Mr. Goldberg is a really bad day for our witnesses. That was the week of October 26th. We would still prefer October the 12th as our best date. I guess the week of the 19th is more preferable than the 26th, I'd simply report as a request.

JUDGE GROSSMAN: The week of the 19th I understand is a week in which there is some symposium for seismic people, so that that's probably out. But we'll have to arrange a conference call.

MR. KNOTTS: That was going to be my suggestion.

JUDGE GROSSMAN: And decide when we do want to put that on.

MR. KNOTTS: Have you had any word as to whether Dr.

K9gjs

Luco's report has been received?

JUDGE GROSSMAN: No. The last word I had was that it would be written sometime this week, it would be finalized and sent out.

MR. GOLDBERG: I don't want to necessarily prolong this. Does the Board have some time frame when it's going to arrive at a determination of how to proceed on this issue relative to the Appeal Board's memoranda?

JUDGE GROSSMAN: I don't want to commit us to a time. If I get out of here soon enough, I'll be in the office tomorrow and can begin drafting something. But we expect that we will issue an order soon indicating what position we're going to take.

MR. GOLDBERG: And I'll save the other schedule. I was going to suggest that we have offered to supplement our seismic testimony. I would think that under the rules the Applicant would be entitled to supplement their seismic testimony. And if it's only convenient to do that the week of the 12th, we would have no objection, all things being equal, to hearing their supplemental testimony that week. But the matter would be compounded if we're going to impanel another panel by the Board.

JUDGE GROSSMAN: I think we've discussed enough on the record now, because it's just not part of the hearing. So, we are then concluding the hearing with regard to emergency planning. Thank you.

(Whereupon, the hearing was concluded at 3:40 p.m.)

NUCLEAR REGULATORY COMMISSION

This is to certify that the attached proceedings before the

NRC

in the matter of:

Date of Proceeding: 9-24-81

Docket Number: 50-395-OL

Place of Proceeding: Columbia, S.C.

were held as herein appears, and that this is the original transcript thereof for the file of the Commission.

Peggy Warren

Official Reporter (Typed)

Peggy J. Warren

Official Reporter (Signature)