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EMERGENCY RESPONSE FACILITIES

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400 Virginia Ave., S.W. Washington, D. C. 20024

Telephone: (202) 554-2345

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U.S. NUCLEAR REGULATORY COMMISSION

WORKSHOP

EMERGENCY RESPONSE FACILITIES

NUREG-0696

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O'Hare Hilton

O'Hare Airport

Chicago, Illinois

August 20, 1980

BEFORE:

BERT DAVIS, Presiding

PANEL:

WARREN MINNERS

LEO BALTRACCHI

STEVE RAMOS

- - -

P R O C E E D I N G S

(8:35 a.m.)

MR. DAVIS: Good morning, ladies and gentlemen. My name is Bert Davis. I am Chief of the Material Safety Branch of NRC Regional Office. I am pinchhitting for Jim Kepler today who is on vacation and was unable to provide the opening remarks.

I welcome you to Region III where we are hosting the NRC's Workshop on Emergency Response Facilities. As you

know, the investigations of the accident at Three Mile Island Unit 2 nuclear power plant identified the need for extensive improvements in emergency preparedness at nuclear power plants.

Some areas identified as deficient and in need of improvement included the organization of personnel to control, manage, assess, support and coordinate activities both on and offsite during an emergency; the facilities for these personnel; the availability of information needed to assess and manage the reactor; other sources of radioactivity; and active and potential radiological consequences; and the provision for disseminating accurate and timely information; warnings and instructions to local and state agencies, the affected population and the public in general.

An acceptable method of providing emergency response facilities is proposed in NUREG-0696, entitled "Functional Criteria for Emergency Response Facilities," and this is the subject of this workshop.

These facilities include an onsite technical support center, an emergency operations facility, a safety parameter display system, and a Nuclear Data Link.

Mr. Warren Minners, the Chairman of the Coordinating Committee of the Safety Data Integration group will commence the presentations describing NUREG-0696. He

will be followed by Mr. Leo Beltracchi who will cover the safety parameter display and the nuclear data link systems. Mr. Steve Ramos will cover the technical support center and the emergency operations facility.

Before we get started I would like to remind you that we do have a register for any of you who want to make a statement this afternoon. There is a time period allotted for that, and we do require you to register to make a statement. That does not apply to questions during the presentations which are for the purpose of clarification. You do not need to register for that.

We have divided the room into two sections, the smoking section on the left and the non-smoking section on the right. We would request you abide by that.

We also would request that when you are asking questions or making a statement that you go to one of the microphones and identify yourself. It will be necessary each time you make a statement to reidentify yourself since we are taping the presentation.

Before I turn the meeting over to Mr. Minners I would like to show our first vu-graph to set the tone of the meeting.

(Slide.)

Let's proceed now with Mr. Minners.

MR. MINNERS: I thought they told me I was going

to be the keynote speaker, and I misunderstood them. I guess it is the keystone speaker.

(Laughter.)

The reason that we are here is because people have perceived that our requirements were going down this path in the area of emergency planning. We were going off in one direction with one group and another direction with another group, and we realized that, and the industry realized that; and so we tried to get ourselves organized and integrate some of the requirements for the Emergency Response Facilities, which is now the term we are using for these requirements.

These consisted of the Lessons Learned recommendations for a technical support center and also for a safety parameter display. And in parallel to that but having started much earlier was the development of Reg Guide 1.97 which was then called Instruments to Follow the Course of an Accident. And the unifying theme of all these things seemed to be the information, the data requirements, and they all needed data on the plant, and the facilities were just a means of displaying the data.

So the report that we finally issued, NUREG-0696, is an attempt to try to give functional requirements for the facilities which are going to use the data that comes out of the plant during accident situations.

We met with AIF, which represented, I believe, most of the industry back in May and June, wrote a draft, the precursor to 0696, got some comments, and rewrote it, and then decided that we should go out and get more public comment. So we have published a draft version of 0696 which we have distributed widely. I think everybody has gotten a copy. There were copies available as you came in if you did not have one.

And now what we would like to have is comments from the industry and from other interested members of the public on what you think about this. We are sincerely interested in your comments, and most of all we are interested in having comments that have some basis.

The industry is obviously a source of much technical information. You have more technical information than the Commission does, and we sorely need that kind of technical information to have a basis for these requirements or for eliminating some of these requirements.

Now, I think you also have all been given an agenda for today's session. We made a similar presentation in Philadelphia yesterday, and it worked out that when we started at 8:30 with the presentations and questions, we finished up our presentation about 11:30, and then that left the rest of the afternoon until 5:00 for people to have a little more chance at discussion, or make statements, or

whatever they wished to do, and it seemed to work out.

So we will accept questions during the presentations if they are of a clarifying nature, but don't interrupt the flow of the presentation. If you don't understand something or it is not clear in some way, ask the question, and we will try to straighten it out. But if it is going to get into something rather long and detailed, we would not address that until later in the afternoon. And in the afternoon I will go down the list of people who have signed up. There is a list outside. If you wish to make a statement or a comment, or even if you wish to ask further questions, put your name on the list.

I am going to go down in the order they are written down and we will listen to you. And if there is any extra time before 5:00, people who have not signed up can give any further comments that they have.

Our presumption is that people have read the report. The presentation today is just to reorient people and maybe give a little more of the background of the why and the how of what the material is. But hopefully you have all read the report, and you have your questions and comments developed.

Our purpose here is to have a workshop. We are here to try to explain what this report means, what its intent is. We will discuss it with you, we will receive

your comments, and we will try not to defend it. If we slip over into a little defensive posture, forgive us. It is hard not to. But it is not our intent to defend it. We just want to explain it. We don't really want to argue with anybody. I would like to discuss it with people and look at all the issues.

It might be well to remind people to look at this NUREG report, if an when it is issued, in the proper perspective. It is not a Commission rule. It does not carry force of law. It is in the same kind of form as a Regulatory Guide, and although this may be a distinction which the industry thinks does not show much difference, it is only an acceptable method for complying with the rule that requires emergency response plans in facilities; and if a licensee of applicant has a different way of doing it, he is welcome to come in and present that.

Now, everybody recognizes that it is much more difficult with your own ideas. It is going to take more time, so in effect, this report carries a lot of weight; and therefore, I would hope that people would try to get the requirements modified to what they think they should be and not hope that well, this is only guidance and when it comes to my plant, I will show my particular characteristics and get an exception.

The intention is to try to fix it up in this

report, if possible, recognizing that there may be unique situations which people may want to come in after the report is issued and have some different way of doing business. But the intent is to have the report generic and cover all of the plants.

We would like to have written comments from you because they will be more useful to us, especially the basis, as I said earlier. Comments which say we like it, we don't like it, or it should be this, or it should be that, these are all right, but they really are not very helpful.

We don't do as good a job as possibly we should in presenting the bases for our requirements and guidance, and that is one of the purposes of this meeting. But I think the industry and other people should also, when they make comments, try to explain why they want them that way.

There is a tendency on your part, as there should be, to look at the practicality of the requirements and say if it is expensive, or hard to do, or impractical, that it should not be done. But as a regulator, although we recognize those factors, our basic purpose is safety, and we need to have some kind of a safety rationale that explains why the requirements should be modified or phrased in a different way or whatever. So your bases are necessary, as well as your comments.

Now, my understanding is that -- there is probably

somebody here from AIF that can confirm this -- that there is going to be a meeting of AIF in August. I think it is August 28, but don't count on me. Contact AIF. They will gather industry representatives together to coordinate the comments and submit them to us. We would like to have it done that way as much as possible.

What that does for us is integrate the comments of industry. You all have a wide spectrum of comments, and some people want it one way, and some people want it the other way. And if you get these individual comments, it is up to the Commission to make a compromise; and I think it may be more appropriate if an industry group made the compromise and presented it to the Commission as an industry position. I think that is a useful function for the AIF to do.

If people want to make individual comments to us, they are certainly welcome, but I think a generic approach from AIF is helpful, both from a technical point of view and from an administrative point of view, in that presumably we will not have duplicate comments that we are going to have to take care of.

Now, our schedule for 0896 is it has been published in the Federal Register, I believe on Friday, although I have not seen the notice. And if that is true, the comment period would end 45 days later, at the end of

September. We would then take those comments, revise the report, and hopefully issue it at the end of October or the beginning of November.

The schedule, I think, is rather important. We have an implementation schedule which, if we are going to meet it, we are going to have to get our guidance out quite early so that people can start designing and ordering equipment, although I would hope people have started some of their studies and development of purchase specifications and things like that earlier than today because the requirements have been around for quite a while.

We hope at least you have done your philosophical thinking and need only look at the details.

Okay. Are there any questions on how we are going to run the meeting and what we are going to do with the report?

(No response.)

I would like to give a brief introduction on what the report is. May I have the first slide?

(Slide.)

Although the Commission had requirements for emergency plans and facilities for a long time, I don't think it was really until Three Mile Island that people understood what that should mean.

Looking at Three Mile Island people saw that there

was a necessity for improvements in several areas. Obviously, management of the accident was one of them. One of the big areas was having data available to the operator and to the technical support people.

Radiological assessment was a difficult area. that is part of the data requirements. The cooperation and coordination with state and local officials was a difficult area which needed help, and also the problem of dealing with the public in general.

Now, the report, 0696, is not going to take care of all these areas. 0696 is a set of requirements for the facilities. The emergency plan will give the organization and the staffing, and there are other reports that give guidance on what action levels should be and things like that. The 0696 is only basically the brick and mortar to help support the emergency organization of a plant.

(Slide.)

Now, in these facilities we have defined four elements: the safety parameter display, the technical support center, the emergency operations facility, and the nuclear data link. And they are all related basically by their common need for data from the plants.

The safety parameter display is less of an emergency system than the other elements. That is a monitor for the operator to look at which gives him an overall plant

system level kind of alarm so he can just look at that and say I'm okay or I'm not okay. That is the purpose of that.

The technical support center is a place where the people who are going to give technical support to the control room will remain. It is obvious -- I think everybody has recognized that -- that you can't put everybody in the control room. You need some place to put these people, and you need facilities and tools for them to do their job. Basically, in the technical support center their attention is directed towards the plant and onsite.

The third element is the emergency operations facility which has the -- primary purpose of coordinating with the offsite agencies, state and local, things like that, and also the press.

The fourth element is the nuclear data link which is what we think we require to discharge our responsibilities in monitoring licensees and activities during an event.

Now, on the last slide -- so the four elements kind of give a graded response. The safety parameter display would be used primarily before accidents. TSC and EOF -- the TSC will be activated for the next level of accidents, and then if severity is greater, we will activate the EOF. The nuclear data link is capable of transmitting data continuously.

The point I want to make is the last bullet on this slide, which is that our guidance is based on the premise that the control room is the place where the accident will be controlled. That is where the shift supervisor is, the person in charge, and the operators are going to be doing the plant manipulations. These other facilities are support or monitoring facilities, and they are not supposed to be controlling the plant. They might give management and things like that, but the control is in the control room.

With that I would like to introduce Leo Beltracchi who will discuss the safety parameter display.

MR. BELTRACCHI: Thank you, Warren.

May I have the first slide, please?

(Slide.)

Can everybody read that?

The purpose of the safety parameter display system is to provide a display of a minimum set of plant parameters from which the safety status of operation may be assessed by control room personnel. It is basically a monitoring system, and it is to aid in the detection of abnormal operating conditions.

It is also to allow the operator to assess in a very quick and rapid manner that the plant is operating safely.

May I have the next slide, please?

(Slide.)

The scope of the display system should contain the magnitudes and trends of parameters or derived variables that have been selected in the minimum set, and I would emphasize the trends and/or rates of these parameters, since this will assist the operator in transients to understand whether the plant has become stabilized or is diverging from a stabilized condition.

The display is to be used during normal and abnormal conditions, and duplication of the display from the control room should be provided in a technical support center and emergency operating facility.

In terms of functional considerations its main purpose is to serve as an operating aid for the detection of abnormal operating conditions. It is to be used in all plant operating modes. It should be capable of functioning during and following events expected to occur during the life of the plant.

It should have flexible design to allow for future modifications; that is, it should be expandable. And emergency procedures should specify the limits of the use of the safety parameter display system to the operator such that he would be able to know when he would switch and go to a 1-E qualified display system for accident monitoring,

close accident monitoring.

The system is to be located in the control room and should have the following characteristics. It should be easily recognized by control room personnel, readily accessible, readily visible. It should not obscure full visual access to other display systems. Relative to size it should be sufficient to be readable from operating stations by the shift supervisor, the shift technical advisor, and at least one reactor operator.

Let me qualify the last. The reason why that is there is that many utilities have asked whether it would be possible to break portions of the display and make it work station dependent, and that is why we have accommodated the one reactor operator in this list.

The staffing of the control room in terms of design should require no additional personnel. It should be for the operation of the safety parameter display system. This can be achieved with the current operating staff.

(Slide.)

In terms of data requirements it should use signals from Reg Guide 1.97 sensors when the variables are common to the safety parameter display system set; that is, it should be isolated. Also, it should be isolated in a form of 1-E isolation devices.

The data validation should be achieved prior to

display to the operator. This is a requirement that has not quite been amplified upon in NUREG-0696, so I would like to spend a moment on it.

What I mean by validation here is it should be checked in the form of its validity with respect to either a redundant sensor or another secondary variable to assure that the reading that is being presented to the operator is proper.

Also, should this not validate properly, then means should be provided to notify the operator of the discrepancy to allow him to resolve the issue and determine what the cause is.

In terms of display considerations it should be use of human factors engineering to enhance the functional effectiveness. One form of this would be the use of pattern coding techniques to assist operators' memory recall by dividing the normal ranges of the parameters, as well as the abnormal ranges of parameters, or at least code the readings such that the operator would be able to detect this very quickly.

There is, in addition, several psychological issues that could be brought to bear in the design that would influence the human factors engineering -- such things as to assure the display is designed in a manner so that it would not present an overload of information, yet it is

presented in a manner that would allow the operator to make a decision very quickly and achieve a closure in that decision to assess that the plant is operating safely or that it is operating unsafely.

Furthermore, this should be done in a manner by which the operator is in control of the display. He should not have to require an inordinate amount of interface in order to determine that the plant is operating safely or unsafely.

There should be a single display format required for each mode of operation, and should there be -- there should be additional display formats, as appropriate, to monitor and present parameters that will be allowed.

The main function of the latter statement is to assist in the diagnosis of a detected problem. Remember, the safety parameter display system is only a detection aid.

VOICE: Can you amplify on the word "mode?"

MR. BELTRACCHI: There are usually operating modes defined in the specifications, criticality being one.

VOICE: You mean that for hot shutdown or standby -- that is what you are referring to?

MR. BELTRACCHI: Yes.

VOICE: Are these slides going to be made available?

MR. RAMOS: Would people who ask questions try to get to a microphone or stand up so that everybody in the

room can hear the question?

MR. BELTRACCHI: Will the slides be available?

MR. DAVIS: We can get copies. If you leave your name, we can provide them to you.

VOICE: Who should we leave our name with?

VOICE: One of the girls outside.

MR. BELTRACCHI: Next slide.

(Slide.)

In terms of the design criteria for the system, the system need not be Class 1-E. However, should you elect to design the system totally 1-E, we would not object to that at all.

(Laughter.)

While there have been people that have talked -- and I think it is important to think in terms of the total use and scope of a system -- if you want to use the system for close accident monitoring, I would like you to consider the fact that it should be a 1-E interface.

The sensors and signal conditioners should be Class 1-E qualified, and of course that means the display portion of the system with respect to its interface to the sensor portion of the system will have to be isolated. The system need not be -- not meet the single failure criterion.

The unavailability goal is for the system -- is 1 times 10 to the -3 per year, and I will come back to this

unavailability issue in a later slide. Furthermore, the system should be capable of functioning during and following an operating base earthquake; and our concern here is that this is the very time that we would expect the operator would want to know the safety status of his plant, and it would be a very critical issue.

(Slide.)

In terms of verification and validation criteria, this is to apply to the design, development, qualification, and installation of the system. And the validation that I am talking about here is a one-time effort in the initial phases of the project, whereas the validation of the data would be a real time ongoing process that is used within the display system.

The V&V should be conducted by independent qualified personnel other than the designer-developer. The objective of that is to achieve a highly reliable and available system, and it is perceived that if the designer-developer were to conduct his own qualification, he would overlook errors. This is one way of attempting to reduce --

VOICE: Can you give me an example of what you mean by "developer?" Company A develops it and --

MR. BELTRACCHI: If you mean specifically, the ideal situation would be if a utility were purchasing or

procuring this equipment from somebody, that the utility could conduct their own verification and validation while it is being designed and developed. This would have the benefit of not only becoming aware of what the system is, but becoming very well associated with the system, achieving a high reliability.

It also reduces our need as regulators to have to check every finite step of the process. It would allow us to conduct an auditing. However, many utilities that I have talked to claim that they do not have these type of personnel.

If you become associated with or if you are aware of, say, like the RESAR 414 project on integrated protection systems, the staff did allow Westinghouse in that case to conduct their own verification and validation, because they showed us that they had an independent group that was not the original designers and developer. However, they were qualified people in that they had done previous design and development, and we allowed them to use that group to verify and validate the system.

Does that answer your question?

VOICE: Yes.

MR. BELTRACCHI: Given that you can show independence, we will allow you to use a group within the same company.

Yes?

VOICE: What exactly do you mean by "independent?"

MR. BELTRACCHI: From the original designer and developer.

VOICE: Right.

MR. BELTRACCHI: You cannot take the designer and have him verify his own work. Don't have him within the same work.

VOICE: That would just apply perhaps to a single person, but if a utility is involved in the development of this independent system, what -- how removed from the actual design does the utility have to be for their personnel to be qualified under independent verification?

MR. BELTRACCHI: I guess I would have to look at the very specific case that you would propose. In the case of Westinghouse they were able to prove to the staff that they did have independent -- they had people that were not within the same design and development group that generated the system that could be used for the verification and validation.

VOICE: In other words, if a system of this type were developed by the plant staff and reviewed by a utility's engineering staff, that would constitute independence.

MR. BELTRACCHI: That probably gets into the realm

of what we would accept. But again, I would like to reserve my final judgment until we proposed an organization that would do that.

VOICE: One more question. How does this differ from the verification that we are doing on Class 1-E systems today?

MR. BELTRACCHI: I think one of the major differences is in terms of the need -- many of the quality assurance people do not have the expertise that would be required to be able to conduct the independent verification and validation.

VOICE: Here we are talking about design, and yet on a 1-E system, an AE system is able to design a 1-E system, and they are able to provide independent verification. Why are more stringent requirements placed on this?

MR. BELTRACCHI: Relative to 1-E systems, as least I know speaking to the systems that I have been associated with, for example, a core protection calculator system, the RESAR 414, and the reactor protection system, we found that it had to be formalized in the past. Whether the staff got into the formalization of that -- assessing the formalization of that effort within the industry, I don't think we did.

Our experience was in the review of the core

protection calculator system we found that the staff had extended itself to where it was doing portions of the verification and validations, and we had to retrench and find a better way of doing business. And this is one way we have attempted to do this.

Now, if there has been a verification and validation effort in the past in the design of 1-E systems, I don't think it has been very well presented to the staff.

VOICE: (Inaudible.)

MR. BELTRACCHI: I would like to separate the quality assurance -- many of the quality assurance -- at least our experience has been many of the quality assurance assessments that we made found that the quality assurance people were not qualified to make that independent --

VOICE: (Inaudible.)

MR. BELTRACCHI: It is in line, in many respects in line with the statements that you will find in Appendix B of 10 CFR 50, if that is your point.

VOICE: I guess it is, yes, rather than independent review by an outside organization.

MR. BELTRACCHI: We are not required, at least in the RESAR 414 review, that the developer and designer go out and hire an independent organization to conduct the verification and validation such as DOD requires.

VOICE: (Inaudible.)

MR. BELTRACCHI: That is correct.

Yes?

VOICE: Another point, independence of design may require, say in the area of human factors engineering, bringing in a consultant to review just that portion of the design. Is it acceptable to split that review, say if the utility has the expertise to review the engineering?

MR. BELTRACCHI: That would be acceptable. In fact, I'd like to stress that because human factors is an area that relative to the Lessons Learned at Three Mile Island there is much advancement that could be made.

May I have the next slide, please?

(Slide.)

Relative to schedule, the NRR has issued requirements, a draft set of requirements in the form of NUREG-0696 with respect to licensee's response -- responses. The designs are to be submitted for NRR review by January of 1981, and a complete implementation of the system is required by January of 1982.

And I would like to add one or two more slides to the presentation that I made yesterday in Philadelphia in order to provide some further clarification with regard to the plant process computer, since this seemed to be an area that had many questions yesterday.

(Slide.)

The first slide will deal with many of the concerns that the staff has with regard to today's plant process computer, and I would like to remind you that the plant process computer is an item -- a component that has been considered non-safety. It is an item or a component that the staff has not reviewed its use or its implementation within the control room.

However, in conducting an LER survey -- and this covers the results of a survey for the last ten years -- it was very interesting to notice the distribution of the errors that resulted or were associated with the plant process computer. There was almost a linear distribution between hardware faults, software faults, and human error in the form of interface with the computer.

There were a total of 152 events in a period of that time. I would like to point out that there is a typo in the hardware portion. Under component failure malfunction, instead of 39.9, that is 39 percent of the total you'll find under software faults. It is not the computer that made the mistake, but generally it was a design error in the form of a specification that coded and was never verified or validated against its functional requirements.

It is also interesting to note that the man-computer interface errors was also a key area, and it

would support many of the conclusions that were reached in an EPRI report that was published in, I believe, May of 1977.

But the staff is concerned with these errors and the propagation of these errors onto emergency response facility and the safety parameter display system. And therefore, it was our basis that these facilities should be separate from the process computer.

(Slide.)

The next slide will deal with a draft report that was presented by --

VOICE: May I ask a question on the process computer?

MR. BELTRACCHI: Yes.

VOICE: Does that apply only to the existing process computers if it is the intent to replace the existing computer?

MR. BELTRACCHI: Let me amplify further on this previous slide on the LER errors. It was interesting to note in a Macro report -- Macro Corporation report that was done under contract to NSAC -- that is covered in the next slide -- that they categorized the current status of process computers within the industry, and they have three categories. And basically, I guess you could associate it with the various computer generations. I think it was pre-1970 to 1975 and 1975 to '80.

It did state that the latter courses of process computer -- the latter category of process computers probably could be modified to meet the requirements that have been presented to the staff, and certainly the staff recognizes that there are architectures within computers that could be used to address many of the functions.

However, I would like to point out that in the course of these LERs, in the course of trying to evaluate the trending of the LERs occurring over a period of time, and over this period of time it is noted that although it is not presented on here, we did have some work done that showed that the trend in these LERs as a function of time is increasing.

I am not sure whether that is due to the fact that there are more functions being done on the process computers and therefore it is subject to more LERs, or current architectures that are being used are not sufficient to address the problems.

So I really would like to hear some comments with regard to that. And we are certainly open to the architecture that you are going to present. But I really would like to address these issues, and these are the basis of our concerns in association with the process computer.

VOICE: With regard to the specific numbers of areas, what is the data base?

MR. BELTRACCHI: It is the LER data base that the staff has in Bethesda.

VOICE: Can you give me an idea of the period of time that you are talking about?

MR. BELTRACCHI: Yes, I can. I had an additional slide on that. The survey was conducted by using just the word computer within our data base. It covered a period of time from 1969 to present. It covered all LERs. It had computers, and in filtering that out it resulted in the order of 152 LERs that were associated with process computers.

I do have that broken down by plant if you like, but I don't have the information with me.

VOICE: It is 11 years of operation.

MR. BELTRACCHI: That is correct.

VOICE: The main process computer within the station --

MR. BELTRACCHI: That is the best way we could interpret the information as presented in the LER.

VOICE: Could you clarify for me on this process computer question, I understand you are not prohibiting the use of computers for processing the signals. You are merely prohibiting the use of the plant processing computer.

MR. BELTRACCHI: Maybe that is a poor way of expressing it. Our concern is we are interested in the

integrity of the function and the data that is being used. I think by the distribution and the type of errors that are shown here, and the fact that design errors in the software represents a significant portion of the errors, our concern is that if a programmer were to go in and change a function like a calibration or a heat calibration, although he would have trouble doing it but he did get it right, that effort would result in a modification of the safety parameter or the TSC in a portion such that when it was needed it would present wrong information to the operator or erroneous information to the operator.

The operator acts upon it. He aggravates rather than mitigates the situation. Integrity of function and integrity of data is basically our concern.

VOICE: What makes you feel that if we get -- if we do away with the plant process computer and install an additional processor that it is going to be any different with this?

MR. BELTRACCHI: The control is the fact that we are going to stress verification and validation, and we will probably use such tools as software sneak circuit analysis to look at some of the critical modules to assess how well the job is done. We cannot go in and do that job for you.

VOICE: I wouldn't expect you to, but if a new or installed (inaudible).

MR. BELTRACCHI: Okay. Let me stress again that our concern is the integrity of the function, the integrity of the data, and being able to accomplish this job. If you can promote an architecture that is within your process computer that will do this and will prove that failure of the other portions of the computer, failure of other portions of the data net is not going to affect the execution of this function, we are certainly willing to sit down and evaluate it.

VOICE: I think 0696 presently states that you can use a process computer. We will be receptive of the comments which would provide us with words that would give a criterion that would provide for security and integrity function, as Leo is talking. We were not clever enough to devise those words today. Maybe later on we will or with your help we could.

But based on what we could see of current process computers, they were not acceptable. Now, maybe future generations which we have not seen might be acceptable if they met certain requirements. We would have to state what those requirements are in 0696

VOICE: I understand your concern, but I don't understand how putting in a separate processor -- you are going to have to have separa' to the same extent (inaudible) just for this pa. .cular functional loan.

MR. BELTRACCHI: That was not our intent. Our intent was that this could be shared. It is a function important to safety. We furthermore feel that there should be a gradation. Things in the past have either been safety or non-safety. I think one of the Lessons Learned out of Three Mile Island is there are systems important to safety, and there should be a category -- a difference between categories 1-E and non-1-E.

VOICE: I had a question on the data base. Did you age this data in such that you know whether is the old computer systems that are contributing, or are the new computer systems contributing their share of these failures?

MR. BELTRACCHI: I had an intern do a real quick reassessment of the data in terms of an NSAC report that came out. It is summarized on the next slide. And as I stated previously, one of the disturbing aspects of this is the fact that it seemed the data would trend up as a function of time. So in the most recent data it seemed there were more errors per licensed plant than in the previous older data.

Now, that is going to have to be checked because that was a real rapid assessment. I tried to have an assessment of time within the categories that were defined by the Macro report, that is, pre-1970, '70 to '75, and '75 to '80. The disturbing aspect was if you normalized the

data and tried to evaluate errors per plant, it trended up. Whether that is due to the fact that there are more functions being performed on the plant process computer and therefore you would expect more LERs to develop, I am not sure. I don't know its cause.

Yes?

VOICE: Leo, from a boiling water reactor point of view, I don't know the requirements to report computer problems on LERs.

MR. BELTRACCHI: The nature of these where you performed a technical violation or a surveillance requirement, or you achieved a higher operating limit, the spectrum was rather wide.

Yes?

VOICE: If we design the system to meet these emergency response facilities, would you object then to the system being expanded to now take over the requirements that are associated with process computer, that we maintain the same level of quality control?

MR. BELTRACCHI: Probably not, provided that the failure of your process portion or your process elements would not impact this portion of the system, and there are ways that that can be achieved.

Yes?

VOICE: Since the wording of 0696 is kind of

proscriptive and strict in a sense, will that be clarified and this interpretation, meaning the data and the function being the prime requirements --

MR. BELTRACCHI: I think Warren just asked for your assistance in this area, if I understood his point of clarification. We would recommend that you make an attempt to provide alternates to that wording in the form of functional approach or to achieve the integrity of the function and security of the data.

Yes?

VOICE: For your data on the front here there has been no attempt to try to see whether these errors actually would have affected the types of data that you are looking at from tech support centers.

MR. BELTRACCHI: That is correct, but I think you can look at portions of the hardware component failures, and you know you are going to lose the system, especially if its power supply or electrical supply -- or component failures, if it is a monolithic type of design, a component failure will probably shut you down.

If you have a design where you can get functional redundancy or you have a lot of not working or maybe failure of a component does not tear the total system down, then I agree you can still achieve the function. I think the staff recognizes there are many computer architects out there that

probably could satisfy our requirements.

We have not specified that in the form of a functional nature within 0696. Our concern was strictly with the process computer, and the basis of our association, which has been very limited, and the concerns that have resulted from that association.

Could I try to get this last slide across and then attempt to address some of the other issues, and then I will take questions.

There is a draft report by -- it was authored by NSAC. It had to do with a survey of computer systems and interface guidelines for nuclear power plants. The draft was published in 1980. The number is given at the bottom of the slide. And I imagine it will be out in formal form within a month or so. However, there were some interesting points that were brought up in the report with respect to availability.

It said that as a result of their survey, if the availability was higher than 99.8 percent, it could not be achieved without -- without accepted unreasonable cost. 002 is probably within the tolerance of what we would accept. But they also recommended that availability should be demonstrated during a test period of at least 1,000 hours.

Yes?

VOICE: In the NUREG you say .01 unavailability

and .001 unavailability. Do you mean percent?

MR. BELTRACCHI: Unavailibility would be the small number. Availability would be the large number.

VOICE: (Inaudible).

MR. BELTRACCHI: An availability of 1 times 10 to the -3 would work out as eight hours per year. It is also interesting to note that the expandability -- in terms of expandability, that they require that all -- they recommended that all hardware and software should be capable of easy expansion within minimum down time to accommodate growth and relative to the life span. And I am sure this is a rather important area.

A completely new system should have a minimum life span of approximately ten years, and it is really dependent upon the existence of spare parts. And I am sure that many of you have some of the older computers, and you have pretty much learned to live with that problem and recognize what your availability problems are.

At this point I guess I have completed the main portion of the talk, and I am open to questions.

Yes.

VOICE: (Inaudible). I would like to explore (Inaudible). If I understand you correctly, you do not want to use any kind of a signal (Inaudible), but it is permissible to use the (Inaudible).

MR. BELTRACCHI: Input?

VOICE: (Inaudible).

MR. BELTRACCHI: In the sense that you would -- well, okay. My only concern there would be with the failure with the plant computer resulting in the failure of the signal to the safety parameter display.

VOICE: No.

MR. BELTRACCHI: Okay. Again, I want to get back and stress the functional integrity of the function and the security of the data.

VOICE: The unavailability is bandied around a lot without defining it. What defines unavailability on a system? Is it total failure of the system? Is it a failure of the smallest part of the system? What is unavailability?

MR. BELTRACCHI: Failure of the function in terms of the operator not being able to assess the safety status of the plant through the display.

VOICE: If one parameter fails and you have some backup for the operator to assess the safety of the plant, that does not constitute unavailability.

MR. BELTRACCHI: If you're saying that one parameter failed -- I guess we are now getting into some of the details. Either we would have to cover that through technical specifications or a look at the specific proposal, but I would sort of suspect that it probably -- something

could be worked out in that area. I don't know what you would propose.

If in essence it said that one signal failed, and he had within close proximity another signal he could look at on the board --

VOICE: Right. That definition is very important because this number is going to be the biggest bone of contention, I believe, and we have to come up with a definition for it. There is no point in talking about the number without defining what it contains.

MR. BELTRACCHI: You are also proposing a solution for which I don't know all the details either.

Yes?

VOICE: I would like to back up to something you mentioned earlier. You said that the SPDS must be designed to withstand an OBE. I take it that that does not apply to the displays in the TSC or elsewhere since neither of those facilities are seismic in the first place.

MR. BELTRACCHI: That is correct. Along that line and as a point of clarification, the SPDS and displays in the TSC need not be seismically OBE.

Yes?

VOICE: Are you then also saying that the computer itself as part of the data acquisition system (Inaudible); and therefore must be designed to seismic Class 1-E and/or

must be installed in a seismic Class 1 structure?

MR. BELTRACCHI: No. It all depends on where you structure your interface with respect to the sensors. 0696 states that the sensors and the signal conditions are either in the form of isolation devices or preamplifiers, what have you.

The Class 1-E, the industry has requested or there have been elements of the industry that have requested the establishment of a common data base such that it could be drawn upon by many components, such as a plant process computer, SPDS, TSC, whatever. And it was within that element that our concern was that if you do that, you should provide at least -- that information be OBE as a link or as a component of the safety parameter display system. It all depends on where you locate your isolation device in terms of what portion of it you want to have 1-E versus non-1-E but yet meet the requirements of OBE.

Yes?

VOICE: In relation also to this OBE thing we really don't see any problems with using existing sensors or properly isolating them and using the existing criteria for Class 1-E signals. However, the computer in this case seems to be the problem in question. I don't know that there is one that could qualify.

MR. BELTRACCHI: I would like to point out that

the core protection calculator system which was reviewed from '75 to '78 is currently in use.

VOICE: Internal as well as (Inaudible)?

MR. BELTRACCHI: The electronics, that is correct.

MR. DANIELS: George Daniels. With regard to qualifications of the OBE, I would point out that as of right now there is no standard which addresses OBE qualification. Okay. That will be a problem in approaching this specific type of situation.

IEEE 344.75 really tells you or your vendor how to qualify a piece of equipment to an SSE, and that will create ultimately some sort of --

MR. BELTRACCHI: I agree, and I think I tried to address this earlier in a comment with respect to categorization of standards from 1-E to non-1-E, and this is an area that probably does need additional work.

Yes?

MR. O'BRIEN: John O'Brien. I would like to get into the location of the safety parameter display to get a little clearer picture of that. Your emphasis on making it available to the shift supervisor -- shift technical supervisor leaves me wondering where you really pictured this display.

I am dealing with a nuclear net control room, and we are looking at the display in the front of the control

room; but you are suggesting perhaps that the display be in the back.

MR. BELTRACCHI: The requirements on this would be to provide -- you are correct in the sense that it is to provide an overview of the plant, and therefore, it should be located where it is easily accessible to the shift technical supervisor.

I don't know specifically the details of nuclear net as to -- in a sense are you talking about the back of the horseshoe?

MR. O'BRIEN: We were looking at putting it (Inaudible) the main panel of the horseshoe, but then the tech shift supervisor, his console is in the back of the horseshoe.

MR. BELTRACCHI: I would have to look at the specifics of that.

MR. O'BRIEN: I was just trying to --

MR. BELTRACCHI: It should be really accessible to the shift supervisor and the shift technical advisor. You may want to duplicate it within the control room.

VOICE: I have a question on the CBE qualification. (Inaudible).

MR. BELTRACCHI: We had a call for that, and I recognize this may be an area -- however, I do want to point out that in -- I know there are hardened CRTs on the

market. I have not made a one-to-one comparison to ensure that it would meet the OBE for every plant.

VOICE: (Inaudible).

MR. BELTRACCHI: Again, we did not go out and say use CRTs exclusively. Display is an area where you are free to look at many designs.

VOICE: (Inaudible).

MR. BELTRACCHI: I don't think you will find the word "CRT" in the computer --

VOICE: (Inaudible).

MR. BELTRACCHI: We tried to be -- we tried to be general in nature rather than design specific.

VOICE: Also, the non-safety sensors are going into the safety parameter display system. Reg Guide 1.97 (Inaudible). How will you meet your OBE qualifications?

MR. BELTRACCHI: We would have to look at the specifics. There are an awful lot of parameters in 1.97, but they're all not -- they are not all Class 1-E categorization.

VOICE: They are category number 5 (Inaudible) and you are trying to put the same parameters into your --

MR. BELTRACCHI: I would like to stress that the safety parameter display system should consist of the macro variables, the prime variables. It should not in essence consist of the status of a valve or component. The failure

of those systems will be reflected upon the prime variables, and I think that is consistent with the objective of keeping a minimum set of prime variables so you can simply the problem of interpretation for the operator.

VOICE: (Inaudible).

MR. BELTRACCHI: We might flood him with information, and he won't be able to find a needle in a haystack.

VOICE: (Inaudible).

MR. BELTRACCHI: I did not say -- I said that the set, the minimum set would probably be a subset of 1.97. I did not say use 1.97 exclusively.

VOICE: Okay. And that goes to the second part of the question. You want isolation -- sensors in isolation to be Class 1-E. A good example is meteorological data and environmental data will be non-1-E type of data.

MR. BELTRACCHI: Would you expect to include that in your safety parameter display?

VOICE: Meteorological panel -- meteorological data.

MR. BELTRACCHI: I would envision if you are that far out, you know, I would expect that there be a much better lead indicator closer to the core that would tell you that you had a problem, and therefore, I would consider that that relative to a minimum set would be a gross

amplification.

Yes?

VOICE: If this OBE qualified system is located in the technical support center which is non --

MR. BELTRACCHI: Wait, wait, wait. The technical support center display duplication does not have to be OBE qualified.

VOICE: What design we were considering was using a computer room facility in the technical support center that we are building to house the process monitor that would also derive the plant safety status display. The building we are considering constructing would not be seismically qualified. The system that would be put in there, would it still be --

MR. BELTRACCHI: I had not thought of that one.

VOICE: This is, I think, a real problem because we are running out of space to put these systems into the control room, okay, and since we were constructing a new facility, we thought this would be an optimum place to put the processing system itself.

MR. BELTRACCHI: There is no way you can break that portion out, the safety parameter display portion out.

VOICE: I think the concept a lot of utilities are looking out is one central type of computer system that would respond to all of your logical functions. I think

that integrated design approach is one that is being commonly considered.

MR. BELTRACCHI: I would agree, but then in terms of the size of the safety parameter display or its requirements on a total system, I could envision a dedicated system that would really be a small portion of that.

VOICE: The problem is the signal conditioning and the logic. If you bring these systems in, okay, I think it is pretty considerably more effective (Inaudible).

MR. BELTRACCHI: If you bring them into one central area and you intend to use non-OBE qualified equipment, that means if you were to have an operating base earthquake, you would lose an awful lot of interface across the board. Can you tolerate that?

VOICE: The building would be substantially non-seismic designed.

MR. BELTRACCHI: You have not answered my question.

(Laughter.)

VOICE: The intent of the guideline here is that an operating-designed earthquake, you have to show that you will not lose this plant safety status display. That is the overall consideration.

MR. BELTRACCHI: That is correct.

Yes?

MR. COMPTON: Byron Compton, Washington Public

Power. I want to get back to one thing that you said that I don't think comes through very clearly in here. You said for a safety parameter to display you wanted to use a subset of 1.97?

MR. BELTRACCHI: I thought that was stated fairly well in 0696.

MR. COMPTON: It says minimum is 1.97, all types.

MR. BELTRACCHI: That is a misinterpretation.

(Laughter.)

MR. COMPTON: It you are trying to show that on page 8, it does not come through very clear. Everything that matches 1.97 must match the same qualification.

MR. BELTRACCHI: The intent was not to use all the parameters in 1.97 because it will get us back to where we are today in terms of control board, and the intent is really to minimize the overall key variables which the operator -- by which the operator would be able to make an assessment of the safety status of the plant. By definition that would be a subset of what is in 1.97, and I think probably a subset of what is in Category A and B.

VOICE: It is going to mean some new derived variables, isn't it?

MR. BELTRACCHI: It could well be derived variables from variables that are there, that is correct. It all depends on what you choose as your minimum set.

There are some people that have talked about trying to keep coolant mass inventory in the primary system. That, of course, is a derived variable.

MR. RAMOS: You are taking a very narrow look at the words on page 4. That minimum data set from Reg Guide 1.97 is taking the four components of the emergency response facility as a whole. For the TSC and the EOF, for example, that is the minimum data set. It is expected that the SPDS would be a subset of that.

MR. COMPTON: Right. (Inaudible).

MR. RAMOS: Your common data acquisition system woud have that as a minimum set, and you would pull out of that acquisition system whatever you needed to meet the SPDS requirements.

MR. COMPTON: Okay. Then anything that is not Class 1-E input or non-safety input still has to meet OBE, right?

MR. MINNERS: Only if it is used in the safety parameter display. There are four elements. The four elements together will have at least the Reg Guide 1.97 set of variables. Each one will not have all of the Reg Guide 1.97 variables. They will only have whatever they need. So for the safety parameter display you will have a few variables from the larger set of Reg Guide 1.97 variables that will be selected for its function, and those few

variables will have to have OBE qualified instrument channels.

MR. BELTRACCHI: Let me amplify on that further. Roughly a week ago NSAC made a presentation to ACRS. They defined in that presentation for both BWRs and PWRs a set of parameters they were proposing for the safety parameter display system; that was a subset of what was currently -- I believe currently in 1.97. I have not made a one-for-one comparison, but I think that is a subset. And it only consisted, I think, of on the order of maybe 15 parameters.

VOICE: For a plant that was about 35 different variables when you considered the different loops. The problem I see in that area is that it seems -- and this was brought out in that presentation -- a lot of the items in 1.97 which are supposedly supposed to provide this sort of monitoring were determined prior to really determining what their functional use would be. And it seems that when we define the functional use via the safety parameter display system, the needs of the tech support center and support staff, that that should be fed back into 1.97 to modify the basic data list.

MR. BELTRACCHI: Your concern was dwelled upon for about two days at ACRS. Let's not go over it now.

(Laughter.)

The staff is fully aware of that, and we have a

letter from the ACRS.

VOICE: My real question relates to schedule. Since he brought that up while I was standing here, I thought I'd hit that.

Relative to schedule, implementation of a system with this sort of reliability or trying to approach this sort of reliability -- and we have been in contact with a number of vendors that provide very reliable equipment that cannot bid to that sort of specification.

The schedule that you have there of full implementation by January of 1982 is impossible by most of the vendors we contacted that in that development and delivery time put things beyond 18 months.

I am wondering what sort of determination went into developing those dates, whether that was just a yearly extension of what seems to be a January 1 deadline put out by 0578 that has been carried through to --

MR. BELTRACCHI: Of course there is the pressure of time in terms of the elapsed time since Three Mile Island, and furthermore, I think you may have to start thinking in terms of modularity with respect to your design.

I get the impression that what the industry would like to do is to insert the total system, and then that will encompass everything. I don't know whether we're going to have the luxury of that.

VOICE: Well, we have been working with a group of utilities since November of last year with this concept in mind. We would have looked ahead and saw the direction things were going, and we developed a system to handle this which would be expandable and start with the minimum information and address some of the increased needs.

And just on that basis, going through the normal development, we cannot meet the January 1, 1982 date, and we started last November.

MR. MINNERS: That is the kind of written comment which we are soliciting, and especially if you can provide the facts which show what your lead times are and design times and that kind of thing to support your contention that it is too short a schedule. And we are receptive to those kinds of comments.

VOICE: I would like to point out that we recently put out a proposal for bids for software which had a January 1982 deadline on it that the vendors said they would have trouble meeting.

MR. BELTRACCHI: That point is also brought out in our report.

Yes?

VOICE: In response to that, the AIF meeting that is being held next week is also going to consolidate industry comments on the schedules that the plants can

meet. AIF has conducted a survey for all utilities and owners groups. They promised NRC that they would come back with the best range of schedules for plants, and that is going to be consolidated next week at AIF. So if anybody has any input to schedules or whatever, they should get that to the AIF.

MR. BELTRACCHI: Let me make one other point relative to this. I think it is important that the industry try to consider standardization either along the lines of owners groups or vendor groups. It is going to minimize the NRC's effort in trying to conduct the review, and it should be able to shorten the schedule for final implementation.

Yes?

MR. MYERS: One of the significant problems we found is in the area of schedules, vendor bidding, etcetera (Inaudible) without standards and degree of acceptability for not only the computer main frame or whatever, but also all processors, routing the cable, and considerations that we normally get into in the SSE areas. We are looking at an exceptionally extended period of time to evaluate that.

Considering in a plant when you have an earthquake you don't know whether it was an OBE or not, it is a question of how we validate the information. I think that needs to be addressed.

Probably recognizing that fact, the OBE is more a

design goal rather than an actual verified QA piece of paper. Then it might be addressed more reasonably and help out in the scheduled implementation.

MR. BELTRACCHI: How do you measure that? That is our problem.

MR. MYERS: Very difficult. (Inaudible).

MR. BELTRACCHI: This may be an area where standardization -- I don't know whether it could be achieved or not -- but standardization certainly would help.

MR. MYERS: Standardization processes take years, as you are aware, and the example of the Arkansas core protection calculator (Inaudible) for the SPDS and elsewhere here.

MR. BELTRACCHI: That is true, but it is SSE-qualified.

MR. MYERS: I understand.

MR. BELTRACCHI: Yes?

VOICE: From what I have heard we have two sets of criteria, one for the safety parameter display system has to be in an OBE building, an OBE processor, a data acquisition system and processor, and have OBE-type displays, and availability for eight hours (Inaudible). You still retain 001 availability, but some of the other systems' requirements (Inaudible), so in fact, unless you are going to end up with dual systems for those functions unless you

can (Inaudible).

MR. MINNERS: Well, we tried to write what we required for each element of the thing, and then it is up to the designer to integrate the design. We did not want to give one set of requirements for all elements. You know, we recognize the problem is that if you have something which is an integrated system, then only one part of it has to meet higher requirements than the rest. It makes the whole system meet the higher requirements. That is not the only design possible

VOICE: What I am really saying is that you cannot -- we don't know of a computer that can do graphics, display events with great flexibility, and using CRTs. We don't know of one for the SPDS system. This one could be used, though, for the technical support center provided it meets the other criteria.

But it seems what you are really telling us from a practical standpoint is that the higher level requirements for the SPDS system are going to preclude using computers, graphics, and CRTs unless somehow we can find something that can be qualified.

MR. BELTRACCHI: Not necessarily, because I have had computer vendors calling me telling me that their computers can do it.

(Laughter.)

I don't want to name them publicly. You can see me afterwards, and I will.

VOICE: (Inaudible).

MR. BELTRACCHI: I know relative to hardened CRTS the DOD has several sources. Now, yesterday there was a gentleman that said that he had looked into that and said that they would basically shock load it, but they would not take a wide spectrum. So although -- after thinking about it, you know, in terms of shock loading, an impulse should contain all your frequencies, so I guess it is a question of amplitude.

VOICE: (Inaudible).

MR. BELTRACCHI: As I said, I know that DOD has many considerably hardened -- I have not made a one-to-one comparison. I don't know whether they will need OBE.

VOICE: (Inaudible). Relative to this schedule in 1982, on page 9 you say that detailed guides (Inaudible) are going to be published separately. When are we going to get those guides, and how are we going to input them into our system design if we have to submit the design by January 1, 1981?

In addition, your schedule lists that the NRC will (Inaudible). What happens if your schedule slips and you don't complete your review design, and you don't get back to us on time to meet any of our technical design requirements?

MR. MINNERS: Let me discuss the additional detailed guidance.

VOICE: Would you speak up, please?

MR. MINNERS: Is that better?

VOICE: A little bit.

MR. MINNERS: Let me address the question of additional detailed requirements. There is some difference of opinion in the staff report that they are desirable or necessary, and 0696 currently says we are going to give you something, and drafts of these detailed requirements have been developed.

I think a question that I would like to ask the industry is whether you want this. Is the material in 0696 now sufficient, or is further information necessary, or is further information desirable?

I think we all realize how the regulatory process goes, and if we give you more information, you may not like it, and you may have to be so conservative to cover all generic requirements that it may exclude some things.

And I really would like people to think about that, plus the problem of the time to produce those kind of detailed requiremens.

VOICE: I think that is a point very well taken, and I think most of us -- everybody can comment on that. Most of us would like to see the functional needs defined

rather than being prescriptive, and there are certain portions of 0696 that become very prescriptive. I don't think there is a need to be that prescriptive.

I certainly would not want to see additional detailed requirements coming out, because what we end up with is something that again gets over-specified, and it becomes impossible to meet.

If we ended up with some modification to 0696, I think we would be satisfied with that in that a number of things which I am sure will be addressed later when we talk about EOF. Because of the type of facilities we are constructing, we are not planning on having the same type of separation simply because of building space. In other words, some of the things that you say should be in the EOF we have space to do in other facilities and feel that is where it should be done because of equipment location, proximity, and space availability. I think becoming very prescriptive has a great danger to it.

MR. MINNERS: If we don't become prescriptive, it increases the chances that when you come in and we review it, increases the chances that we will not approve it. We have all been through this before, and I would like to hear what the industry has to say, because I have heard the opposite of what you say.

I think when you get down into the design level

and purchase level of people, they would like to have a piece of paper they can put a rubber stamp on and send it out to the vendor. You can see why. It is much easier for a designer if he has detailed requirements.

VOICE: We have not been all that satisfied with the vendors' response.

MR. MINNERS: Okay.

MR. BELTRACCHI: Yes?

VOICE: (Inaudible) designed to earthquake criteria, and operators have been using them for years. I have a hard time understanding why the CBE requirement is being placed on the safety parameter display. The safety parameter display, the tech support center, that is being used as an operator aid, and we even talk ourselves as being used by supervisors for overview. All those things are already on display, and they are qualified.

You know, I can understand, you know, wanting to do more and do more and do more, but yet with the state we talk about of computer systems, displays and stuff and the development and all, I have a very hard time trying to understand why you are trying to provide for those 15 parameters on the board. You can highlight, you can do something else rather than putting in as an additional requirement.

MR. BELTRACCHI: I will address that issue, and

the issue is fairly simple, and it is fairly basic. Both the Enrico Fermi incident and the Three Mile Island accident, there is a very common thread. The post-mortem analysis stated that the information was all located in the control room. It was all there. But the problem was it was so diffuse that the operator could not integrate it.

The purpose of the safety parameter display system is to provide that integration and concentration, and because of that importance to safety, we have placed these requirements on it.

VOICE: It sounds like you are saying that the board today is inadequate.

MR. BELTRACCHI: In terms of the critical minimum set of parameters in a human factors interface, yes.

MR. MINNERS: Let me try to expand on the rationale for having the safety parameter display, the safety parameter display to be qualified to the CBE. The rationale is if you had an earthquake, you would have a large number of alarms that would be given on the control board which would confuse the operator, and that is exactly the purpose of the safety parameter display, to give him some place to go when he has confusion and to know whether he is safe or whether he is unsafe, to put it simply.

And an earthquake is a case in which an operator does not know what is going to happen, and you are going to

have all these alarms going off; so that is the rationale for having such a requirement.

We realize that the plant is designed to survive the earthquake and nothing should happen to it, and that it will still be able to operate and certainly able to shut down. But it is the confusion. You don't want the operator to see some alarm and then do the wrong thing, and then he could be the one that puts the plant in the unsafe condition rather than it being a direct result of the earthquake.

VOICE: I think you can take any transient going on. There are alarms on all the transients that go on. I think the operators concentrate first on annunciators and then on parameters that are important to the plant.

MR. MINNERS: Our perception is that he does concentrate, and sometimes he does concentrate on the wrong thing. I think there are plenty of examples where you have alarms in the secondary system, and he is concentrating on the secondary system trying to get that straightened away, and that is not his real problem.

That is what the safety parameter display is supposed to do, focus his attention on the primary thing which is the reactor.

MR. BELTRACCHI: First, on annunciators, they may not be safety-related annunciators.

VOICE: First of all you are making the assumption

you are going to have an accident and an earthquake together.

MR. MINNERS: No, that is not the assumption. I tried to explain that.

VOICE: You are going to have -- the system is not qualified for the OBE. It is still going to be available most of the time. It is likely in the event that if you do have an accident, the system is going to be available. You are also forgetting about the requirement we have to go through a human factors evaluation of the control room and making the necessary corrections such that the existing displays are meaningful and are located such that they are not confusing to the operator and can be used by him.

MR. MINNERS: Well, I --

VOICE: The one single event, the earthquake, you have existing parameters to fall back on.

MR. MINNERS: That is correct. Let me try to -- I don't think I have gotten my point across, and let me say it again. I'm not trying to argue with you. I just don't think you have understood what I said. Let me try it again.

We realize that during an earthquake the plant is designed to survive the earthquake, and therefore we will not have an accident. We are not presuming an accident. But during an earthquake you will certainly have a large number of alarms going off because the earthquake is going to do things to the non-safety equipment and probably some

of the safety equipment that is going to cause alarms. And he is going to have mass alarms on his board.

VOICE: Are you sure?

MR. MINNERS: Am I sure?

VOICE: Yes.

MR. MINNERS: Yes, I am sure, yes.

VOICE: I'm not.

MR. MINNERS: Fine. If you can make that demonstration, I think I would accept it. The people I have talked to have said what I am describing to you. If you think that what you say is right and have some way of making a demonstration, I would be interested to see it because that is an interesting point.

If you have had experience in fossil plants that have gone through earthquakes and you don't get alarms, that would be interesting information. That is not what I have been told. I don't know how else you would go about proving it.

VOICE: Pardon me.

MR. MINNERS: I don't know how else you would go about making a demonstration except to --

VOICE: You are making an assumption because you don't know you are going to have them. You are saying you don't know; therefore, they will be. I don't think that is valid either.

MR. MINNERS: No. The people I have talked to have said that this is the experience, that during such events you get alarms. It certainly --

VOICE: Which people have you talked to?

MR. MINNERS: I'm sorry. I cannot give you a list.

VOICE: How many of them have experience in a control room?

MR. MINNERS: I agree, I have very limited experience.

VOICE: How many people you talked to have experience in a control room?

MR. MINNERS: I'll put the questions back to you. How many people you have talked to have experience in a c[illegible] room during an earthquake? That is the question. Neither one of us really knows, but we have to go on the best information we have now. If you have better information than I do, I would welcome it. I would encourage you to provide it, because it would help us make a better decision.

VOICE: My only point is you are limiting what we can do because of one event design basis earthquake --

MR. MINNERS: You have misunderstood it. I think you are distorting what we are doing slightly. We have not asked for a design basis earthquake. We have asked for an OBE, which is not the design basis earthquake.

VOICE: You are still limiting our flexibility.

MR. MINNERS: For one event.

VOICE: For answering the Kemeny Commission and the Rogovin Report. We are not keeping up with the state of the art, the operator displays --

MR. MINNERS: That would be an excellent comment to make, that we think you are designing for an extreme event, and that is a lesson to be learned from Three Mile Island, that you should not design for extreme events, because the majority of events are not those, and you want to have the best system for the non-extreme events. That is a good comment. If you sent that comment in, I think people would consider it very carefully, but --

MR. MYERS: In your description of the confusion in the control room, obviously if you do have a lot of alarms, yes, there is confusion. However, in an earthquake event, the first thing you would have to verify before you went to the SPDS is that it was less than an OBE; it was within its qualification. If not, then you could not rely on it or you would have to go through a validation process to validate SPDS information against the SSE qualified information already in the control room.

As I said, there are no instruments in our plant that are directly readout type. Yes, you have had less than an OBE, or no, you have no more than an OBE. Not having had

that information, a validation process would have to occur.

Yes, you can go to the CRT, but you would have to sit there and validate against the SSE. That process in itself would force the operator to look at other parameters.

MR. MINNERS: That is a probability argument. The probability of having greater than an OBE is very small, and the Commission has chosen not to design against it. We will take the chance that once in so many times you get something greater than the OBE, and it misleads the operator -- a small chance.

MR. MYERS: So for this type of evaluation you are going to send the operator to -- when he has a known earthquake -- to a piece of information for his initial operator director that is guaranteed not to be qualified to an SSE.

VOICE: It does not mean it is not going to work.

MR. MYERS: I want to make sure that --

MR. MINNERS: I don't think -- is your comment that -- there is some weakness in our argument that we don't have it qualified to SSE and maybe we should reconsider and qualify it to SSE.

(Laughter.)

MR. MYERS: My comment is he has to go to SSE equipment anyway to do validation, and with the other items mentioned here perhaps we can talk about a tradeoff of

guaranteed paper vendors going to do shaker tests on computers, multiplexers and everything, as compared to good engineering design, shock testing, whatever. There is a wide spectrum of good engineering (Inaudible).

MR. MINNERS: And that is the comment that was made before, and I think that is a very good comment, and we have struggled with that also. We don't want to eliminate computers if we don't have to, but at the moment the consensus has been that somehow we had to address this earthquake issue as I have tried to explain it.

If it is not a problem, if we have overestimated the problem, and when a plant goes through an earthquake you don't even know it, we don't have a very good argument. We are going on the best information, which I will admit is not very complete.

I don't know how you make it complete, and any aid that we can get which says hey, you are wrong because, will certainly be looked at very carefully. If we have a comment that says you are wrong, I don't think we will give it very much thought unless it has some basis behind it, because you know, we think our unsupported opinions are better than your unsupported opinions.

(Laughter.)

MR. MC CREE: One place you might look is the Japanese experience. There was a BWR a few years ago that

did have a rather significant earthquake. At least the plant was just fine. In terms of how many alarms they had, I don't know.

MR. MINNERS: That is the first question. I am sure the plants are okay.

MR. MC CREE: The operators did not do anything wrong in that case in terms of what I heard. In terms of the basic issue though, I wonder if an approach which would result in faster implementation or perhaps one that would meet your schedule is to take the human factors review of the control board as the prime indicators which would allow the operator to not be confused in the event of an earthquake, and then have the SPDS not qualified on paper for an OBE.

But there I think that might get equipment in faster that would have more flexibility to provide more useful information to the operator, still be covered for the OBE by the control board, and perhaps not the control boards that are not in plants today, but reconfigured or somewhat rearranged. I think that might address your concerns and ours.

MR. MINNERS: I think the operator training can be allowed. As with any instrument, he is going to have to be trained and instructed in what the safety parameter display can do and what it cannot do. I mean, he cannot believe

that that is all he has to look at, and he has to have explained to him under what conditions it is good and under what conditions it is bad, and what he does after he looks at it.

You cannot just look at the equipment. You have to look at the whole training and operating program.

VOICE: I have one other question. In the event of this OBE, suppose you cannot find a computer manufacturer that can qualify his equipment to this? What is this going to do to your Nuclear Data Link, because your Nuclear Data Link is going to be very dependent upon this?

MR. MINNERS: The Nuclear Data Link cannot be qualified because it is going to go on telephone lines and (Inaudible).

MR. BELTRACCHI: There is no requirement on --

VOICE: (Inaudible) to send it over the phone to your computer terminals.

MR. MINNERS: I am missing your point then.

VOICE: If we cannot find something that is going to qualify for this, how do we process these signals to get them into a configuration that we can send to you in Washington?

MR. MINNERS: Are you on the seismic issue still or another issue?

VOICE: Yes.

MR. BELTRACCHI: You do that today in the form of use of signals from safety systems. Okay? In fact --

MR. MINNERS: Isn't the answer to your question, if you cannot find a computer that meets the OBE requirements, you will have to do something else for the safety parameter display and have a non-seismic computer for other purposes, including processing the data for the Nuclear Data Link.

VOICE: In other words, you are saying if you cannot get a computer, we are going to have to hard-wire the SPDS?

MR. MINNERS: I don't think that is desirable. I guess it is a problem that has to be worked on, but we are not willing to just now say you cannot buy a non-seismic computer.

VOICE: No. I didn't say that. I just said what if. What about computers on the other end? Are they going to have to do the same thing?

MR. MINNERS: No. As I tried to say, the telephone lines between the plants and NRC headquarters are not seismically qualified, so there is no use in making any of the Nuclear Data Links seismically qualified above some --

VOICE: We cannot hear you in the back.

MR. MINNERS: -- above some moderate level. We would like to -- we will have time in the afternoon

session. I think we are getting beyond the clarifying question. We are getting into the area of discussion, which is fine, but I think we would just like to get through the presentation. So we will move on to Steve Ramos who will go into the technical support center and the emergency operations facility.

MR. RAMOS: I am Steve Ramos, and I am going to cover the technical support center, and following that, the emergency operations facility.

The slide here has one error in it in the first bullet in that --

VOICE: We cannot hear you.

MR. RAMOS: Can you hear me back there now?

(Slide.)

As I started to say, the first slide has an error in it in that we changed our posture in NUREG-0696 in that it is optional to demand the TSC during the notification of an unusual event in the alert stage. It is required to demand it during the increased alert situation.

It also says in NUREG-0696 that we are working on graded staffing for the TSC, EOF, and that hopefully that will be out in about a month or two.

VOICE: Is that an incorrect statement in the first bullet or a correct statement?

MR. RAMOS: That is an incorrect statement in the

first bullet in that it is optional during the notification on the alert level, and it is required in the site area emergency and general emergency.

It is anticipated that you will start manning it during the alert stage. You won't have as many people in there. But it is not a requirement. It is optional.

One of the contentions that we have had over the past few weeks is the location of the TSC. Our requirement is that the near -- near the control room. Our druthers would be that it would be directly adjacent to the control room. So if you went out of the control room into another room, you would be in the TSC.

We realize that some of the plants in existence right now don't have room or won't make room, but they really don't have room.

On an original draft of NUREG-0696 we had the distance of 50 feet. At the insistence of the industry and our own in house discussions, we decided to first relax it to five minutes and decided that was too much time, that a person needed a TSC in the control room or he would be away from his primary station, and five minutes -- the person would be out for ten minutes, so we reduced it to two minutes. That is an easy walking distance between the two facilities.

The reason why we want it close we thought was

obvious, but from all the arguments and discussion we had on the subject, it seemed to be not completely clear. We need to have -- at least Three Mile Island indicated to all of us that we need to have ready access, face-to-face access between the people in charge in the control room and the people in charge in the TSC.

There needs to be ready access for the people to certain components which may not be displayed in the TSC. Would took as a size based on 25 people, giving each person 75 square feet of working space, and that is where we got the figure of 1,875 feet -- square feet, as a typical TSC size. If you desire to have more people than that, then obviously you are going to need more room. That does not include the space that is allocated for the NRC, and it should be a separate room that can handle about five people.

VOICE: (Inaudible).

MR. RAMOS: The transcriber is having trouble picking up the questions. If you want your questions to be recorded -- and this transcript will be available to anybody who wants it -- you have to use the microphone.

MR. ZELL: My name is John Zell. I would like a clarification on the basis for 75 square foot per person, please.

(Laughter.)

MR. RAMOS: It is the standard size space that GSA

has for a work -- GS-9, GS-10 level. That is where it came from. That is where the 75 square feet came from.

VOICE: Then it has a basis in (Inaudible).

MR. RAMOS: We asked AIF to give us a typical size. We asked them for three months, and we never got anything, so we said well, we will take this and use this. And the document is out for comment. If you people feel that 1,875 square feet is too large or too small, then tell us in your comments. We are not sure that 1,875 square feet is enough space.

VOICE: Why is it necessary for the NRC to have a private room in the TSC? Can it be located anywhere at all?

MR. RAMOS: We consider that it is necessary, and we feel that we need a space where we can get away from what is going on in the TSC and the control room to make a decision, if we have to make one, directly onsite.

VOICE: Why not get out of the TSC into another location?

MR. RAMOS: We are asking for a room that is separate, part of the TSC complex but divorced from the TSC itself. I am talking about a separate room not just a work room.

VOICE: I understand that is what you are saying.

MR. RAMOS: It will handle five people.

VOICE: That is on the basis of the prescriptive

75 square feet per person again.

MR. RAMOS: That is right.

VOICE: (Inaudible) the NRC required us to start on plans on a permanent TSC to be implemented by January 1, 1981. Many of us started to build our technical support centers then because it takes six to 12 months to build such a center, and we don't have any rooms, private rooms, for the NRC in our design. And those structures are being built now in very, very limited space facilities on limited space sites.

MR. RAMOS: We understand the problem that you're going through right now, because the criteria did not come out a year ago. They probably should have. Still, this is what the NRC decided that they wanted to have, and that is what we are putting in the criteria.

VOICE: Does this NRC room have to have the same criteria and habitability --

(Laughter.)

MR. RAMOS: That is the reason why we made it part of the TSC.

(Laughter.)

We did not want you to just get rid of us.

(Laughter.)

We just want a place where we can go and take all the data that we have to make a decision on without the

influence of anybody else.

VOICE: As was pointed out, many of us have started construction or at least have the engineering design for new facilities, and this moving target that we are trying to hit is getting tougher and tougher. I don't have any problem with square feet, but I have problems with moving walls and things.

On this habitability question, perhaps that could be modified a little bit. Would it be acceptable to have the NRC office space available after 24 hours?

MR. RAMOS: What do you mean after 24 hours?

VOICE: Twenty-four hours after the accident. I have an 18,000 square foot facility that will have the lower floors available, including a large TSC instrument readout room, that will be available from time zero. The other two floors do not become available until 24 hours after the accident.

MR. RAMOS: You have lost me.

VOICE: Radiological conditions on the upper floors (Inaudible) make them usable for other normal office functions during normal operation. That would be an idea area for the NRC, but it would not be available for 24 hours.

MR. RAMOS: Why don't you make that as a comment and provide it to us, and we will look at it? I am not going to give you a decision on it right now.

VOICE: Let me ask a question which I mean very sincerely, and that is, when can we anticipate that the requirements for the emergency offsite facility, as well as the technical support center, will stop changing?

MR. RAMOS: The purpose of 0696 was to do that. We had a directive from the NRC's Executive Director for Operations to form this committee, the Safety Data Integration Group, which is made up from members from all the offices. And the purpose is to integrate a system and to finalize it.

VOICE: Okay. Thank you.

MR. MINNERS: In fact, that is why some of the things we are doing are rather rushed. Issuing the report, and announcing the meeting, and getting comments back and all that, I think we are on a very fast schedule, and we ask for your cooperation in some of the inconveniences that that is bringing us. But we are trying to get the requirements out as soon as we can, because we realize that you need them to be able to do your designs.

MR. RAMOS: Also, that is the reason why the January 1, 1981 date was changed, because we knew that there was a considerable amount of change that would be required, and we were anticipating that these requirements will be finalized, if our schedule can be held to, by October of this year, depending on what comments that we get from the

meetings that we have here and formally from AIF and individuals.

VOICE: Meeting the requirements of 0696, the two minute criterion, as near to the control room as possible (Inaudible) somewhat flexible because of the recognition that there is problems, physical problems in designing a TSC in an existing plant.

I raise the question: Is it possible to consider to meet the visual face-to-face exposure and observation of other parameters, to use the picture phone concept between the control room and the TSC in lieu of a stringent requirement of some preselected time?

MR. RAMOS: Two minutes was an interim choice and not really all that strict. The intent of the face-to-face communication between the people in the TSC and the control room is a direct result of Three Mile Island and the people that were up there and in charge.

We have looked at some closed circuit television, telephone/video circuits, and we don't consider that to be adequate to meet the face-to-face requirements.

Yes?

MR. ABEL: I have another question on location. I am Jim Abel, Commonwealth Edison Company. We are well along in construction at several of our operating plants on these technical support centers. I suspect we will not meet the

two minute requirement.

Could you explain what alternatives we might offer to the two minute requirement, or more details?

MR. RAMOS: As we have told most industry that cannot meet the two minutes but can meet three minutes or possibly four minutes, to present their case individually and the rationale and the reasons why they cannot meet that requirement. We will take it on an individual case basis.

I would suggest that you get that into us as soon as you can so we can review it.

MR. ABEL: (Inaudible) indicated the locations and estimated times to the control room.

MR. RAMOS: I will direct the team leader to look at them, but you have to understand, too, that he has had the same moving target that you have had, and therefore, he did not have the two minute requirement at that time.

Now, that does not mean that an emergency plan would not have been accepted or rejected based on that requirement of two minutes. The requirement in 0654 said you had to have it. The requirements in January 1980 say you have to have a basic rudimentary EOF and TSC.

What we are trying to do in 0696 is to give you the criteria for the final system configuration. It has been hard work for us, too, to develop that, and we have been working on it for roughly two months now.

Yes?

VOICE: You just alluded a moment ago to a changed date for construction of the technical support center. I think I missed something there.

MR. RAMOS: We will get to the schedule at the very end, and I will address it at that time.

VOICE: You say in 0696 that the technical support center has to be able to staff 25 people. Is there some consideration for plant size taken into account here?

MR. RAMOS: No.

VOICE: If we only have a staff of 40 people and we would only have 15 people in the technical support center, we would go ahead and submit that for comment and review also, is that correct?

MR. RAMOS: Yes, you can.

VOICE: Okay.

MR. RAMOS: We are working on staffing requirements based on flow, functional data, and functions to be performed by each individual.

VOICE: Since we are running behind on our presentations, would it be possible to ask these questions this afternoon?

MR. RAMOS: Yes.

MR. MINNERS: Thank you.

MR. RAMOS: The structure, as we said in

NUREG-0696, it must be substantial. We have done that because some people wanted to convert other buildings, butler buildings and what have you, that really would not be satisfactory.

Communications, I think it is pretty clear. I am not going to go into it.

Another item that has had a lot of discussion is the unavailability factors for the --

VOICE: Excuse me. Relative to structure you say that the winds and floods with a 100-year recurrence frequency are acceptable as a design basis. What if that is more stringent than the total design basis of the plant?

(Laughter.)

Such as by a factor of two?

MR. RAMOS: What else would you like us to use as a criteria?

VOICE: How about the FSAR?

MR. RAMOS: I would not want to get into arguments about the FSAR.

VOICE: It seems we are trying to design a facility here that is much more stringent in certain aspects, because your requirement is very prescriptive, than comparable requirements for the total plant. And I don't think that is reasonable.

MR. RAMOS: If you had seen the draft on what we

had written, the substantial structure, you would not make that statement. But we thought we had made it general enough and would cover a large enough spectrum to allow you a certain amount of latitude in design. Our objective is to have a substantial structure.

MR. MINNERS: I don't consider that to be prescriptive. I think that is a rather broad criteria.

What form would you suggest that be put in, in that it is more what you think is not prescriptive? How would you say it?

VOICE: I think the licensing basis of the plant given in the FSAR for similar type structures could be stated here instead of something like that --

MR. MINNERS: That is more than we want. Most plants, I think, are designed for more than the 100-year flood.

VOICE: I would like to see a show of hands of plants that are.

MR. MINNERS: All the new siting criteria are going to be --

VOICE: (Inaudible).

MR. RAMOS: Let me go on and finish.

VOICE: This is a very serious concern of ours due to the age of our plant and the conditions under which it was built. I think we would prefer seeing something more

along the lines of FSAR being spelled out as well. It is a very touchy issue. We have a 50 megawatt unit.

MR. RAMOS: As I said, make your proposal and submit it.

Okay. Getting on to the unavailability factor, we have said that originally we had the same criteria as there was for the SPDS, .001. After due consideration and the fact that TSC and EOF are not designed to actually control the reactor, we backed off and made it .01 unavailability factor. However, we did retain the .001 for individual parameters.

The data set for the TSC is Reg Guide 1.97. That is the minimum requirement.

(Slide.)

VOICE: Would you say that again, please?

MR. RAMOS: The minimum data set for the TSC is Reg Guide 1.97.

If you go across -- raise that up, would you, please?

VOICE: Perhaps I misconstrued your meaning in the draft Reg Guide we have available, but on page 13 of the guide you say, "The total system shall be designed to achieve the function of unavailability" (Inaudible). You say, "The TSC systems, including power supply, shall have less than .001 unavailability."

MR. RAMOS: That is an error we picked up in Philadelphia. Overall it is .01. Various components, individual components, that includes power supplies, .001.

VOICE: System overall, .01.

MR. RAMOS: Correct. That is principally to ensure -- not ensure but to allow you not to have two computers to meet that need.

VOICE: I am not sure which one has to have .01 and which one has to have .001.

MR. MINNERS: It is a difficult problem and was pointed out before. The definition of when it is unavailable is a difficult definition, and it is not provided; but the intent was -- the overall function of the TSC should have an unavailability of .01.

We also gave guidance on what we thought individual systems should have for an unavailability, each system that went into the TSC, each instrument system, of 10 to the -3.

VOICE: (Inaudible).

VOICE: Is there some way to improve the microphones on the table there? We can't hear.

MR. RAMOS: Can you hear this one?

VOICE: No.

MR. RAMOS: The second line reiterates basically what I covered on the TSC during the last few minutes, and I

will just show you that.

(Slide.)

Let's get into the EOF. This is the basic functional criteria. Let me back up. The TSC slide was correct. This is the slide that is incorrect. I did not mark it on the paper.

The EOF is not required to be manned during the alert stage. The TSC is required to be manned during the alert stage.

This slide should say that the EOF activation is required for site emergency and general emergency levels of response and is optional for the lesser conditions. I apologize.

It seems that the EOF is another one that has a large bearing --a contention about where it should be located. We spent about three hours with the Commission on where it should be located. The Commission had had some discussions with some foreign countries, and in particular Britain, and they said they would have the EOF at from three to ten miles; and at the same time they said it would be outside their evacuation zone.

I had a discussion with them a couple of weeks ago, and the three to ten miles comes from the fact that that is where they will have what we are basically calling an operational control center, which is one where the state

and local in the United States -- whereby the local constabulary can be. And the three to ten miles comes from the fact that if there happens to be a nearby town, that is where they would have that facility.

Further discussions with them concerning EOF as we define it and as they are defining it, they are looking from one to three miles. They still contend that for their largest facilility they would probably not have to evacuate any greater than three miles.

VOICE: Who is looking for one to three?

MR. RAMOS: The British. That is where some of the arguments that we got from the Commission in our discussion -- reiterating what we went through. So we were directed in 0696 to change it to read no further than five to ten miles. Obviously, we probably would accept something that went 10 1/2 miles or possibly 11 miles if 0696 stays the way it is. It depends upon the comments, and we had many comments from people who said they would like to have it one to three miles away, because they want to design the system to handle the 99 percent of these situations where you will not have to evacuate and not have it out so far, because they will not be able to control what they needed to control, such as at Three Mile Island.

The Commission further said that wherever it was located, if it was one mile, five miles, ten miles, it had

to be constructed with the habitability requirements such that if you had to evacuate, you would not evacuate the EOF. They felt that at that time the data flow to the local, the state, and whoever needed the information on meteorological and radiological data, that was the time they really needed it in a positive flow. So 0696 was written to accommodate those changes. And you can build it anywhere in the ten-mile radius as it stands right now.

If we have sufficient comments to say that it should be in closer, we will present those to the Commission, and they will then make a further determination whether or not to change 0696.

VOICE: For sufficient justification do you think they would go more than ten?

MR. RAMOS: As I said, no, I don't think they will go much beyond ten, but near ten miles, based on the discussion we had with them. As I say, we will probably accept 10 1/2 miles or 11 miles. If you say you want it 20 miles away, then it will not be accepted.

VOICE: For those plants that have five-mile EPZs, would one mile be acceptable?

MR. RAMOS: We think so, yes. It still must meet the habitability requirements.

VOICE: Right.

MR. RAMOS: Let me reiterate what I just said.

You asked if a five-mile EPZ -- would one mile be acceptable? If you had a ten-mile EPZ, one mile would still be acceptable. Anywhere in the ten-mile area is acceptable as long as it meets the habitability requirements.

VOICE: Do you mean the same as control room habitability ten miles away?

MR. RAMOS: I am saying that there must be the shielding, the control ventilation system there, that the people do not have to evacuate during an evacuation. You design the system to handle that type of radiation.

VOICE: (Inaudible).

MR. RAMOS: It may not be required if you're outside --

VOICE: (Inaudible).

MR. RAMOS: Strictly based on that.

VOICE: Would you comment on the apparent conflict in the writeup in the draft of 0696 which first talks about the purpose of the EOF being to, one, evaluate radiological conditions, and two, to coordinate and communicate with the various governmental agencies involved?

If those are the primary functions, again we have had a problem with prescription because you are calling for all the same data to be available in the EOF that is available in the TSC. As a little example, we would propose doing all the radiological evaluations in the TSC. However,

we would then have the EOF or our equivalent thereof be the place to meet with all the various agencies involved.

Would you comment on that?

MR. RAMOS: We don't consider that a conflict in roles. The primary purpose of the EOF is to do radiological and meteorological monitoring so you can plot a plume if there is a plume, to map the area as far as radiation levels are concerned. You have a place where all the portable and mobile monitoring teams can get their data into a central place. You have evacuation routes already there, so you can coordinate with the state and locals to let them know which areas should be evacuated. You have the communications there with the NRC, the state, or the local, and of course the TSC. There is also the role of the EOF to do recovery operations later on.

Now, the reason why we used that same data base for the TSC and the EOF is because initially before -- the TSC will perform the functions of the EOF, and it will shift when that is manned. The TSC will have different displays from the EOF as we envision it. We expect the displays, except for the SPDS, we expect the displays in the EOF will be primarily oriented to offsite control and offsite radiation monitoring and recovery operations.

We expect the TSC to be primarily attuned to handling support of the control room in plant system

operation.

VOICE: I understand that, but the SPDS, for example, is not needed to evaluate offsite consequences; and secondly, why cannot the radiological evaluation functions be done from the TSC which is sufficiently large to accommodate additional personnel?

MR. RAMOS: Primarily because we want the EOF offsite. We don't want the TSC to be overly burdened with handling the offsite problem. The TSC is designed to handle the control room support.

MR. MINNERS: There was also some desire to separate people. We want to try -- the EOF is going to have some management of the accident and people who have that responsibility, and we wanted to separate the managers for the technical support from the control room. We think there is a necessity for that and that that is one of the reasons for having the various facilities.

We think that if you get everybody so close together that you are just going to have everybody giving direct orders to everybody, and it is not going to work out.

VOICE: My concern is primarily with this instrumentation, and the instrumentation is of primary use to those who would evaluate the offsite consequences. Those same people will be utility or licensee personnel. The rest of the EOF functions I have no quarrel with being outside

this particular area.

MR. MINNERS: In my view I don't look at offsite consequences being evaluated solely by offsite monitors or plant effluent monitors. I think that you are going to have to look at the reactor status to make any kind of balanced decision about what you are going to do offsite. Once you start getting stuff coming out, it is too late.

VOICE: (Inaudible).

MR. MINNERS: That is an argument for doing that, and the counterargument is you don't want to put all those people in the technical support center. You still want to have separation, so in order to keep separation of people and keep some of these -- so you don't have to process a whole bunch of people through the security of the onsite center, you have an offsite center; and to make up for that you put the data in the center, and it is costing you something to do that. Agreed.

MR. RAMOS: We are saying it only has to be available. In your design you set up what displays you think you need to have in there, and we are not specifying what those displays are in the TSC. We are saying the data must be available.

Now, you must have displays in there for the radiological and meteorological monitoring obviously.

VOICE: But you don't need those in the tech

support center.

MR. RAMOS: That is right. You would need them in the initial stages. You could have them there if you wanted them there.

VOICE: They could be in the control room with a dedicated link to the EOF.

MR. RAMOS: I don't know if you would want to put them in the control room.

MR. MINNERS: You guys are having a private conversation.

VOICE: We cannot hear.

VOICE: We have been working -- I think most people have been working towards a January 1, 1981 deadline. Given that deadline, I know we are well along in construction, and I would think everybody else is, at least in trying to meet that deadline.

What we are coming up with now are a lot of criteria that invalidate designs that were started by us.

MR. RAMOS: I understand that.

VOICE: I don't think that we -- what you are saying is forget it, do it our way and throw it away. It is no good. We made a mistake. We are sorry.

One of the initial comments we made when this whole thing started was we were -- you decided to implement all the TMI requirements via letters and via NUREGs which

are outside the normal procedure, assuring us that you would act in good faith, that we committed to these letters and NUREGs. We acted in good faith, and we started implementing these designs, and now you are coming back and saying sorry, we were kidding.

MR. MINNERS: What would you suggest that we do to try to correct the situation? We understand the situation. You just don't want to hear us say mea culpa. What do you want us to do?

VOICE: I think you have to accept alternatives to what you are proposing here, and a big one -- and a big one is the handling of our radiological analysis. (Inaudible).

MR. RAMOS: If you go to NUREG-0654, which was issued last January, and if we go to the October 10 memo that was signed off by Eisenhut which covers requirements for meteorological and radiological data, they are much more stringent there than we have laid out in 0696.

The question is do you want us to do that, or do we want to do this thing logically and come up with a system that will handle emergency response? That is what we have tried to do at the direction of our EDO.

VOICE: A system that will accommodate existing work that is underway, existing design.

MR. RAMOS: Let me finish. Realizing that we have the 1-1-81 date, we presented the Commission an alternate

date, the end date. We asked AIF and other industry people if we changed the date to April 1982, can you meet this date, and we were told yes. So the end date was partially developed by industry, the April 1982 date, meaning that they could meet that date. And number two, that is what we went to the Commission and said -- we know we cannot meet the 1-1-81 date, and we will give them functional criteria. And again, industry asked us not to tell us how to do it but only what the functions are, and we tried to do that.

And on 1-1-81 we will have the industry give us their descriptions which we will then review. We will take three months to review them, and I think we can meet that date, in order to meet an April 1982 date.

Now, the only criteria that ever changed in all of this which was laid out in 0578 for the SPDS, the requirement for the SPDS, was in January 1981 you had to submit your conceptual design for approval and by 1-1-82 you had to have it installed and operational. That has never changed.

VOICE: That was 0585.

MR. RAMOS: Right. 0585.

MR. MINNERS: We sympathize with you. You are the people who have to do it, and you have the hard job. I am not sure that it is very fruitful to discuss the implementation schedule where we are now.

VOICE: My concern is not the schedule. My concern is that trying to meet the 1-1-81 schedule we committed a large sum of money and started construction on facilities, directing functions to each facility as we could accommodate within the designs, and you are saying now that that is no good.

MR. MINNERS: No, we have not said that. This is a proposed NUREG. If it conflicts with what you are constructing, I would suggest you provide us with comments of how we should modify it so that your facility would come under this NUREG and give us a rationale of why that is okay.

VOICE: Your reactions from the comments were that you would not accept what was being proposed.

MR. MINNERS: I have forgotten the specifics but --

VOICE: What he is proposing happens to be very similar to --

MR. MINNERS: What was the proposal?

MR. RAMOS: Give us the details again. I forget the exact proposal.

VOICE: Okay. For our technical support center we are planning an 18,000 square foot building, four different levels, two above grade, two below grade. That will give us plenty of room to accommodate people. The TSC instrument room, the heart of the TSC, is around 1,000 square feet itself. There is no problem with personnel crowding here

now.

All we are proposing is that to avoid the duplication of instrumentation in the EOF we do the primary radiological evaluation, a portion of that evaluation which requires plant readouts, that that be done in the technical support center, and any further evaluation and discussion can indeed be done in the EOF.

MR. RAMOS: How far apart?

VOICE: Our EOF is split into two buildings, and one is perhaps about three-quarters of a mile away, and the other one is about a quarter of a mile.

MR. MINNERS: I agree that there might be some inefficiency and extra cost, but is there a real problem in taking that radiological display and putting it in the EOF? It seems to me like you just have to run some more wires.

(Laughter.)

You know, it is money. I agree with that. But it is not like you have to build a whole new structure. I agree it is inefficient, and it is not the optimum cost.

VOICE: (Inaudible). We went into our Public Service Commission for construction authorization to build one type of structure for our EOF -- for one of the EOF buildings which will be required, and now you come out with additional requirements, habitability requirements, the ventilation system, as well as shielding requirements that

go along with habitability; and so we are being forced to redesign it.

MR. MINNERS: What was your original rationale for not having any filters or whatever that you did not put on the plant?

VOICE: (Inaudible) potential habitability problems (Inaudible).

MR. MINNERS: Yes. There is an excellent comment which I wish the industry would write in and give the rationale for. I think there are differences in the staff and within the NRC on that point. And you know, if things have changed, pointed out that things have changed and maybe you don't think there's a good basis for the change.

MR. HALL: You stated in here that all the sets of Reg Guide 1.97 must be available in the TSC and the EOF, including radiological and meteorological data. This is on page 13, Section I. However, in the middle of the sentence -- in the middle of the paragraph you state that, "The trend information (Inaudible) plant systems (Inaudible) must also be there."

Is this over and above or different from the requirements of Reg Guide 1.97?

MR. RAMOS: No, no. You take the data coming in from Reg Guide 1.97 and have the capability of trending it and displaying it.

MR. HALL: As long as we display what is in 1.97 we would not be out of the realm of your requirements.

MR. RAMOS: That is right.

VOICE: I would like to get back to the question of nearsite, offsite business. Apparently you are now saying that the EOF must be offsite rather than nearsite, or that it is not being within the controlled area which can be a substantial site. And I'm not clear whether or not you're actually saying that or not.

MR. RAMOS: Maybe that is what I said in words, but the intent is that it be nearsite but outside the security boundary. It has to be outside the security boundary.

VOICE: Then the FEMA criteria in NUREG-0654 holds. It must be within one mile of the reactor facility. That is what the FEMA criteria currently says.

VOICE: (Inaudible).

VOICE: Now, what if we take the three functions that are required, and you say now that they have to be in adjacent buildings or in a single structure. How adjacent is adjacent to you in terms of adjacent buildings?

MR. RAMOS: I don't think you want me to tell you that they have to be five feet apart. I think you have to lay this out in your plan and give it to us for review.

VOICE: Is it acceptable to have one of those

(Inaudible)?

MR. RAMOS: That might be acceptable. I am not going to answer that right now. I think it might be acceptable. I have to look at it.

VOICE: One more question. With respect to the habitability of the EOF, the Commissioners are saying they don't think it should be relocated. What about the new facility portion of this EOF where you have to have a place for the 20 newspersons?

Do we have to make a specific room habitable for the 20 newspersons in this EOF that is habitable, or can that portion of the EOF -- can that function be relocated to another location?

MR. RAMOS: The portion about newspersons is an optional requirement for the EOF. It has always been an optional requirement. I think originally in 0654 it was a detailed requirement, but it was relaxed to make it an optional requirement so that some utilities have gone to the Visitors Center, for example, and made that their press briefing and what have you.

VOICE: With respect to (Inaudible) all of the locations that we have (Inaudible) were submitted November 9, 1979, and we have not heard one word about it on our submitted upgrade emergency plan for our facility.

Your review of the emergency operation facility

(Inaudible) in and of themselves, or is this a separate review?

MR. RAMOS: We are going to do it separately. That is the reason why we want the design and your concept of the system by 1 January 1981; and we have set up a special team to review all of those in the three-month period. If we get them earlier, obviously we will review them earlier.

VOICE: How do you resolve conflicts between the two groups that are reviewing the emergency plan per se and FEMA and yourselves?

MR. RAMOS: The two groups that you are talking about in the NRC are in the same office, so I don't see a problem. As far as FEMA is concerned, we will have to coordinate through our steering committee with FEMA to reconcile any problems there; but they are working with us to revise 0654 based on the comments that were received, and we are trying to reconcile any differences there.

VOICE: Are you going to address staffing next?

MR. RAMOS: In a minute.

VOICE: Is your --

MR. RAMOS: Let me finish the presentation, and then we will go on.

VOICE: Just one comment. Did I hear you say on 1-1-81 (Inaudible)? I thought it was just going to be the

safety parameter display system.

MR. RAMOS: No, no. At the very end we will go through the revised schedule. But to answer your specific question, the entire system for emergency response facilities has to be submitted on 1-1-81.

VOICE: Is this for operating plants or (Inaudible)?

MR. RAMOS: It is for all facilities.

(Discussion off the record.)

MR. MINNERS: It is obvious that an applicant does not have to have his plan submitted and reviewed until he gets his license. He can adjust his schedule to that.

MR. RAMOS: Unless he is trying to meet 0694 requirements, which may, you know, if you have to do a fuel load in January 1982, you would have to get your plans in now.

Staffing, we are doing another -- the same review that we are doing for the TSC we are doing on the EOF, and we expect to get that done in about two months. We are doing the same kind of functional and communication flow through the EOF to determine what is required -- what type of people are required in the EOF.

Size, we again use 75 square feet per person.

We discussed habitability and structure.

The unavailability factor is the same for the EOF

as it is for the TSC.

Next slide.

(Slide.)

VOICE: Excuse me. Does that mean that we have to have qualified communication lines to maintain that unavailability of .001 for individual parameters?

MR. RAMOS: Yes.

VOICE: So we cannot use telephone lines.

MR. RAMOS: You may not be able to unless you can provide -- show the redundancy necessary to meet the .001 criteria.

VOICE: What sort of seismic qualification does that take?

MR. RAMOS: We have not laid any seismic qualifications.

MR. MINNERS: There are no seismic qualifications on the EOF and TSC.

VOICE: So that -- so we do not have to meet that availability in the case of a seismic event.

MR. RAMOS: That is right.

MR. MINNERS: They are two separate things. Unavailability is to try to give some criteria for the normal random failure rate of equipment, and earthquake addresses the question of design adequacy, and they are really two separate things. Earthquakes and unavailability

do not mix. They are separate things.

VOICE: To what extent do we have to factor in other weather conditions: ice storms, the tornadoes?

VOICE: I think the statement is that environmental conditions that are expected during the lifetime of the plant. Is that the way we stated it? I think that is the way we stated it.

VOICE: I guess we would like a clear definition of where that line falls.

MR. MINNERS: I was just criticized for saying that once in 100 years is too prescriptive. I am not trying to argue with you. I am just trying to illustrate the problem. And I think a good forum for you is the AIF. And where one person wants it one way and another person wants it another, if through the AIF or some other mechanism you could come to what you think is a generally acceptable position for all of the industry, it would be very useful to us.

The way it is now I am going to listen to the guy who says one in 100 years is going to be too prescriptive, and you who say once in the lifetime of the plant or whatever we say is not prescriptive enough and make my own judgment.

VOICE: I didn't say that I was the same person.

(Laughter.)

MR. MINNERS: I've got a problem.

VOICE: (Inaudible) logical FSAR basis, and applying that to structures with a reasonable engineering judgment sort of criteria (Inaudible) based on proximity or non-proximity to the site. I think that has to be considered.

MR. MINNERS: I think on a case-by-case basis if you came in and said my plan is only designed for this flood, there is no use in designing the technical supports for a higher flood, except there is a fault in the logic.

VOICE: I am glad you finally said that.

MR. MINNERS: There is a fault in that logic in that if your plant is only designed for a low flood level, just for discussion wouldn't it be nice to have the systems that are supposed to take care of emergencies be able to survive that flood level so they could take care of the plant during those flood conditions?

VOICE: Not if you never expect that flood to (Inaudible).

MR. MINNERS: But the expected flood is the one we are trying to define. That is the one you expect to occur during the lifetime of the plant. It seems like a reasonable design criterion.

VOICE: Requirements sometimes go beyond what is expected really.

MR. MINNERS: I recognize that criticism, that things tend to get ratcheted, but everybody has that problem. And on the opposite side, some people don't even meet what is obviously the intent. Everybody has those problems. I don' think it is fruitful to discuss those. That is a separate issue that the Commission has to discipline itself better on applying its regulations.

Let's try to get the guidance down to say what we think it ought to say, and then the next step, be sure that it is properly implemented.

VOICE: All right. I don't want to dwell on that. In terms of staffing there is a statement here on page 16, item C, "A senior member of a licensing plant for corporate management shall be in charge of all activities in the EOF."

Could you comment on what you mean by "all activities," especially since this includes interface with the public and press.

MR. RAMOS: The corporate structure, the person who has been designated to be in charge of the EOF for all offsite recovery type of operations.

VOICE: In other words, we can interpret that to mean that all public releases that are made through the EOF go through a central person who will be responsible then for verifying that, so we don't fall in the same trap as we did

at TMI, including NRC.

MR. RAMOS: That is the reason why our NRC person will be there to try to coordinate that.

MR. MINNERS: At the last presentation in Philadelphia we were criticized for that, saying that based on this person's evaluation that the utilities really could not do that function; so not everybody thinks that is the way to go.

VOICE: That is true. Most of us are not privileged to have been in the Philadelphia meeting, so some of these references to what goes on in Philadelphia I think require that sort of clarification.

MR. MINNERS: I am just telling you to explain what --

VOICE: (Inaudible) and coordinating the Commission, the utility, and other state or local organization working out of the EOF. Certainly the licensee's responsibility to present that information in a clear and concise manner, rather than having several spokesmen present differing views.

MR. RAMOS: That is one of the intents.

VOICE: I would like a clarification on what I thought you said. Did I hear you say that the unavailability is the same as the technical support center?

MR. RAMOS: Yes.

VOICE: It is of concern to me because one is .01 and the other is .001.

MR. RAMOS: They are both .01 overall and .001 for individual components.

VOICE: You might want to clarify that. That is not clear in the written material.

MR. RAMOS: Okay.

VOICE: Does that mean to say if you have a failure or something in the EOF (Inaudible) and that is acceptable?

MR. RAMOS: Yes. To answer your question, yes. You have to look at the function of the EOF, and you have to look at the function of the TSC.

VOICE: That is one of the things we would like clarification on. If something fails in the EOF and you don't have the data to display in there (Inaudible) as long as we don't get a (Inaudible).

MR. RAMOS: There is an LCL requirement that if it is down for over eight hours you have to make a report, and you have to report what your compensatory measures are. A compensatory measure in that case may be that you shift that function to the TSC while you get it back up DC.

VOICE: Relative to the numbers on page 19, could you specifically say which one is .01 and which one is .001? One is at the top of the page, and one is at the end

of the paragraph.

MR. RAMOS: The overall EOF -- the one at the bottom of the page, the bottom of the second paragraph should have read .01. That is an error. The EOF data system, that is referring to the overall data system, shall have less than .01 availability instead of .001.

The one at the top of the page referring to instrumentation and power supplies is .001.

Again, just to reiterate, the functions and the various requirements on the EOF is on this slide.

I have one more slide which I am going to delay until after the NDL, which is the overall schedule, and we will go over the overall schedule at that time.

Now I would like to turn it back over to Mr. Beltracchi who will cover the NDL, the Nuclear Data Link.

MR. BELTRACCHI: The NDL was to be covered by our Office of Inspection and Enforcement. However, they were not able to have a representative here, so I have been associated with the project for a while, but I may not have all of the latest details. I think I can give you a general overview of where it stands relative to NUREG-0696.

May I have the first slide, please?

(Slide.)

In this first slide there is an identification of roles of the NRC in emergencies, starting with the

monitoring and advisory. That is above the dashed line. Direction, management control, and constraints below the dashed line. Let me address the former first.

With respect to monitoring, the Nuclear Data Link is to provide information so that the NRC would be able to verify and evaluate data from multiple sources to assure that proper and adequate operational protective measures are being taken and to inform the public.

In terms of advisory, to provide requested or volunteered assistance in diagnosing the situation and isolating critical problems. This could consist of protective action determinations and advise other concerned agencies.

The actions above the line would probably represent 98 percent of the cases, and certainly the major -- majority of the cases. With respect to actions below the line, we would perceive this to be a very, very small percentage of the cases, and it would deal with the direction in terms of -- to assume initiative in making operational decisions regarding licensee's actions to be taken.

With respect to management control, take tasking of the licensee and supervision of the implementation of the actions ordered. Of course, the constraint would be that the NRC would not physically operate the facility.

With respect to actions below the line, this would probably be, as our current thinking would go, be implemented by regional people as they arrived at the plant.

VOICE: Can you give us an example of when you might take the two actions below the line and what situation you might do it in?

MR. BELTRACCHI: It is awfully hard to come out with a specific example. I think in emergencies that the NRC is directed to respond to a critical event. We have to be prepared to do so. If we are told to make decisions and respond to that and be at the site, and if the utility were not able to, say, execute -- the management of the utility was not able to execute what would be needed to control the accident or to mitigate the accident, we may very well be ordered to attempt to take that function.

VOICE: You feel this would only be in a case --

MR. BELTRACCHI: Believe me, we do not look forward to anything like that. We would only expect that to be in a very extreme condition.

VOICE: That raises some concern among those of us who have reviewed this, as well as the public relations thing. Who is going to be responsible for news releases? Are we going to end up with NRC giving news releases and the licensee giving news releases as well?

I think that has been clarified, but there was

some concern (Inaudible).

MR. BELTRACCHI: Of course, relative to -- relative to overall safety, the primary function is with the operator, and that is where it should be. We feel it is only in extreme cases, and it is very hard to define the boundaries of that.

We may find as an agency we are directed to do so by higher elements within the government.

VOICE: What sort of responsibilities when that small portion is taken --

(Laughter.)

Because now the facility passes out of the licensee's control

MR. BELTRACCHI: The constraint is not physical operation.

VOICE: There is very little difference between somebody directly manipulating a control and somebody who has control of that person's license qualifications or currency of license qualifications, and telling him you move that control because I cannot touch that control, but I am telling you to do it.

MR. BELTRACCHI: You raise a good point, and I think relative to a lot of the details, the 2 percent probably have not been thought out in terms of the legal aspects because of the majority of the effort has gone into

the 98 percent and probably does require additional clarification.

VOICE: I think that 2 percent is very important.

MR. BELTRACCHI: I know the 2 percent is very, very critical to what --

MR. MINNERS: What does the 2 percent have to do with the design of the Nuclear Data Link? It really is not whether it is some other slight different variation than you understand, and it is not going to change the design of the Nuclear Data Link, which is really what we are trying to address at the moment. You have other problems.

VOICE: I would like to talk about the Nuclear Data Link more than its role in emergencies. I did not see anything on that slide -- I thought this was kind of introductory.

MR. BELTRACCHI: It is, but let me relate the Nuclear Data Link -- it would probably be more associated with the items above the line since you cannot do remote control.

VOICE: My last comment on the EOF under monitoring, the item "and inform the public," I thought that would take place from the EOF (Inaudible).

MR. RAMOS: As far as the releases coming directly out of the plant that is correct. Now, obviously -- can you hear me back there?

VOICE: Yes.

MR. RAMOS: Obviously we are going to have to make releases to the people in Washington, to FEMA, to the various other agencies, and that may come out in the press also. The intent is to -- the intent is to establish communication between the EOF, TSC, and NRC to make sure that what we do release is coordinated.

VOICE: Okay. I guess --

MR. MINNERS: Don't interpret this slide as to what is going to be done at headquarters. This slide is what the NRC is going to do during an emergency, and we have regional people who are going to be onsite, and we have people at headquarters, and we have people here and there. This is the total function of the NRC, and people tend to look at this slide as what is going to be done at headquarters. That is incorrect

MR. BELTRACCHI: You cannot do remote control with a hundred points when you look at a control room, and there are thousands of points that exist.

VOICE: I appreciate that clarification. Even onsite, the small point of informing the public per the EOF specification is that of the senior licensing management designee.

MR. MINNERS: I hope we have all learned that lesson, that we ought to have one place.

VOICE: Right.

MR. BELTRACCHI: May I have the next slide, please?

(Slide.)

This slide presents some of the anticipated NRC actions. I guess I am -- I have to get around front, but it will address the making of recommendations on -- to protect public health and safety, the advice and counseling to the licensee, providing evaluative information, and determine significance of events, coordinating onsite assistance to licensee, possibly directing licensee to take or not to take specific actions. This is further amplification of the first slide.

(Slide.)

Relative to the emergency response summary, this deals with how the portions of the emergency would interact with the operations center in terms of notification on a hot line to the duty officer at our operations center in Bethesda. The licensee is to maintain open and continuous communication channels. Headquarters and regions notification procedures would be initiated. Regional director and support staff would leave for a site, and because of the various distances between the regional headquarters and sites, that may take anywhere from two to eight hours. The resident inspector would be notified, and that would take about an hour.

The operations center would be manned in Bethesda. That will anywhere from five minutes to an hour with a staff of approximately 60 people. It would be a single voice line to the site during the initial phases.

(Slide.)

In terms of the NDL design features, there will be approximately 100 data points from each PWR and BWR parameters according to the initial specifications or initial thinking along these lines. The parameters would be samples collected and processed once per minute. There would be 30 minutes of pre-event data, and the sample parameters would also contain some transient analysis, particularly looking, I think, for flux and pressure anomalies, the details of which were presented in the specifications on the link. Within the headquarters in Bethesda I think we were thinking on the order of having the capability of storing two weeks of event data.

We would also have event alerting of key parameters, and data would be presented to the operations center in standard format and protocol as we received it over the link.

(Slide.)

Specific data would consist of the same as Reg Guide 1.97 variables to be presented in engineering units. They would be digitized and formatted for transmission, and

this will be covered through an interface.

(Slide.)

And that will give details of the data format transmission requirements and the environmental and performance criteria of the equipment at the various plants.

In terms of a schedule, the activities are defined in the lefthand column. We have had Sandia as a contractor to do a feasibility study on the link, and the activities involve such factor as a context study down through a lab lockup and installation and testing, software and hardware procurement and development down to an initial operation which I think was called for in '84.

So that pretty much covers the Nuclear Data Link. I recognize I have gone over this very quickly, but if there are any questions, I will try to answer them.

VOICE: What is the intent of the NRC in Bethesda in the high resolution flux and continuum pressure information that has been requested?

MR. BELTRACCHI: The intent there was just really to try to get some information to help us understand the event. The transient data, the resolution of one minute. you would not -- you would miss a spike or things of that nature, so we really felt there had to be some additional data that would be presented and a final resolution.

VOICE: Is there anything that can be done in

Bethesda that cannot be done locally if one knows that there is a reactivity spike, or a transient going on, or a containment pressure spike?

MR. BELTRACCHI: The intent was to try to define that. If there are any other approaches that you could take and, say, implement in analog fashion and determine that there was a spike, or peak, or something like that and then convert it to digital and then transmit it, I am sure that would be acceptable.

VOICE: What is the use going to be made of it in Bethesda?

MR. BELTRACCHI: Just to understand the initiation of the event.

VOICE: Why can't that be transmitted in some kind of tertiary fashion rather than having a direct transmission?

MR. MINNERS: What do you mean by tertiary?

VOICE: Why does it need to be on a direct data link? I don't understand, unless the intent is actually to have someone sitting in Bethesda who is going to grab the phone if he sees an anomaly in the source range indication all of a sudden. That just seems absurd.

MR. BELTRACCHI: One of the bases for the link in the first place was to improve communications and to ensure that the NRC would receive valid data. I think the Crystal River event was a good example of that.

VOICE: But this sort of data seems to be probably the type of data that would be the most unreliable and certainly the most difficult to make any kind of decisions on from a remote location. And additionally, it requires special consideration because of the high sampling rate.

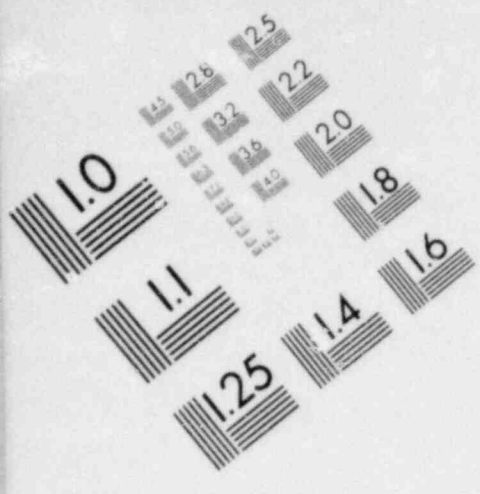
MR. BELTRACCHI: The high sampling rate is an area, because of the pressure to try to get a spec out -- there are other solutions to the high sampling rate that could be done in the form of analog monitoring. So if that is what your real concern is, propose an alternative to that.

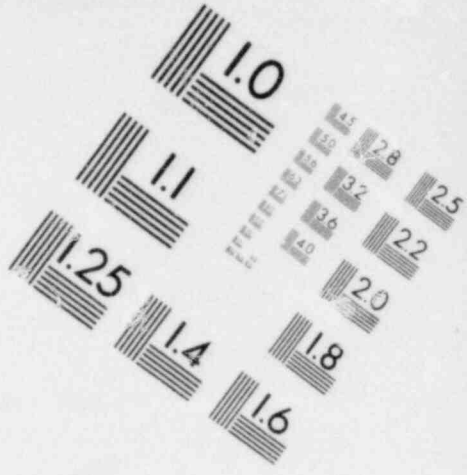
VOICE: You mentioned trend data. Is that not something that the Bethesda operations center would develop from the data at the high sampling rate? We would just provide the raw data and the rates digitized, and then any trending by your system?

MR. BELTRACCHI: Yes. That was the intent. The trending would be performed on the displays at the operations center.

VOICE: Not trying to provide data plus bursts of data (Inaudible).

MR. BELTRACCHI: If you are referring to the fact -- I know there was one time a concept presented within the NRC of having a link where the plant process computer or the plant's computer -- let me phrase it that way -- have them perform the trending and then send the information back. I





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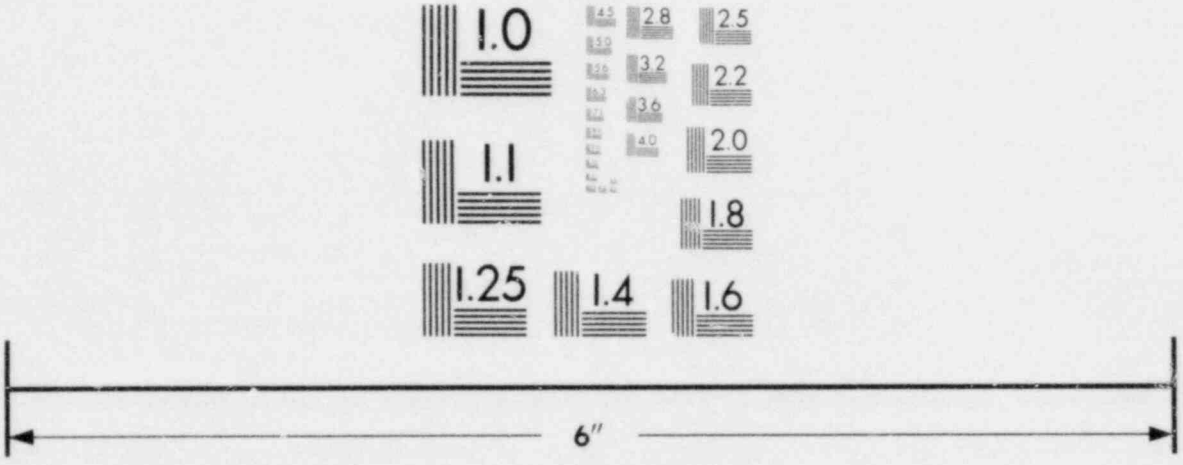

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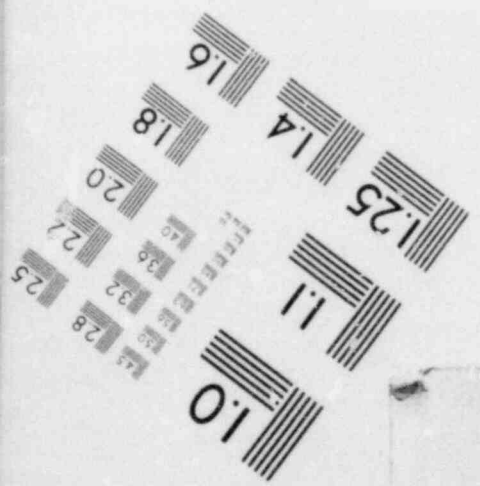

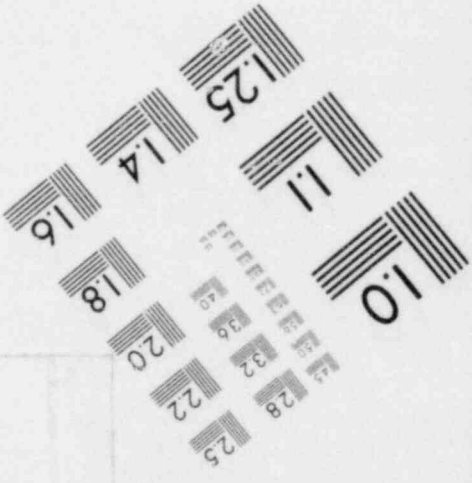

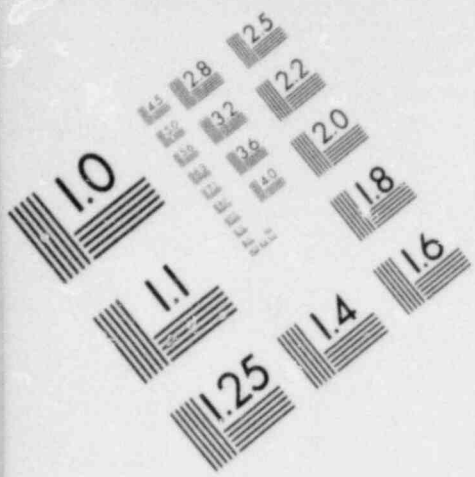

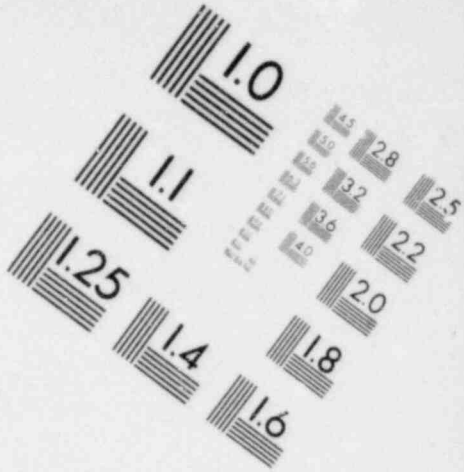

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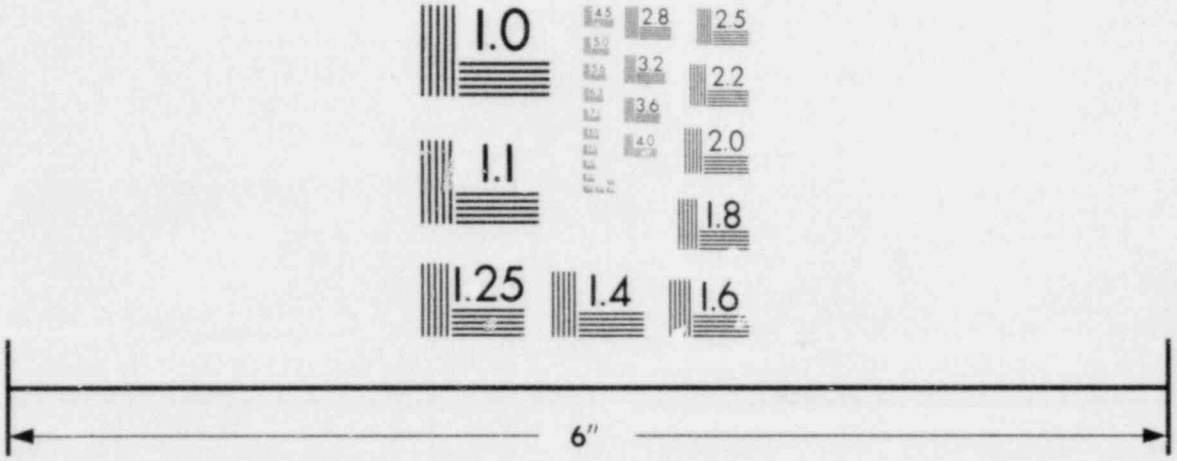

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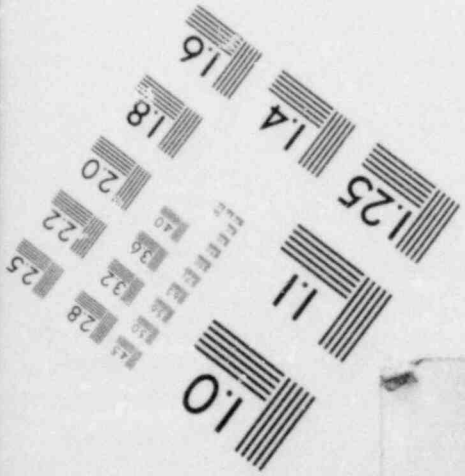

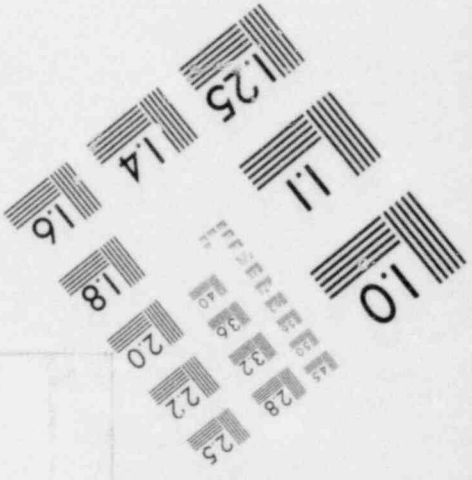

think that would be a complex approach to the problem. However, I would not want to totally rule it out. I would expect that the link would be more of a case of sending sample data to NRC and then let NRC operate on the data, present it in its various trends and displays within the operations center.

VOICE: (Inaudible) two week data storage will allow you to recall and trend?

MR. BELTRACCHI: Yes, yes.

VOICE: This really is not in the Nuclear Data Link section, but I think the question goes to that area. On page 9 of the report it was indicated it may be desirable to provide interactive (Inaudible) between the plant emergency facilities and NRC headquarters.

Could you explain? It seems to go to the item you were just discussing. Is it desirable or isn't it?

MR. RAMOS: You do make that statement. You do make that statement.

VOICE: Fourth paragraph from the bottom.

MR. RAMOS: I know. I know what paragraph you are talking about.

MR. MINNERS: We have been hassled about this before. We know where it is.

(Laughter.)

MR. RAMOS: That is something we are still

studying. That is the reason why it is put in there as a vague requirement. We do not intend to provide interaction with your computer except perhaps in one mode that they are considering just to activate the flow.

The other type of interaction we are talking about is primarily to exchange data back and forth between the two facilities -- either one of the three facilities.

VOICE: Exchange data and what? I guess I am not real sure.

MR. RAMOS: If you have a particular display that we are misinterpreting, if we had to have a display that says it looks like, you know, this is happening, and you have a similar display that shows that is not happening, we want to exchange that type of information.

VOICE: (Inaudible).

MR. RAMOS: That would be handled over the --

MR. BELTRACCHI: There would be other means of communication. The Nuclear Data Link was primarily a one-way data flow from the plant to the NRC with the exception of such things as maybe error checking or manual initiation to start the data as a provision -- as an alternate provision.

MR. RAMOS: Don't take the interactive capability there to mean necessarily computer-to-computer interaction.

VOICE: That is the way most people would take it.

MR. RAMOS: I understand.

VOICE: Will you clarify this at a later date?

MR. RAMOS: We will clarify it before the final edition is put out.

MR. BELTRACCHI: Question?

VOICE: In the letter of March 12, 1980 from Eisenhut you set forth parameters for PWRs and BWRs. The parameters you would like for the Nuclear Data Link, is this part of the NUREG-CR-1451?

MR. BELTRACCHI: Is that the Sandia report?

VOICE: Yes.

MR. BELTRACCHI: What has happened since then, we have gone back and tried to make a comparison with Reg Guide 1.97 to make sure Reg Guide 1.97 had the variables, so that would be consistent with what it's called in the NUREG --

VOICE: Certain reactors in the United States do not fit the criteria of this document.

MR. BELTRACCHI: We recognize that.

VOICE: What will our guidelines be?

MR. BELTRACCHI: There will be blank forms, a format. We recognize there will not be data, and the intelligence that will have to be built into the operations center computer will recognize that and act accordingly.

VOICE: Do you propose that we send our meteorological data over the Nuclear Data Link to you?

MR. MINNERS: The meteorological data that is required by Reg Guide 1.97 is a very minimum set. I think it is just wind speed and direction. I think we even have eliminated any temperature measurements.

You are referring to the requirements of 0654.

VOICE: It is reported in several places that we have to send meteorological data to you. Do we have to send it over the Nuclear Data Link?

MR. MINNERS: Yes. We envision only one flow of data back and forth.

VOICE: If there was a question that we could not send this through a computer at the plant, this makes it complicated. Can we use it as throughput through our computer and then put it on the Nuclear Data Link as straight data?

MR. RAMOS: Probably. You would have to show us that in your design concept.

MR. BELTRACCHI: (Inaudible) be less than say the availability of the link.

VOICE: That is going to be a common problem anywhere you go.

MR. BELTRACCHI: Again, you are looking at the weakest link in a system here. What is the weakest link? If you are adding an additional -- in order to get the information into the Nuclear Data Link, you are adding

something that is weaker than the entire link, then we would be concerned. That data would probably not be there when it was needed.

Again, I would sort of suspect that there is a lot of flexibility in design approaches to this. There should be a solution to the problem.

VOICE: I am sure there is. It is just a matter of whether you all will accept the solution.

MR. COMPTON: The reference was made a little bit ago to 0654. Are you talking about the minimum meteorological data set, or are you talking about the appendix that says (Inaudible)?

MR. MINNERS: I think we decided from the meeting in Philadelphia that there may be inconsistencies between 0654 and 0696, and we are going to have to go back and look at that.

My understanding of the intent now is that what is being put into Reg Guide 1.97, no more than that data will be sent on the Nuclear Data Link, and that includes a very limited set of meteorological data. As I remember it, it is only wind speed and direction. But we have to go back and be sure those two documents are consistent, and 0654 is also in the process of being revised and modified.

MR. GOLDEN: I would add, Reg Guide 1.23, the new draft out, has the same kind of --

MR. RAMOS: That is the intent.

MR. GOLDEN: 1.23 conflicts with 0654 which conflicts with NDL. So really what you are saying is that NDL should replace 0654 and 1.23.

MR. MINNERS: The meteorological people revised Reg Guide 1.97 which is going to go into the NDL. My understanding is they did that to make it consistent with what they were proposing for Reg Guide 1.23.

MR. GOLDEN: That might be the case (Inaudible). What you are proposing, just in summary, is the NDL concept of meteorological data will satisfy 0654 when it ultimately comes out and Reg Guide 1.23 when it comes out.

MR. MINNERS: Correct.

MR. BELTRACCHI: Yes?

MR. GRIMES: On the meteorological data you could have a microprocessor (Inaudible). I am bothered by the term "plant process computer" in your -- towards the end. I'm trying to see why it is that you don't want to use the plant processor computer. Is it because it does not meet the criteria?

MR. MINNERS: We would like to get through the presentation, and that is a very good subject which I think we could discuss in detail after lunch. May we do that? Let's try to complete the presentation.

Are there any more questions on the Nuclear Data

Link?

VOICE: I have a particular comment. (Inaudible) that a battery backup (Inaudible). I don't know how some of this equipment would work off of batteries without an intermediate device.

MR. BELTRACCHI: I guess I would have to, you know -- I guess I would have to look at the various specific devices you were proposing.

VOICE: Most of the equipment is AC-operated. In fact, all of it is, whether it be communication equipment or the computer equipment. So that your comment of battery infers that the equipment is operated directly from a DC power source. I think you are being too narrow if you want us to take this literally.

VOICE: (Inaudible).

MR. BELTRACCHI: Okay, okay. Good point.

MR. MINNERS: Okay. I think -- let me -- I think we are through with the Nuclear Data Link. Let me make a clarification, and then we will put on the slide on implementation.

We have had some discussion about interaction between the utility, the NRC, state and local authorities and other federal authorities. I think we have to be careful with what we are saying. Maybe we all realize the qualifications that we put on these things without stating

them.

When we say the senior utility person is going to be in charge of the EOF, I think we know what that means. The utility cannot be in charge of the NRC. It cannot be in charge of the state and local people in the direct sense that he can give them orders. We and they are independent people. He is a coordinator, and I think we all have realized from Three Mile Island that it would be best to have coordinated statements come out on what is happening during an accident.

That does not prohibit state and local authorities or the NRC to make press statements if they think those are necessary. I don't think you can stand here now and say that we are going to do it a certain way exactly, that no press release or press statement will go out unless it is approved by a senior utility person. So we have to recognize that besides the utility there are other organizations which are independent of them, and certainly during an accident there has to be coordination, but there is no direct control. I just want to make that point clear.

VOICE: (Inaudible).

MR. MINNERS: And that is why we are trying to put up these facilities. First of all, there is going to be an organization on paper, and just because it is on paper it does not mean it has to be followed during an accident. We

hope that by having adequate facilities that that will strengthen the impetus to follow the organization that is on paper. If you have no facilities and just an organization, people may not even read the piece of paper; but if you have a facility, that gives you a lot more ability to direct people in the way the organization is on paper. And that is the one purpose of these emergency response facilities.

That is why we think we need the EOF outside the security fence, so that we can get these other people in there all in one place and be able to talk to them.

All right. Let's have a last item which is the implementation schedule for all this material.

MR. RAMOS: Evidently you won't be able to see this, but in the August 1st letter that Darrell Eisenhut put out it has the schedule in there in the last page with the direction to use that for planning purposes. This is the schedule that we gave to the Commission as how we envisaged being able to meet the April 1982 date.

Some of those bars in there go all the way back to June and earlier, because we feel that a lot of facilities have already started some of that planning and started their equipment procurement and what have you.

The critical dates that have been changed from the previous documents is the 1 January 1981 date, and by that date we expect to have from everyone -- prior to that date,

if possible -- your concept description on how you propose to meet the requirements of 0696.

On January 1, 1982 we expect the SPDS to be fully operational. On April 1, 1982 we expect the TSC and EOF fully operational. Currently the way Reg Guide 1.97 is written, those new facilities that are coming on line here in the near future would have to meet all of Reg Guide 1.97 requirements by June of 1982, and those that have to backfit or upgrade -- operating plants, that is -- would have to meet the January 1983 date requirements.

So although we expect a fully operational TSC and EOF, you may not have the final data flow in except maybe through a process computer or something else where you already have the data until you finally get the full 1.97 requirements in. This is a change from the previous requirement of having a fully operational TSC by January 1, 1981.

Do you have any questions?

MR. MINNERS: Well, fine. Okay. I don't think that means that you agree with it.

Let's see. It is now 12:15. Let's reconvene at 1:30 for the afternoon session which will be devoted to comments, questions, and whatever else you would like to do.

(Whereupon, at 12:15 p.m., the workshop was recessed for lunch, to be reconvened at 1:30 p.m., the same

day.)

AFTERNOON SESSION

(1:30 p.m.)

MR. DAVIS: We are ready to start the afternoon session. A couple of announcements before we do.

We have a form here you can fill out if you are interested in getting a transcript of this workshop. You have a couple of choices. You can pick up the form, take it back with you, and then mail it to Alderson Reporting in Washington, D.C., and the address is on the bottom of the form. The other thing you may do is just sign the form and give it to this gentleman here on my right, and he will take it back then and make arrangements to send the transcript to you. I am told it is 45 cents per page.

The afternoon session will begin as a comment period, and we will start with the individuals on the list as they appear. There was one person who was on the list first that asked me a question as to whether or not he could have somebody substitute for him. I guess the answer to that is yes, but then he goes to the bottom of the list.

MR. MINNERS: Okay. Let me remind you, especially in this session if you wish to make a comment, please come to the microphones, identify yourself and make your comment.

All right. I am going to proceed down the list in the order that people signed up. I will cut it off at 5:00. If there is time, people who have not signed up on

the list or people who want to come back again and make another comment, we will get to you.

Okay. Let's start.

Mr. Bradley from SMUD.

MR. BRADLEY: Ed Bradley, Sacramento Municipal Utility District.

What will be the NRC staff qualifications at the TSC and EOF concerning their expertise and qualifications?

MR. MINNERS: Say that again. I missed something.

MR. BRADLEY: What will be the NRC staff qualifications at the TSC and the EOF?

MR. RAMOS: That is still under development at a joint group at I&E deciding what that should be.

MR. BRADLEY: Our plant management has a big difficulty with that since most of the NRC people were brought up with Westinghouse or the Navy program, and since we have a B&W plant there is a lot of differences; and if we have somebody we don't know coming in and telling us what switch to pull, we are not going to believe them. There is a credibility gap there.

MR. MINNERS: I am willing to discuss that question with you, but I guess we both recognize that does not have much impact on the design of the emergency response facilities. Whether our people are qualified or unqualified really is not going to affect these requirements.

If you would like to discuss it, I think that is a good thing to discuss. I am willing to discuss philosophy, and maybe the region would be willing to discuss what their plans are for having people, because it is going to be the regional people who are going to be at the plant.

MR. BRADLEY: There are two computer systems, the SPDS and the NDL. Why the redundancy? Can't we get by with one system? Wouldn't that be a cost benefit on that?

MR. MINNERS: The intent -- we are not specifying whether you need one, two, or more. We have said what each function has to be, and how you satisfy those functions is up to the designer. And we have had some discussions by us requiring OBE on the safety parameter display that makes you have at least two systems or may make you have two systems. I understand that.

We are not specifying how many computers you have to have. We want the functions. We don't care much how you do it, whether you use two computers or three computers.

MR. BRADLEY: In 0696 there is a mention that the NRC wants their own private terminal. Is the NRC going to purchase that on their own, or is it up to the utility to purchase that?

MR. MINNERS: For the NDL we are going to have the utility provide that terminal.

MR. BRADLEY: Can't you guys share?

MR. MINNERS: The site -- what we have called the site transmission unit will be owned and purchased by the NRC. At least that is the concept now.

MR. BRADLEY: The site transmission to Bethesda?

MR. MINNERS: It is called a site transmission unit, and it is the unit that is going to take the process data and manipulate it so it can be transmitted --

MR. BELTRACCHI: The concept was or the concept as it is currently being proposed is to have a site transmission unit that would have a receptable wherein the utility would be able to provide the information in formatted form, and the site transmission would take it and store it and transmit the data.

There is a point of interface, and that point of interface will be covered through an interface which remains yet to be developed.

MR. BRADLEY: Okay. We'll have the SPDS and the NDL in the TSC, is that correct?

MR. BELTRACCHI: The SPDS is there. I don't think we have specified any --

MR. MINNERS: I don't know what you mean by the NDL.

MR. BRADLEY: Nuclear Data Link. Do you want all that data information at the tech support center and the ECF?

MR. MINNERS: We want the same data base.

MR. BELTRACCHI: That is covered by Reg Guide 1.97.

MR. BRADLEY: You want your own private NRC terminal at both of those locations also?

MR. MINNERS: No.

MR. BRADLEY: One terminal would be sufficient at each of the locations?

MR. MINNERS: You are confusing us. Would you define "terminal?"

MR. BRADLEY: Whatever the CRT display or whatever display is decided upon, would one display be sufficient at each of the locations?

MR. BELTRACCHI: For what purpose?

MR. BRADLEY: For the Nuclear Data Link.

MR. MINNERS: We don't intend to have any display of the Nuclear Data Link at the site. That display would be at the NRC headquarters. All we want is a plug that we can plug into from headquarters, not to have that information as it is provided on the Nuclear Data Link display.

Obviously that data comes from the same common data base, and it is going to be displayed in possibly a different form in the TSC and EOF. Our people are going to look over your people's shoulders in those facilities to look at the same instruments you are looking at. We don't want a private display in the TSC or EOF. In fact, one of the concerns is we want to look at the same information you

look at so we can talk the same language.

And one of the concerns with a Nuclear Data Link is some people have suggested that not only should the data be from a common data base, but your display should be transmitted over the data link so that we see it presented in exactly the same form.

That is not the current concept, but people are saying if you don't do it that way, how do you assure that you are not going to get miscommunication where you, the Commission, could manipulate the data a bit differently and therefore get a different interpretation or something and add to the confusion.

MR. BRADLEY: 0654 talks about backup tech support center and a backup EOF. If we meet the habitability requirements that you are mentioning in 0696, is it necessary then to have a backup TSC and EOF?

MR. MINNERS: No, no. One TSC and one EOF is the current design concept.

MR. RAMOS: In Philadelphia they brought up the point in some cases where they would like to have the option of having an alternate EOF and possibly a TSC, similar to what was approved for Arkansas as far as the TSC was concerned. But in our discussion with the Commission on July 11 it was said that we would only have the three facilities, the control room TSC and EOF, for controlling

accidents.

That is our requirement. If you want to have an alternate --

MR. BRADLEY: You make mention in there that if the TSC becomes uninhabitable that the function is then split back to the control room and the EOF. In that case will you require a backup TSC?

MR. RAMOS: I don't think it is worded like you said. I think it is worded that in those cases where you choose to have a primary TSC -- and that is the Arkansas option -- where they have a primary TSC, I believe it is on their turbine base, which is not habitable, and it becomes non-habitable, then it shifts to their alternate TSC. And they understand that they have to have the data requirements in both places, and that is what that is referring to. It is giving you that option.

If you do not have room inside the reactor building and you want to build a non-habitable TSC, for example, on the turbine bay, and you want to have a habitable TSC near, then we would accept that option.

MR. BRADLEY: Okay.

MR. RAMOS: But the intent is to have only one TSC, so if you make it habitable and it is right near the control room, that would be the only TSC required.

MR. BRADLEY: That is all my questions.

MR. MINNERS: Okay. Mr. Abel of Commonwealth Edison.

MR. ABEL: First, I would like to thank you for this opportunity to comment. I am not going to go into specific questions on the NUREG because we have a large number of what we consider to be substantial questions and comments that we will submit in writing.

I would hope that one of the things you have gotten out of this meeting is that is probably true of all utility companies present. I would also like to urge that the staff work closely, as you suggested, with the AIF subcomittee that is working on this NUREG. I believe there are still substantial improvements that can be made, if not in the intent of the report, at least in the wording of some of the sections.

MR. MINNERS: We would appreciate any specific rewordings that you would suggest. It would be better to give us a specific rewording rather than to say it needs improvement, because everything needs improvement.

MR. ABEL: Right. I understand that. I believe that is what the AIF subcommittee is working on.

This morning it was mentioned that the schedule for completion of the technical support center requirements of 1-1-81 would be delayed until 1-1-82. I hope that is going to be documented in some formal way so we can stop

work on the 0578 requirements that are currently under way.

MR. RAMOS: It has already been documented by Mr. Eisenhut in his letter to all the licensees for planning purposes, and there is a clarification letter coming out on Lessons Learned items, and that has been cranked into that letter. And there is also a workshop on those Lessons Learned items I think in September.

MR. ABEL: One thing you might consider -- I read the letter transmitting the NUREG-0696 -- it is not clear we are being given specific relief from the 0578 requirements. That was my point.

MR. RAMOS: It was intended that way to use it for planning, and it was supposed to be clarified in the clarification letter on Lessons Learned items which will be -- as I said, there will be a workshop on it, as I recall in the middle of September.

MR. ABEL: The last item I would like to discuss in some detail is this schedule that has been developed for this. Primarily my comment is I think it is premature to be establishing a 1-1-82 date for implementation of these requirements, primarily because it appears that it has taken nearly a year to develop the criteria document that we are discussing today. We are being given four months to develop designs in response to those criteria and something less than 12 months to install those designs.

I don't believe that a highly compressed schedule of this kind is going to allow us to meet the intent of all this entire approach, which is to improve an integrated system for handling emergency conditions.

Granted, I understand the urgency, but I feel with the vast scope we are trying to incorporate in this single document, it is unrealistic to establish that schedule.

And finally --

MR. MINNERS: In your written comments I would hope you would provide some more supporting material which would demonstrate your contention that the schedule is too short, which I am sure that you can do.

MR. ABEL: Well, my final comment is that -- on the schedule is that I don't feel its completion date can at all be established by us, by Commonwealth Edison, until we have an approved design from the NRC. And an example, case in point is our commitments on 0578 for the technical support center.

We proceeded in good faith, have designed, have purchased all the equipment, and have the buildings well under way in construction, and now the requirement has changed, and I do not think we can go through that again a second time.

So my suggestion is that you tie the schedule to be established when your detailed review of our design is

completed. I think we will know what it is we are scheduling then, and you will have a much better idea of where we are going also.

Thank you.

MR. MINNERS: Thank you.

Mr. Ewbank of Detroit Edison.

MR. EWBANK: Most of my comments were covered this morning, but there is still one on page 15 where you have a limiting condition for operation. The EOF is not operational for a period of eight hours -- exceeding eight hours, correction -- what does this mean?

MR. RAMOS: If you cannot perform the functions of the EOF for a period of eight hours for some reason such as the equipment is down, or it is flooded, or what have you, then you have got to make a report stating what you are going to do to compensate for the fact that you cannot perform that function. That is what the LCO is for.

MR. EWBANK: This is in addition to your .01 unavailability then.

MR. MINNERS: The .01 unavailability is a design goal. That is what the guy is going to try to design to, and the LCO is the thing that implements that design goal and says that is what you are actually going to be held to.

Mr. Golden of Commonwealth.

MR. GOLDEN: My thunder for my first question was

stolen, but I would like to have the point elaborated since we have to develop technical specifications for the non-operation of the EOF and TSC. It is quite vague as to what is meant; for instance, does it mean that you cannot turn the lights on because there is no replacement bulb? Does that mean it is non-functional?

One can elaborate many different criteria. It seems to me it is a very vague statement.

MR. MINNERS: I don't think it is any more vague than the usual tech spec thing of operable.

MR. GOLDEN: Does this mean we have to send out a person at every shift to a facility that is 10 miles from the plant to check on its operability? The implication is there.

MR. MINNERS: I don't know what the surveillance requirement would be. There would be some surveillance requirements on the EOF, whatever that may be.

MR. GOLDEN: A second point was not touched on this morning --

MR. MINNERS: But I do not see why you couldn't have -- if that is a problem, you could have some kind of a remote way of testing the facility if that is a problem.

MR. GOLDEN: It gets back to what is defined as non-operation.

MR. MINNERS: Let's discuss that some more. That

is a problem, and I am not sure that you want us to define it better. We have never in any documentation that I know of defined operable any better than in the tech specs, and it has been worked out over the years of what operable means, and people now understand that.

I think it is one of those problems that you really cannot define. It is one of those words that you have to use a lot so that everybody understands what it means. If we get too specific, you will accuse us of being too prescriptive.

MR. GOLDEN: I take it if the filtration system is not functioning, the TSC is considered non-operable even though there is no radioactivity or contamination in the area. That would constitute, I take it, non-operation.

MR. MINNERS: Part of its function is to be able to function during conditions in which there is radioactivity, so it can't perform its function. It is not operable.

MR. GOLDEN: If the data link is not operable for one reason or another, that defines non-operation even though all other functions in EOF can be covered.

MR. MINNERS: I don't think -- you brought up a question I had not thought about. The Nuclear Data Link is not part of the TSC or EOF, and we have not put any operability requirements yet on the Nuclear Data Link.

MR. GOLDEN: It is a subset of all the other information that has to go into the TSC. I guess I was using the Nuclear Data Link in a generic sense. It just seems to be a point --

MR. MINNERS: That is going to be a difficult point to resolve. I don't know how to do it now. That is, to say how much data could be unavailable, and you could still consider the facility to be functional. And it is like an ECCS system. I mean, you know, you have two trains, and one is out. You can define it -- we have different definitions for how much of the equipment is out, an we are going to have to work that out on these facilities.

I think that is a very detailed thing that is going to have to be worked out once the facility is designed, and that is all I know how to say right now.

MR. GOLDEN: This is related to a question that came up just a little bit back concerning the backup EOF concept. If this concept which apparently -- which was in 0654 and now apparently superseded by the non-requirement for the backup, if the utility -- I am not saying Edison is going to do that -- if a utility were to choose the backup concept, would the primary EOF have to be designed to the habitability requirements and must the backup be within ten miles?

MR. RAMOS: That is a difficult question to answer.

MR. GOLDEN: That is why I asked it.

(Laughter.)

MR. RAMOS: Without looking at the details. We are not preventing you from having the backup concept. The backup would have to meet the habitability requirements.

MR. GOLDEN: Why would they have to meet the habitability requirements in either case, because if the first is not habitable, then you would move to the second; so it does not seem to me that you would have to have the habitability requirements on either one if you went to the backup concept.

MR. RAMOS: Okay. Let me back up and say that if it is within the ten mile EPZ and your backup is within the ten mile EPZ --

MR. GOLDEN: That is the second part of the question.

MR. RAMOS: I realize that. If it is within the ten mile EPZ, and that is where you have moved to and you get to the point where you have to evacuate, you will not be able to evacuate that facility. I mean, by design you will not be able to evacuate it.

If you move it outside the ten mile EPZ and you have to evacuate the area, the ten mile area, then obviously it does not have a habitability requirement because it is outside the ten mile area.

Does that answer your question?

MR. GOLDEN: By that you are saying that neither the primary nor the secondary EOF would have to have or meet the habitability requirements, and that the backup could be outside the ten mile area. Is that what you are saying?

MR. RAMOS: That is what I am saying. I will also say that both of them will have to have all of the data requirements.

MR. GOLDEN: I realize that. I was specifically referring to the habitability requirements.

MR. MINNERS: I think we had some misunderstanding in the previous meeting. If your EOF is at 9.9 miles, the habitability requirements will probably be very minimal.

MR. GOLDEN: I am not making any reference to the particular type of requirements. I am just saying that the backup concept is still a viable one apparently, and that neither facility really would need to meet such stringent habitability requirements if you went to that particular concept.

And second of all, there is no mileage requirement on the backup system. That is all I wanted to know.

Another point which was not --

(Laughter.)

MR. RAMOS: What kind of mileage were you thinking about?

MR. GOLDEN: About 50 miles.

MR. RAMOS: I am sure we would not accept that.

MR. MINNERS: You just pointed up a hole. We are going to have to put some mileage requirement.

MR. GOLDEN: We will probably be discussing it further anyway. That would just more or less be a backup, but that would be discussed further. But I just wanted to get a feel for where we stood.

Another subject which was not touched upon this morning but which is very critical, in the EOF concept it talks about the mobile systems, and it talks about for communications a backup -- a primary and a backup, which because they are mobile, they are radiocommunication links.

Getting access to the airway use is extremely difficult just to get a single channel. This implies that we must get two channels. We could not even get the single channel. We had to piggyback our communications on top of our divisions through an override feature -- our divisions being the people that service the areas and who already have radiocommunications.

Would you elaborate on how a utility could go about getting these two additional channels for this primary and backup mobile system?

MR. RAMOS: FEMA has a direct line with the FCC on emergency communications, and we will bring it up in the

next Steering Committee meeting we have with FEMA. But -- as something to consider -- but I would suggest that you contact the FEMA regional office and go through them, because they can probably get the frequency for you.

MR. GOLDEN: I think they already tried. I'm not positive.

MR. RAMOS: There is this --

MR. GOLDEN: Why would the need for a backup system on this particular point --

MR. RAMOS: We did not lay down a requirement for a backup for the mobile. We made the requirement between the TSC and the EOF, and NRC and EOF or TSC. We did not lay down a communication requirement.

MR. GOLDEN: Let me read two sentences then. Perhaps you can tell me why they are not linked.

MR. RAMOS: What page?

MR. GOLDEN: It says, "Mobile communication links will be necessary for communication with field monitoring teams." The next sentence, "Reliable primary and backup means of communication are required."

Are you indicating that those two sentences are not linked? Or I would switch the order. I would put the backup and primary prior to that sentence and then have them -- the relationship with the mobiles removed and placed afterwards.

MR. RAMOS: Let me look into that in more detail.

MR. GOLDEN: Okay. Possibly it was not intended to read that way then. Very good. Thank you.

MR. MINNERS: Mr. O'Brien of Illinois Power Company.

MR. O'BRIEN: I really have only two comments that remain after this morning's discussion. The first one deals with the use of the process computer, and we have discussed it quite a bit this morning, but I am still quite concerned about it.

The way the NUREG stands it would seem that no amount of design or planning for an upgrade of an existing system would let us use the process computer.

MR. MINNERS: The way it is written now I think that is a correct statement.

MR. O'BRIEN. And it would seem for future control rooms like our Unit 2 control room, which we are probably several years away from starting the design on, we will have to implement a completely separate computer system even though we might be able to implement much of what is really needed in the main control boards. So this is something that is of quite a bit of concern to us.

Specifically in my case we are dealing with a control room that has six process 4500 Honeywell processors in it now, and on our process radiation monitoring system, a

completely redundant digital system with something like 150 microprocessors.

The other point deals with the EOF.

MR. MINNERS: That sounds like to me that you have enough equipment that some of it could be dedicated to the safety function, and if properly controlled and assuring the functional integrity and security, that that might be acceptable.

What we need is some words that will state that so people will understand what is required without having just a prohibition, a blanket prohibition of process computers. But we have -- I have not been able to get anybody who knows anything about computers to write down such statements which they would be satisfied with.

MR. O'BRIEN: As far as the NUREG is concerned.

MR. MINNERS: As far as the NUREG -- let me explain something in this NUREG that I encouraged. When we got to some of the tough points, and there were quite a few, and the question came what should we write down, I pointed out this was a document which was a draft document that was going to go out for comment, and we would get more comments and better comments if we took the tougher side of the alternatives before us rather than the weaker side.

If we put down the final -- the weakest position, people would all say that is great and go along with it. So

in some of these things, and I think the process computer may be an example of that, we took a position in the draft which probably reflects the most conservative way that we are looking at it now. And part of the reason of putting it down that way was to encourage comments.

It does not mean that we do not think this is a way we might go. It is just -- we had several alternatives, and we thought we would get better comments by putting down a tougher position, and you might want to recognize that in making your comments.

MR. O'BRIEN: I hope we can get it worked out in the NUREG.

MR. RAMOS: In those comments we are looking for the rationale of why we should do it in that way.

MR. O'BRIEN: My final point deals with the EOF and the need for the safety parameter display, and perhaps your staffing requirements will explain that to us a little bit better. But I have the gut feel that the safety parameter display is going to be the display that is going to control the communications or the data link requirements between the plant and the EOF.

What we have looked at is something that is going to require ten megahertz connection and microwave or something like that, and we cannot handle it over telephone circuits. We would like to see -- if we cannot get by with

something at a much lower speed, what can be handled in telephone circuits, if we could.

MR. BELTRACCHI: Could you amplify on why you feel that you need that high a --

MR. O'BRIEN: What we were looking at is driving CRTs and EOF directly from the computers in the plant.

MR. BELTRACCHI: I understand.

MR. O'BRIEN: We were not looking at putting a processor in the EOF.

Thank you.

MR. RAMOS: Let me back up to a question asked earlier on the ability -- the EOF or backup EOF. In thinking about what the Commissioners said, if you happen to be in the primary EOF, wherever it happens to be, and the decision to evacuate comes up, that flow of traffic or that flow of data cannot be stopped to allow those people to evacuate. You have to take that into consideration when you design a primary and a backup EOF. The data must flow.

MR. MASTERS: Which data do you mean?

MR. RAMOS: Meteorological, radiological, the data that is going to the state and locals to control evacuation.

MR. BRADLEY: I have a question. I am Ed Bradley, SMUD.

If the decision is made to evacuate the general population due to a PAG -- exceeding a PAG, does that same

criteria -- is that in effect for the workers at the EOF since they are radiation workers and can accept higher doses rather than the general population?

MR. RAMOS: They are not radiation workers, all of them. There are going to be state and local people, newspaper reporters. You're talking about people inside the EOF.

MR. BRADLEY: Yes.

MR. RAMOS: The intent is for them not to have to move, so if you make it habitable with the controlled ventilation system, it wouldn't have to be --

MR. MINNERS: The same dose limits can be put on the workers in the EOF as the general population. Would you allow the workers to get a higher dose?

MR. RAMOS: Is that your question?

MR. BRADLEY: Yes.

MR. MINNERS: I think you have to qualify it. I think in an accident situation people are going to be making balancing judgments of whether it is better to evacuate or whether to leave people where they are, and I am not sure -- I don't know what you would do with the general population in that situation. That is a very difficult situation to try to predict exactly what you do.

With the general psychology now some people are saying that you should not give the population any dose at

all, and of course, that is the ideal. But I think you have to recognize the possibility, however remote it may be, that you could have an uncontrolled accident, and in that situation I do not think -- you may not have -- be able to limit the doses to the people to the lowest level that you would like to, and that is the purpose.

I think that is just recognizing the extremes of reality, so I just want to qualify the question. There is a difference between what you design to and what may actually happen, and you have to recognize what may actually happen as well as your design requirements.

Okay. Mr. Cowan of WPPSS.

MR. COWAN: Again, I won't elaborate on any of the questions I feel were answered this morning. However, my company will be submitting detailed comments, either separately to the request by the Commission for comment, or through AIF, or perhaps both.

The items I would like to chat about briefly are not questions so much as perhaps statements, the positions as the way we feel them now.

MR. MINNERS: That is encouraging. We would like to hear what people think as well as questions.

MR. COWAN: It is a matter of philosophy perhaps, but I think it is true to say that what we are dealing with here is four basic information streams that we are talking

about. They flow one of four places. All of those flows are for information only, and I think that is acknowledged by everyone.

However, I feel, and our position is, that what we have in front of us, 0696, at this point and others prior to it have what we call a built-in ratchet in it. You state that they do not have to be completely designed to 1-E or to seismic one. However, the next sentence says typically are, but the goal is to do so.

And I am sorry, gentlemen, but that is part of the problem in our business. We never get done. We are always open-ended. You have heard other folks say the same thing in different ways.

You have defined more in 0696, but you have still left the door open, and it is still awfully hard, you know, to get the job done.

MR. MINNERS: Do I infer from that that you have a suggestion that we do not put in those extra sentences and say that this is it, and that is all we are going to require?

MR. COWAN: If you said non-1-E and non-seismic, we would have been better off, better off for us for certain.

Let me go on --

MR. MINNERS: Could you give me a page reference on where we say what you say we said or later?

MR. COWAN: I don't have them in front of me. One

of my guys can look them up.

MR. MINNERS: Later, if you have a chance, would you point it out to me? I would like to look at that.

MR. COWAN: Let me go on. The discussion this morning, I believe, led me to believe at least that you are definitely thinking of extra requirements for SPDS as versus the other three, OBE, for example, added on to this information stream.

MR. MINNERS: We think the SPDS has a higher safety function than the other things.

MR. COWAN: The alternative to get that if we cannot buy computers is to hard-wire, and if you carry the ratchet process to the other information flows, we are hard-wiring to the point of unreasonableness.

I don't think it is anybody's intent, and I hope it is not yours, to do so. We are talking information flow, not control.

I think in the bottom line sense I think -- and you can put this in the category of trying harder -- but words lead us into trouble when you may not intend it. I think 0396, you'd better work harder on it.

Finally --

MR. MINNERS: You will have some specific example or specifics when you have your written comments, I hope.

MR. COWAN: Yes. Finally, on the tech spec item,

ght hours, we find that -- I guess basically thinking that is unreasonable since, for example, diesels are a seven-day tech spec, and they are a safety system. Here we are talking about an information system with an eight-hour requirement on it, and I find -- we find that unreasonable. We find there is no basis for it.

MR. MINNERS: Let me discuss that a little bit. With the diesels you have redundant diesels and you have offsite power, and it is hard to draw an exact analogy with the safety parameter display. But do you think the control board is a backup to that?

MR. COWAN: Sure.

MR. MINNERS: Okay. And I think we have said that you don't have to shut down if you are out eight hours. You just have to show what compensating measures you could take to compensate for the outage of the safety parameter display. If you lose all your diesels, you are going to have to shut down your plant, okay? But if you lose your safety parameter display, we are not requiring you to shut down. We are just requiring you to tell us what you are going to do to bring the level of safety back up to what it was or near to what it was. So --

MR. COWAN: Why eight hours? What is the basis for eight hours? You didn't say shut down; you said report.

MR. MINNERS: Because I think the eight hours is

consistent with the reliability criterion that we put down.

MR. COWAN: Which has been challenged.

MR. MINNERS: If we change the reliability requirement, we probably should change the tech spec requirement.

MR. COWAN: Okay. Thank you.

MR. MINNERS: Mr. Sale of Washington Public Power.

MR. SHAH: He just left. He had one comment.

MR. MINNERS: Are you Mr. Shah?

MR. SHAH: Right. I am Shah.

MR. MINNERS: Could I have you use the microphone so we make sure we get it recorded?

MR. SHAH: Could we use multiple rooms for a technical support center as long as you meet the space requirement?

MR. MINNERS: What?

MR. SHAH: Rooms.

MR. RAMOS: That opens up the other box that was opened up earlier about distances away from the site as far as the TSC is concerned. When you say multiple rooms, do you mean a group of rooms that are --

MR. SHAH: In the same neighborhood, in the same area, maybe upstairs, downstairs, as long as we provide a display at all those locations.

MR. RAMOS: They probably will be acceptable. We

would have to see it as you lay it out.

MR. MINNERS: I am not even sure you would have to have the full display at all locations. You could distribute the display.

MR. RAMOS: Depending on the functions. But if you tried to move it around several buildings onsite, that would not be acceptable.

MR. SHAH: I just want to reconfirm on SPDS that the computer, the (Inaudible).

MR. BELTRACCHI: We would accept the 99.8 that was stated by Macro, .002.

MR. MINNERS: I guess there is a problem there. I think we have written down 1 times 10 to the -3, and I am not quite sure what Leo is saying. He is going to keep it written as 1 and accept a 2.

(Laughter.)

MR. BELTRACCHI: Close it up and --

MR. MINNERS: I would hope that --

VOICE: (Inaudible).

MR. MINNERS: Pardon?

VOICE: (Inaudible).

MR. BELTRACCHI: You are quoting the Macro report. Technologically you can.

MR. MINNERS: But practically you cannot.

VOICE: (Inaudible).

MR. MINNERS: I think our goal will be that if we are going to accept 99.8 that we will write it as 99.8. If the next draft comes out with 99.9, we mean 99.9. I don't want to give the sense -- the sense is that we are going to write down one thing and accept another.

MR. SHAH: Okay. With this OBE requirement on SPDS and this kind of unavailability, there is a potential that we might have to go to a hard wire system. And also, listening to the people in industry, we are talking like 25 parameters or maybe less. So it might be defeating the purpose where you want to have more flexibility in your display. And so I think that the OBE requirements should seriously be looked into. Otherwise, people might be forced into a hard wire system and --

MR. MINNERS: Let me address that point because I think it is a good one. I think we have been properly accused of hindering the use of computers in nuclear power plants because of our requirements, and people see that the computers have some futures which from a human factors standpoint are very good. And we would not like to exclude computers because of some requirements, so we are sympathetic to using computers.

I think most of the people who are working on the report envision computers, and hope that we can have both; that we can have our cake and eat it, too. But if we cannot

get the OBE -- we want the OBE, and we want computers, and maybe there is some way you can suggest that we have some other additional means -- or I don't know exactly how to express it -- in which the problem I have expressed about the OBE could be handled.

There was one suggestion that maybe some of the instruments on the control board would be grouped, and they are qualified equipment, and during an earthquake we would use those rather than using the safety parameters.

MR. SHAH: Or you could use that to verify.

MR. MINNERS: I am not sure that is an acceptable way. Perhaps someone who had thought about it more could provide that as a comment.

MR. SHAH: Okay. So if we go to that -- my second part of the same question is if we go to hard wire systems, then can we use the plant process computer for TSC and EOF?

MR. RAMOS: Only if you can show the security -- what we discussed earlier this morning, that the functional requirements be met without any degradation at all. We have already discussed in great detail this morning the fact that some process computers may be capable of meeting all our goals. If they can and it can be shown that conclusively and then verified by some means, then we probably would accept that.

MR. SHAH: Okay. That's all.

MR. HALL: Along the same line of his question, you are not placing any restrictions as far as the OBE on this as far as using the plant process computer for the TSC and the EOF, if some other means is made to -- whereby the SPDS is set to your requirement, is that correct?

MR. RAMOS: That is correct.

MR. HALL: That would include the plant computer, the process computer, if you had some other means for the SPDS.

MR. MINNERS: No, I don't think it says that. The objection to the process computer has nothing to do with its seismic qualification. It is concerned with the security and integrity of that computer and the information that it processes.

We feel since it has other operational programs in it that you cannot maintain -- at least the ones we have seen do not maintain security, and people can go in and change those other programs and inadvertently change these safety functions.

That is our concern. It has nothing to do with seismic qualifications.

MR. HALL: Your statement in here only applies to the SPDS. If we can show that the computer is available, just the availability of the computer --

MR. MINNERS: Correct.

MR. RAMOS: If you can meet the unavailability factors as defined and you can demonstrate that because you have a security system, for example, that monitors everybody going in and out that it does not overload it to the point that if we had an emergency that we could not use it. That is the kind of concern that we are worried about.

You are going to have to demonstrate in your design, in the process computer whatever design you have can meet the needs of the EOF and the TSC functionally.

MR. MINNERS: Mr. Compton of Washington Public Power.

MR. COMPTON: I have some questions on some things that we did not get into this morning. One of the things that you have for the SPDS is for early recognition of abnormal values in data trends. Would you explain further what this means?

Does this mean that we are to do limit checking and alarming or leave that out? We have alarms going off already. We don't want more confusing the operator.

MR. BELTRACCHI: At one time alarming was in there. However, you don't see it there now. I would expect that in terms of detection it would be the use of such things as meter coding or the equivalent of meter coding. For example, if your temperature rates are going positive, you could locate such things as trends of temperatures. If

the display were to contain several temperatures or if you were to integrate your display such that it would contain several temperatures and one was deviating from the normal trend, I mean that certainly would be one way of doing it.

Other aspects might be such things as, oh, the normal -- say, a process limit achieving saturation on the primary coolant, and hence, the display such that the operator would recognize that.

VOICE: (Inaudible).

MR. BELTRACCHI: Meter coding, if you take like a circular dial or anything like that you might have for a hard wired approach, you might have something like a green band. The EPRI reports dealt with this considerably on the review of the control rooms.

Normal bands, as well as abnormal bands, they would be an aid to the operator to recognize when he is in an abnormal condition.

Does that help you any?

MR. COMPTON: Yes. That gets into my second question: what you mean in 0696 when you say "pattern and coding techniques to aid the operator." This is what you are talking about, things like that.

MR. BELTRACCHI: Yes.

MR. COMPTON: Changing the CRT is a thing like that.

MR. BELTRACCHI: That would be one way, yes.

MR. COMPTON: Okay. Okay. In the document also you use the term that we should have time history displays and trend displays. Would you explain the difference?

MR. BELTRACCHI: I guess we are really giving you an option -- okay, time history and trends would be the same in that particular case.

MR. MINNERS: I envision that time history -- a strip chart would give you time history, okay. But you might have a meter which just showed whether the trend was positive or negative. It just would give you the instantaneous derivative without telling you what had happened in the past.

MR. BELTRACCHI: I guess I would consider that rate.

(Laughter.)

MR. COMPTON: That's why they all appear in different places.

MR. MINNERS: What do you mean?

MR. BELTRACCHI: Well, no. At what time I had a version of this that had both rate/trend.

MR. MINNERS: Rate is just a quantification of trend. Rate says how fast -- you are going in a certain direction and at a certain rate. You know what the quantification is. Trend is just that you are on -- you are

going in a certain direction, but it does not say how fast you are going there.

It says that the temperature is decreasing, but I cannot tell you it is going at so many degrees per minute or whatever it might be.

MR. BELTRACCHI: Let me also state that relative to the control room reviews that are coming up, I strongly feel that it is really that information while the operator is in a transient -- while the plant is in a transient, that he really has very little of the rate and/or trend information displayed to him, so that he can tell whether the plant has been stabilized.

And it is that type of information that I think is going to -- they could use a good review in order to assess what aspects of those -- what parameters should really be displayed to the operator so he can make that assessment during a transient.

MR. COMPTON: Okay. Another item that was talked about some this morning is the SPDS and the OBE requirements on that. If we have something that is a partial loss of function -- let's say a printer that will not be able to print out a complete trend, but we still have a display --

MR. BELTRACCHI: You have not lost function then. I would consider that to be the interpretation.

MR. COMPTON: Okay. Very good.

In regard to the unavailability that is being put here and what you had this morning on that report, was that for a single channel computer, or were your numbers for --

MR. BELTRACCHI: I did not attempt to make that design -- the unavailability was for the safety parameter display system.

MR. COMPTON: But now, like the report you referenced this morning that said anything greater than 99.8 percent availability was very --

MR. BELTRACCHI: Very costly.

MR. COMPTON: Is that 99.8 achievable with single, or is that redundant?

MR. BELTRACCHI: I would suspect portions would be redundant. I don't think you could expect to achieve that -- I can't remember whether the statement was made very clearly in the Macro report, but they stated that you probably would not achieve 99.8 with a monolithic type design. You know, portions would have to be --

MR. COMPTON: I don't believe that is possible with a single system.

MR. BELTRACCHI: A monolithic design, that would probably be very difficult to achieve.

MR. COMPTON: Okay. So I believe that you -- instead of just coming out with this 0696 and applying it across the board with those kind of availabilities, I see

what you are trying to do, infuse some of the aerospace and military requirements and reliability -- unavailability, and you should have a plan for infusing it in stages rather than trying to apply it across the board.

MR. BELTRACCHI: And the reason why that number is stated is it would have been very easy to say Class 1-E throughout, but in recognition of the human factors and the interface, we recognize there would have to be some other approach taken. And in order to take another approach you are going to have to draw some sort of criteria and guidelines.

Now, in safety systems you look at 10 to the -4 in terms of unavailability, and since this is a function that is important to safety, we felt that 10 to the -3 would be an appropriate goal. And I think I stated a band of acceptance criteria as unofficial, even though it is not in writing because I have only seen the Macro report this week.

MR. COMPTON: Okay, but -- you are still trying to -- the power industry has been one that has been going on. We have a lot of nuclear power plants at different stages and ages. And all of a sudden you are just going to infuse this whole thing right in there and --

MR. MINNERS: I thought we were staging it, because we are only requiring one little thing to have reliability requirements. We are not applying reliability

to the whole plant.

Do you think the stage is too big, we should take a smaller bite?

MR. COMPTON: In terms of the time frame that it is going to take to implement the systems. You have not looked at the time frame that it takes to implement a large data system. It takes 32 months is what a vendor is going to quote you on a training simulator. We have less than 32 months for an operating plant, and a training simulator does not have to meet that. Anything that is going out with V&V has a longer schedule on it than that.

MR. MINNERS: Is that what you mean by stages? You don't have enough time?

MR. COMPTON: Right. And then you are --

MR. MINNERS: Okay. I understand. I think I understand your comment then.

MR. BELTRACCHI: To some extent your comments are also reflected in the Macro report in terms of the needs -- the needs for the industry to have additional time to develop and install.

MR. MINNERS: Let me ask you a question. One of the previous gentlemen who stood up thought that the safety parameter display was going to take 25 parameters. My conception was that it was going to take a half a dozen or at the most a dozen.

MR. SHAH: All I used, the man from Point Beach, he said four loops. That is 25.

MR. MINNERS: It seems like a lot of parameters for a concise display.

VOICE: Well, NSAC came up with a list of, I think, 15 or 16, and then if you say well, we have -- and in that 15 or 16 they had hot loop temperature, cold loop temperature. So if you recognize you have a four loop plant, and if you are going to display each loop separately, then you have to get up to that number. If you say you are also going to display all sensors of a given parameter, like pressurizer level, you could probably end up with even more, maybe 40 or so.

MR. BELTRACCHI: I think relative to the NSAC list there were probably only 5 or 6 parameters associated with any particular safety function, and I think that is an important point to make in terms of the display. And it gets around to the items of being able to -- for the operator to evaluate that function and evaluate it quickly.

I believe a display could be put together that it would allow him to do that.

MR. MINNERS: Mr. Schwoerer of SNUPPS.

MR. SCHWOERER: I have four comments here. Some of them really follow from this morning.

We are also concerned about the prohibition

against use of the process computer. In SNUPPS plants, which you know are later plants, we have a reliable state of the art process computer that has dual processors, dual memories fail-over feature, and it is as good a computer as what we could go out and buy today for the tech support center.

I would suggest the way you handle this thing in NUREG-0694 is simply to delete the prohibition against use of these process computers, and that is on about three pages, pages 4, 13, and 19; and let the NUREG document simply state the reliability goals.

That is comment one.

MR. MINNERS: I do not think that reliability goals really address those kinds of questions of security. I mean, you can draw the analogy to sabotage in a plant. I mean, what reliability goals you put on your plant does not say anything about whether the plant is secure against sabotage; and I do not see how reliability goals would tell a designer that his software has to have certain security features to it.

MR. SCHWOERER: I am not a computer man myself, but it seems to me you could expand the conventional reliability thing. That is the second thing. You have unavailability, and I am not sure how it will be measured. Let's say the unavailability that you agree to is .002. Is

that a tenth of an hour out of 100, 2 hours out of 1000, 17 hours a year?

MR. BELTRACCHI: Seventeen hours out of a year.

MR. SCHWOERER: I think for surveillance purposes it is going to be critical to define how you measure that, and then it would seem to me that you could fold into this total reliability number the threat to reliability, if you will, of having a programmer go in and monkey around with the programs in a computer.

In our security computer, for example, we are doing things to prevent just that kind of thing.

MR. BELTRACCHI: Those were the very concerns why it was stated other than the process computer, okay. And maybe those were the underlying reasons behind it, and we should have listed those instead of saying not use the process computer.

MR. SCHWOERER: We really would rather see you just state the goals.

The second one, we are also bothered about this OBE requirement for the SPDS, and I think the real concern here is that we see a tradeoff here between a design to meet an OBE and a design that has the maximum capability, flexibility and value to the operator.

I guess our feeling is that the SPDS is something that is going to evolve over some years as people get

experience with it.

We also feel that ultimately -- we are concerned that the number of parameters that NSAC has defined or some subset of those is not necessarily all the information that could go into an SPDS. For example, you could go through the emergency procedures that have been developed, look at the things that the operator has to do. He has to verify that reactor trip as occurred, turbine trip has occurred, that safety injection has occurred, and all these things.

It seems to us that with a flexible computer-based SPDS, this additional information could come in. And so whoever is looking at this thing could not only assess that yes, an accident is happening, but he could assess whether the plant is responding the way it should respond to the accident.

He could also differentiate between, let's say, a LOCA and a steam generator tube rupture. But I think the technology to develop this kind of a display is going to take quite a while to develop. It seems to me that it ought to be checked out on a simulator and this sort of thing.

It seems to me if we go with a hard OBE requirement, we are very likely to lose some of the flexibility and hence, some of the ultimate capability.

I further say that as was pointed out this morning, the control board is designed to an SSE. That is

the primary thing that an operator is trained to use. And we feel that gives adequate assurance that in case of an OBE we are not going to have a disaster.

MR. BELTRACCHI: I would like to address those comments. In terms of function, the safety parameter display system was basically, again, an aid for detection. I would agree that if you were to consider expanding it into diagnostics and to have an aid to assist the operator to diagnose, then it becomes a bigger system.

But I think we have to be extremely careful to keep it dedicated to the extent of detection. Otherwise, we can very easily get back to the situation where we have on the control board today in terms of the amount of information and information overload -- I think it is important to keep the functions separated. And to some extent the EPRI work -- there is EPRI work going on in various programs which I'm sure you are familiar with.

MR. SCHWOERER: There is a difference of opinion on that one.

The last point has to do with the distance between the control room and the technical support center. Your two minute guideline is a problem for us in the SNUPPS design, in part because we have one two-unit site.

I guess our feeling is that the time -- well, the distance here ought to be flexible, and there ought to be

some allowance for trading off the distance versus the amount of data and quality of data displayed in the tech support center.

We do not feel that from the standpoint of the operators of the plant that it is desirable to have face-to-face contact. We just do no perceive the need to have this face-to-face contact between the people that we will assign to the technical support center and the ones we will have in the control room.

You referred to Three Mile Island as the basis for feeling that face-to-face contact was necessary, and I would submit that Three Mile Island may not be relevant, in that Three Mile Island did not have the kind of a tech support center that we are going to have.

So I don't know. I guess this leads me to a final question, and I really wonder if the two minute requirement is based more on the desire of the NRC to have an NRC man be able to run back and forth between the two areas rather than from a standpoint of plant operability.

MR. RAMOS: The desire of the NRC is to have the TSC next to the control room. We backed off to initially five minutes and two minutes.

MR. SCHWOERER: I don't understand why. It seems to me that is kind of an archaic notion, that in this day and age of information transfer and so on why must they be

so close together?

MR. MINNERS: We discussed that in the last meeting. I guess the way I expressed it then is the only way I know how. It is a difficult thing to quantify, face-to-face contact, and it is your perception of how human communication goes. But my experience is that there is a big difference between telephone and electronic communication and face-to-face.

If I thought other means of communication were satisfactory, I would not be here. The reason I am here is because I think face-to-face communication is necessary to get the ideas across. These are not simple concepts, and during an accident confusion will be very easy.

MR. SCHWOERER: It could also be that face-to-face contact could only add to the confusion. It is hard to say. But it does seem to us that there ought to be a capability for tradeoff here. For example, we are kind of going down the road of trying to get the entire computer data base available into the tech support center so that the man in the technical support center can call up anything that can be called up from the control room.

I think if you a very complete set of information in the tech support center, as compared to some, maybe a minimum list which would be Reg Guide 1.97, it would seem to me there is less need for this kind of close communication.

And I think your Reg Guide or your NUREG should recognize that.

MR. MINNERS: Your comment on the NRC wanting to go back and forth between the TSC and the control room is not something I have ever heard or sensed anybody say in the Commission. We are going to have people in both places, and I do not even see -- I don't see much need for the NRC to be running back and forth.

The only thing I've heard is this face-to-face communication between the people, which is basically the utility people who are going to have to deal with the accident, and that is our concern; and we really aren't thinking of the NRC.

MR. SCHWOERER: Thank you.

MR. MINNERS: Mr. Roller of Portland General Electric.

MR. ROLLER: My question has been answered.

MR. MINNERS: Okay. Mr. Cardinale of Sargent Lundy. Do I have your name right?

MR. CARDINALE: I am Dan Cardinale of Sargent and Lundy Engineers. I have several questions, some of which have been addressed in varying degrees up until this point, so I will try to be brief.

The first problem is finding questions.

(Laughter.)

These are more in the line of comments rather than questions.

MR. MINNERS: Fine.

MR. CARDINALE: To whip the horse of unavailability once more, I am still confused by the requirement that a piece of equipment be described as meeting an unavailability of .001 or .002 or whatever the number is that we wind up with, because we have not talked yet about how that will be measured and whether that will be a precondition of operation, or whether it will be an unavailability measured after operation over a period of time.

And the way things go I can see -- I can envision that this will be defined as a precondition of operation for a demonstration that an unavailability of .001 or .002 be applied to, say, a computer purchase for a safety parameter display system.

And I would suggest to you that it would be extremely difficult to achieve that kind of a demonstration. It probably would make the problems with meeting IEEE 323 qualifications seem easy. And over the period of time we are talking about, I would describe the problem of demonstrating an unavailability of that magnitude as virtually impossible.

The unavailability programs that were developed

for the space program were developed over periods of many, many years to the point they are at now; and there are many levels -- many levels of unavailability being considered. There is component testing, component life testing, and then there is fault tree analysis, and then there is systems testing, and you have not addressed those questions at all as to what level this unavailability is going to be imposed upon the design of the equipment that you are saying must meet certain levels of unavailability.

MR. MINNERS: That is our problem. What we want to do is two things: to tell the designer, first of all, what constitutes design adequacy and environmental qualification, those kinds of things; and we do that by saying OBE and those kinds of things. But we still have to deal with this random failure rate. We previously did it with single failures, which is not too applicable to computers, and we have not thought of anything better than what we specified in 0696. And we recognize it has problems, and it is going to be one of the first applications in a regulation of something like this. Alternatives would be welcome.

MR. CARDINALE: Sure. I would suggest that you should adjust your thinking in terms of achieving this unavailability as a goal and think about developing a long-range program that will take many years to get all the

pieces in place, because you are not talking about a single piece of equipment. You are talking about an entire industry developing the technology to build a complicated system, computer-based data transmission system, and coming up with overall unavailability numbers.

I would submit that you just cannot do this in the time frame that you are considering. That is all I wanted to say about that point.

With respect to the distance, again another horse that has been whipped, the distance between the technical support center and the main control room, the original version of the functional requirements of the emergency response facilities had a 50-yard limitation between the technical support center and the main control room. And at the June 19th meeting with the AIF there was some comment on that, and the AIF went away, and the new version came out, and the 50 yards was changed to 2 minutes.

I do not see too much of a difference in those two definitions of proximity. I would suggest in this case that the requirements of what we are trying to achieve be thought about a little bit more.

The comments have been made, which I support, that there does not seem to be a legitimate need to have face-to-face communication between the occupants of the TSC and the occupants of the main control room. But I would

like to bring up another tangential idea to this.

We are talking about having 28 people in the technical support center. We have not talked really about a management plan, or at least I am not sure that we have talked about it, about how these 28 people will be coordinated, or chains of command, or whether that will be an NRC-imposed decision, or whether it will be part of a utility's emergency response plan.

It would seem to me that with 28 people or even with 15 people in a technical support center, you would not necessarily want to have these 15 people or 28 people all running to have face-to-face communication with the main control room. As a matter of fact --

MR. MINNERS: Let me interrupt you before we proceed.

MR. CARDINALE: I am very close to the end of the thought. It would seem to me that there would be basically a chain of command within the technical support center with people who were doing various monitoring, monitoring various displays; I imagine multiple operators, maybe one -- one to six perhaps leading up to a central technical support center coordinator or main operator, with the rest of the people doing analysis functions basically out of the way in the back of the room. And any decisions that would have to be made and transmitted to the operators in the main control

room should be made through a designated person, perhaps the lead coordinator himself or perhaps through a specially designated person.

Now, that kind of communication I would envision going on between, say, this person that is designated and the senior reactor operator, not even a reactor operator. I am talking about the senior reactor operator. So I don't see a lot of confusion resulting from the lack of face-to-face communication.

I think a telephone line, or closed circuit cable TV, or something like that would be more than adequate, which would allow you to put this TSC out almost any place on the site boundary -- within the site boundary.

MR. MINNERS: This document does not address the whole emergency response problem, and we probably have not got it all documented. There obviously has to be an emergency plan or some other document which says who is going to do what. Okay.

And all this document is trying to do is to provide the facilities for those people. Maybe it is a fair criticism to say you cannot design the facilities until you know what the people are going to do, but that is a chicken and egg syndrome, and I don't know which one comes first.

We are trying to take bite-size pieces of the problem and solve them. It has to be agreed there are other

places which say what the plant's emergency organization is going to be. As far as this face-to-face communication, there is a requirement now; one of the short-term requirements that was put out is that there be a procedure for limiting access to the control room, and that would apply to the TSC.

The people in the TSC who have blue badges can go into the control room. The people in the TSC who don't have blue badges cannot go into the control room. That is the kind of thing I would conceive of being developed and implemented in plants.

And, yes, we endorse having a strong chain of command, but I guess we are still saying -- what we are still staying is the chain of command needs face-to-face contact, and that is where we have a difference in philosophy which I am not sure that either of us can be -- can bring any facts to convince the other.

MR. CARDINALE: Okay. We will let that go. I will let my comments stand then.

MR. MINNERS: I welcome your comment. I am interested to hear it. I am just trying to explain some of the other facets.

MR. CARDINALE: Another point, sort of a motherhood and apple pie type of comment, in that operations people or people of certain responsibilities need to have

the data presented to them to perform their functions obviously. I think a similar comment is we don't want to present any data to them which we do not need, because it tends to muddy the waters.

I would just like to pass the comment that I do not see that the people in the main control room who are responsible for operating the plant, protecting the plant, monitoring the boundaries of radiation, and monitoring the release points for radiation have to know what the radiation dose is half a mile or a mile outside the plant.

Once the radiation has gotten to that point they really have no control over it at all. And to require offsite radiation information, which is part of the 1.97 data base, in the main control room I do not feel is doing a service to the operator or the safe operation of the plant.

Similarly, I don't feel that providing a wealth of in-plant data to the people in the emergency operation facility will do them any good or help them do their job any better either.

MR. MINNERS: There is a fine point there I would like to explain. I agree with you that you should not continuously present the people information which may confuse them and is unnecessary to their function; but I also don't want to be in the position of not letting people go and get information which they think they may need, so

the way we stated it is it should be available.

Now, what is presented and displayed continuously should be that information which is required for the function of whatever particular element you are talking about.

What we also think is almost all of the information should be made available to almost everyone because it is hard to think of beforehand what information a person might want in an accident. If I have some guy who cannot prevent the accident because he cannot get access to data, I think that is bad, and it does not sound to me like a terrible requirement to make the data available.

Now, to have it displayed all the time, that is a different problem but there is a distinction between display and availability.

MR. CARDINALE: I would agree with that. I don't see any -- perhaps you have a greater vision than I in this area -- but I don't see any information in which the operator would want to know what is downwind dispersion was outside of the plant boundaries.

I think we are basically diluting the operator's function where he should be concerned with protecting the plant, what is left of it, with radiological control practices outside the plant boundaries. And the purpose of that -- the purpose of that is that you have to, if you are

going to present this data and make it available to the operator -- you are going to have to have a greater degree of prewired on-line radiation monitoring systems outside the plant boundary, which could be handled by means of portable -- portable means, or techniques or something like that.

MR. MINNERS: As far as having radiation data presented to the operator, if all of these facilities are fully manned, I would agree with you that he does not have to know that; but there is going to be an initial period in which the control room is the only place that is going to be able to manage the whole accident, including offsite response.

So if you have something that happens, and I may exaggerate like I like to -- happen in five minutes, and you are going to get offsite doses, the control room is the only place that can do that function.

MR. CARDINALE: If the accident happens and develops that rapidly, I would suggest to you that he would have his hands full trying to look at the core and protect the core without looking at the offsite radiation.

MR. MINNERS: But somebody has to protect the public in that situation, and how does that get done? It may not be a reactor accident.

MR. CARDINALE: Well, I think we have thrown that one --

MR. MINNERS: The operator may not have to do anything at all. His system may be perfectly safe. He just has spilled some stuff on the floor, and he has this big puff going out over the fields, and he has to do something about that.

And so maybe I do have a different vision than you do, but I think you can conceive of situations in which the operator is the only person who can direct the offsite response and needs some information.

MR. CARDINALE: He would know that from monitoring his discharge points. He would know that that is going on.

I am concerned about a proliferation of radiation monitoring equipment out in the boundaries, outside the plant boundary itself.

MR. MINNERS: If we had these nice computer displays, which hopefully we will not prohibit, all he has to do -- it is not that big a deal. He just presses the right button, and the radiation measurements come up on the screen, so you know --

MR. CARDINALE: If they are available.

MR. MINNERS: If they are available. I don't think that is a big confusion to the operator. Maybe if we start hard wiring things we are going to have human factors problems.

MR. COMPTON: This morning I thought I heard you

say (Inaudible) data set for SPDS can be less than the full set for 1.97, and it only has to be that to determine the safety of the plant.

MR. MINNERS: That is for the SPDS, but I believe--

MR. COMPTON: You are talking about operators, so--

MR. MINNERS: I think all of the information in Reg Guide 1.97 must be displayed in the control room. That is what the Reg Guide said. That is right.

MR. COMPTON: That is a different issue.

VOICE: (Inaudible).

MR. MINNERS: Am I defending it? I will try. I will take on anything.

(Laughter.)

MR. COMPTON: (Inaudible).

MR. MINNERS: The concern was -- it does not have to be an SPDS, but he was talking about Reg Guide 1.97.

MR. CARDINALE: I was, that is right. It was a separate topic.

MR. MINNERS: You have made that clear.

MR. CARDINALE: The last comment I had was -- well, it is first a question. Am I correct in assuming that the present concept of the NDL is that it is a real time data transmission system?

MR. BELTRACCHI: Let me address that. Real time to the extent that we see it one second later in the

operations center in Bethesda after, say, the real time occurred in the plant. The answer to that question is no.

Real time, I would say, the true definition of real time, the answer to that is no, and I would say that it is probably more like on the order of five minutes from the time of the reading to the time it should be in Bethesda, okay? Does that pretty much answer your question? At least that is what our thinking was, and we haven't really gotten it all down in writing.

MR. CARDINALE: The significance of my question is that I see little justification for providing real time or near real time data transmission to Bethesda. We are talking about a certain number of points at the present time.

By putting in a real time data transmission system, it would impose restraints upon a system design that would be very difficult to expand, whereas if you wanted to expand the system for more data, like a bulk data storage transmission type of thing, that might give you data 15 minutes after it happened or a half an hour after it happened. But it probably would serve your purposes just as well and cost less in terms of total equipment and also have greater flexibility.

MR. BELTRACCHI: We ran into the very same issues when we conducted a feasibility study of this.

MR. CARDINALE: That's all I have.

coolant system integrity, and that parameter went out, I would say that the function went out.

MR. HALL: If we only had the one, that would preclude the plant as well as the rest of them, too.

MR. MINNERS: I mean in the TSC or the SPDS, you might have it in the control room.

MR. HALL: There was some question on our part concerning the eight-hour reporting time, especially for operational and criteria for operability based on your recently issued tech specs for accident monitoring systems. You give us up to as much as seven days to repair failed instruments in that area.

MR. RAMOS: That is just time to repair. We are telling you when you have to make an LER, you have to make a notification if the system is down. If it is down for eight hours or you anticipate it will be done for more than eight hours, then you report it; then you report what compensatory measures you are going to take during the time you need to repair it.

MR. HALL: And this gets back to a particular instrument that may be on this list for accident monitoring. You give us three days or seven days in the case of only one failed instrument.

MR. RAMOS: We did not specify length of time to repair it.

MR. MINNERS: Thank you.

Mr. Hall of Consumers Power.

MR. HALL: Warren Hall, Consumers Power Company. I won't beat the dead horse of the computer and the unavailability again. I think the previous two or three gentlemen have pretty well expressed our feelings on this, and we feel pretty much basically the same way. So I will pass on that one.d

I do have some questions, though. You stated earlier -- there was some question earlier about the operational criteria for these various centers concerning tech specs; and you stated that you did not think we would like you to define operability for us. So I am going to ask a question that maybe would define operability.

Do you mean operability in the sense that one sensor that feeds the system that feeds these areas goes out, or do you mean when the total system goes out?

MR. RAMOS: When the function goes out. If you have enough parameters that do not allow you to meet the functional criteria, then the system is out. It would be out if you could not -- did not have enough parameters to do your trending and do your analysis to support the control room. Okay. Well, I --

MR. MINNERS: If you had only one parameter, which I do not think would be the case, which indicated reactor

MR. HALL: We just have to tell you that it is down and what we are going to do.

MR. RAMOS: And what you are going to do to ensure that you can meet the functions of the TSC, EOF, or whatever is out.

MR. MINNERS: It is a very mild tech spec requirement. I think maybe that is what is bothering you. You don't believe we would give you such an easy one.

(Laughter.)

MR. HALL: That is not really the problem.

(Laughter.)

I was just wondering what to do in the meantime.

MR. RAMOS: If the EOF were out, you might want to bring in more people.

MR. HALL: That gets back to the main concern for the SPDS in the first place, the dispersion of information in the control room; so if it were out, you may want to augment your staff.

Okay. You made a statement that the TSC will function as the primary information source to the EOF and to the NRC for plant operations. I guess I don't quite --

MR. MINNERS: I did not hear the first part.

MR. HALL: The TSC will function as the primary information source to the EOF and to the NRC for plant operations.

MR. RAMOS: I don't believe I said that. That is not the function of the TSC.

MR. HALL: It is in your Reg Guide.

(Laughter.)

MR. MINNERS: What page?

MR. HALL: Page 9, second paragraph, next to the last sentence.

MR. RAMOS: Okay, okay. That is the primary information source for plant operation; that is, for the person in charge in the TSC will coordinate with the person in charge of the EOF and discuss what the problems are as far as plant operation is concerned and also with the NRC.

MR. MINNERS: I think you narrowly define it as data and not information.

MR. HALL: I just read the statement.

MR. MINNERS: We must have heard you wrong. Go ahead.

MR. HALL: I just read the statement and wanted some clarification as to what the statement meant.

MR. MINNERS: We think we've got it straight. Keep going.

(Laughter.)

MR. HALL: Would you clarify so that when you do this again others will know? Before I came we had about six or eight people say ask them what they are talking about

here.

MR. MINNERS: Is that your question?

MR. HALL: You have answered my question.

The location of the tech support center, again I received earlier this week a kind of critique from the ACRS meeting that was held in July, I believe, when this was discussed, and the two minute time limit was also stated there. But somehow in the summary of NUREG-0696 -- of this NUREG discussion, there they indicated that there was an approximately 600-foot distance associated with this two minute walking distance. And I just wondered what validity there was to that statement.

MR. RAMOS: I don't think we have ever specified the distance as being 600 feet. I know there was some discussion among some of the ACRS engineers saying that two minutes roughly was 600 feet, but I don't recall it ever being --

MR. HALL: There is no validity to that statement then. Would you entertain any validity to that statement?

MR. MINNERS: We originally had a distance in, and we took it out. You said the proper criterion is time, and we put time in.

MR. HALL: I saw the distance statement and wondered if perhaps there was any validity to it.

Something that I have not heard addressed yet

today was raised in our minds when we reviewed this, and it has to do with radiological monitoring in the tech support center and/or the EOF.

We are in agreement that radiation monitoring is a necessity in the TSC, it being onsite, and the requirements for habitability and so forth; but we have a feeling that perhaps the permanent radiation monitoring for items such as particulate matter and iodines are not going to be sufficient; that we would prefer to see something on the order of a portable radiation monitor being brought into the room. We could take samples, take them to the lab, and get a better assurance that this is the case.

When we cite TMI, gain which we don't like to do, where they had an erroneous reading on a permanent monitor, this --

MR. MINNERS: This must be a health physicist talking to a non-health physicist.

MR. HALL: No.

MR. MINNERS: I have heard this commment before, and I think I am misunderstanding what you mean by portable. I think you mean manual. You want to be able to take a sample and take it to the radiation lab and measure the sample. You could have a permanently installed meter which is not the meter itself, or the sampler was not necessarily portable, but the sample would be removable and

taken to some place --

MR. HALL: We were thinking more about the big type where you set it on a roller and roll it in there. We think you would get a better idea were you able to do this, especially for particulates and iodines.

MR. MINNERS: Why couldn't you bolt that to the wall?

MR. HALL: Touche.

MR. MINNERS: People want to have it portable so they can use it during normal operation in the plant, and then when the accident comes, they trundle it to the TSC and use it. Our objection to that was how can we be assured that the equipment will be available when we need it? The health physics technician may have put it some place where nobody knows where it is.

MR. HALL: The question was asked of me to ask more on the basis of the type of equipment you may be looking for.

MR. RAMOS: We have not specified type.

MR. HALL: We realize that.

MR. MINNERS: I don't think it has to be on-line automatic. I think that is the way I would phrase it.

MR. HALL: That answers my question.

The tech support center technical data and data systems where you set as a minimum the Reg Guide 1.97 types

will be available there. Also, there was a statement in here that said, "In addition, all sensor data and calculated parameters provided in the EOF from variables not specified in Reg Guide 1.97 shall be available in the TSC on a callup basis." And we were wondering what you may have had in mind when that statement was added.

MR. RAMOS: Those calculations from the environmental data and things like that.

MR. HALL: We have environmental data and radiological data available through 1.97.

MR. RAMOS: Then you won't need it.

MR. MINNERS: That is a limited set. For your purposes you may want a lot more environmental data than is required by 1.97.

MR. HALL: That is what I am asking. Do you have anything in mind? What do your statements here, and this is very -- you know, we could say everything that is in 1.97 is sufficient to satisfy the requirements.

MR. MINNERS: My understanding -- I don't think it is written down this way in the Guide -- is that all we are going to ask for in 1.97 is wind direction and wind speed and infer meteorological conditions from that. But also available but not necessarily qualified to these requirements would be the met tower temperatures, okay. And if you take those temperatures, they should be distributed

to the TSC. I think that is what he means.

MR. RAMOS: And the reason is that in initial stages before you man the EOF, the TSC must function as the -- do the EOF function.

MR. HALL: I will leave you with a parting thought -- that is my last question -- but bear in mind, most companies that have plant process computers have all this data available on them already, rather than having to go through it again for a second computer should that be necessary.

MR. MINNERS: Mr. Lipke of Wisconsin Electric Power.

MR. LIPKE: We got in some discussion this morning during the questions accompanying your presentation regarding a comparison of a functional bases versis proscriptive techniques.

And most of the people here suggested that you give a functional bases instead of telling us exactly the technique to accomplish those functions. And I guess I would like to reiterate that thought.

At the same time, I would like to point out some differences in determining what category a thing falls in or not. You had brought up the questions about the 100 year wind and the 100 year flood as an example of where we wanted functional bases, and then told us -- I told you that we did not want them.

Well, I agree that giving a 100 year wind and a 100 year flood are two meteorological conditions that are indeed a functional bases. It happens that we don't particularly agree with that basis, although that is the type of guidance -- you know -- we think we ought to have.

That is a type of function --

MR. MINNERS: You may disagree with the number, but you think the form is correct; you just disagree with

the number.

MR. LIPKE: That is correct. And we disagree with the number on the basis of the fact that there have been a number of licensing actions in the not too distant past that have accepted other criteria, particularly on the side of the flood basis.

The wind is not too big of a problem. Looking at it the other way, to give an example, one where we have too much proscription and insufficient discussion of function, is with respect to the emergency offsite center -- facility, the EOF.

There, I think, we would like to have more discussions of the functions that ought to be carried out and substantially less proscription, and let us propose some alternatives to the Commission whereby we think we could meet them, as I discussed with you earlier this morning. Certainly, there is nothing wrong with the Commission giving us examples of possible acceptable techniques.

But historically throughout all the regulatory guides, and so forth, the function is clearly spelled out, and it is stated that the licensee is free to propose alternative techniques.

And I guess we would still like some of that freedom to really do the job right for our particular facility, our particular site, and our particular conditions.

And we would like to be free to propose certain alternatives to you. Along those lines, I question the justification for making EOF habitability standards meeting those of the control room. It seems we first came up with the idea in this country that we ought to have a technical support center where everybody could gather together and follow and criticize and assist in the event of an accidden.

And so we developed a TSC. Now we are developing really a second TSC in the form of an EOF. And I really think at some point we have to draw the line and say -- you know -- look, one function in one place, and one in another. And they are not equally critical.

Certainly, the control room is the primary piont you have to defend at all costs, and the technical support center is important, but something slightly less; but then the EOF is still less. And the functional criteria that are set forth each of these facilities that have been proposed should reflect a step by step gradation of criteria that are appropriate to the facilities.

One small comment on --

MR. MINNERS: I heard a Commisioner propose the opposite gradation to what you proposed, just as a comment. Is that possibly because the EOF in his thought was going to contain civilians; it should have better protection than the control room.

MR. LIPKE: All right. If we want to follow that line of reasoning, then we can say, okay, let's do that. But then let's in fact have some gradation. We cannot have -- continue to multiply these facilities and say that they are all equally important. I think there has to be a recognized philosophy behind them.

Someone behind just remarked now that, you know, the people in the control room are civilians too, which is a good point.

We don't totally understand how one can argue that a strict limiting condition for operation for the EOF -- and I foresee all kinds of difficulties in trying to carry that out, this eight hour unavailability business. There has been no mention of putting emergency power into an EOF yet. And yet that seems to be what is implied here because if you cannot have power, you canno run your HBAC.

If you cannot run your HBAC, you don't have habitability assured. So now all of a sudden we are into putting emergency power into the EOF, again a problem with graded importance of facilities, I believe.

I would like to just, in closing here, just recap a comment that I made earlier this morning, that there is no reason for introducing non-radiological data into the EOF. If one argues that the EOF's primary function is radiological evaluation and support and subsequent

communication with the various authorities involved --

MR. MINNERS: I don't think you said that quite right. You are welcome to your opinion, but you said if its primary function is offsite, it would not require any data, but it would have the secondary function of looking at the plant.

Do you really mean that if its only function is to interact with offsite, it has no need for plant data. You said if its primary function is to interact with the offsite people it has no need --

MR. LIPKE: It is the way you spelled it out in 0696. We take it that the primary function is -- perhaps -- let's not say "primary." Let's say the first function is radiological evaluation; the second function is communication with offsite authorities.

MR. MINNERS: And the third functon is overview of the whole plant.

MR. LIPKE: If the third function is overview of the whole plant, perhaps that ought to be carried out in the technical support center.

MR. MINNERS: Now I understand your comment.

MR. LIPKE: Okay. Thank you.

MR. MINNERS: Mr. Schellin of Wisconsin Public Power.

MR. SCHELLIN: I will try and eliminate the

comments that have gone befcre me as I have gone done my list.

You mentioned an NRC workshop. Could you elaborate on that? I think you said relative to 0578 or some other Lessons Learned item coming up sometime in September.

MR. RAMOS: There should be a letter coming out in the next week or so signed by Mr. Eisenhut discussing -- and also a Federal Register notice discussing a workshop. And I believe the date is in September, the mid part of September to discuss the clarification of the Lessons Learned item, including whatever changes in schedule that they are coming up with.

And it could be the whole gamut of the Lessons Learned items.

MR. SCHELLIN: Is thisa on a regional basis or in Bethesda or --

MR. RAMOS: I cannot really address that.

VOICE: I think it is regional.

MR. RAMOS: It will be run similar to the emergency planning workshops where we had four meetings in January; in this case they will go Region I, II, III, and then a meeting in an intermediate point; say, Los Vegas. That, I believe, will be the fourth point.

MR. SCHELLIN: Will this try and address

region-specific items?

MR. RAMOS: I cannot address that because I am not involved with it. I only know about it because of associating with the Lessons Learned people.

MR. MINNERS: Why don't you give Tom Telford (phonetic) a call; he can give you the details.

MR. SCHELLIN: In terms of the process computer, I am not going to beat that. But relative to that and the unavailability being -- one of the items that should be inserted in place of the restriction on the process computer is some funcitonal wording relative to the security of the systems that are processing the SPDS.

I think what we have been talking back and forth is really that point, as you have raised it, not whether it is done in the process computer, a main frame, a number of minis.

What we are talking about is what sort of process is allowed to change the programming because, certainly, the flexibility that we have to design into the system requires changes for the better. So that is a general observation.

I won't hit OBE and seismic requirements again.

I think one thing we are losing site of is the fact that the SPDS must be verified by the control board instrumentation, which is the most feliable source, before the operator really can use it or believe it or take any

actions.

So it is really a key in the overall mosaic or puzzle that he has to figure out. And we should not be too prescriptive in that respect because we still want him to use the most reliable safety-related indications from the control board.

And we should not draw him away from those.

MR. MINNERS: There have to be procedures and training for the use of the SPDS which would address that point.

MR. BELTRACCHI: There also is the item that I tried to stress again this morning: the validation of the data before it is presented to the operator, an online validation which could either be done through redundancy or secondary sensors.

MR. SCHELLIN: I guess one of the items that might come up in that is, say, during a seismic event, it would be very hard, I think, if you are using instrumentation, that uses, maybe, a forced balance where you rely on masses being moved. I think it would be extremely difficult to design a program that works during an event; it may work well before and after, and --

MR. BELTRACCHI: I agree.

MR. SCHELLIN: You may run into some dichotomies there.

MR. BELTRACCHI: That is recognized in the form of some of the recordings or some of the things that the staff has accepted in the past with respect to Reg Guide 1.97 or post-accident monitoring.

MR. SCHELLIN: Okay. I think when we refer to Reg Guide 1.97, I think we are referring to a document that is moving and changing in parallel to this NUREG, and it is very difficult to try and design a system to meet items in a reg guide which change from draft to draft and month to month.

Is there any anticipation of a formal process for review and comment of Reg Guide 1.97 to try and firm up a target?

MR. MINNERS: The Reg Guide 1.97 has gone through its public comment period. It was presented to the ACRS who said to do some more work on it, and NRR is now considering that direction by the ACRS.

We had hoped to have the reg guide out in October at the same time that 0696 went out. That may not be possible now.

The ACRS directed us to redo 1.97 and have it finished by the end of the year.

MR. SCHELLIN: One of the problems, then, is the feedback from something like 0696 comments which address things on a functional need basis feeding back into 1.97,

which was developed without some of those funcitonal needs being considered.

I think that was addressed also this morning.

MR. MINNERS: I would agree with what you say with a little qualification; I do not think we were completely unaware of the functional requirements. We just did not do it systeematically.

MR. SCHELLIN: Well, I think one of the great areas of impact -- and this certainly affects the ordering of equipment for installation -- is the vascilating, changes, and qualification of specific parameter -- parameters that are required for 1.97.

And you will certainly agree that that has changed greatly. In fact, I am not sure whether 0696 refers to the same qualification levels as are in draft to rev two. I think 0696 has A,B,C and the other one has one, two, three, four, which is entirely different in meaning.

So that cognizance has to be factored in. One of the things that I think should be considered and was brought upo very poingantly is the previous commitments for 0578, which either have not been reviewed and have been proceeded on by the utilities or have been reviewed and approved and are now being changed or altered.

I think this shold be sufficient basis for exceptions or changes in schedule or function. And I think

that was spelled out very clearly in terms of looking at things relative to where things are located and whether it is the TSC or ECF.

MR. MINNERS: We think we recognize that, at least in the intance where we modified the 1/1/81 date for the TSC.

MR. SCHELLIN: I think that is recognizing realism, yes.

I think that flexibility should be included in the future. I am unclear as to what the diagram in 0696 of the computer system was meant to be. If it was meant to be a prescriptive item, it borders on the functional. But where it is addressed in the text on page 4, it talks about this being a functional flow of information, more or less. And I think really what we are talking about is a functional flow in the final document.

That should be spelled out rather than keying on whether a certain function is taking place in a processor or whether it is a data transmission.

The two minute location was covered very well.

The SFDS states that the data acquisition, the sensors and signals shall be designed and qualified to Class 1-E standards.

Can you talk about that a bit?

MR. BELTRACCHI: That is in the context of interfacing a non-safety system with a safety system.

MR. SCHELLIN: So, beyond the isolator there is no restriction outside good engineering design?

MR. BELTRACCHI: Other than what is stated in the -- other than what is stated in the report.

MR. SCHELLIN: Okay. Not addressing process computer spearability, again --

VOICE: May I make a point? In other words, then, the Class 1-E equirement is a result of a requirement -- is that basically what you are saying?

It is not a requirement to be qualified to Class 1-E requirements, but it is a result of that?

MR. BELTRACCHI: In the sense that we are using 1.97 as a data base.

MR. SCHELLIN: If an item is Class 1-E, under 1.97 we should provide appropriate isolation, but we should not factor Class 1-E on something that is not Class 1-E now?

MR. BELTRACCHI: Yes.

MR. SCHELLIN: Okay. The applicability of GDC is at best vague and in some sense contradictory to other specific items in 0696 and if certain portions of these documents are indeed required, I think, perhaps, they should be etracted and made an appendix to th8e document.

Somebody said, spell it out. The SPDS should not generate an LCO since it neither limits the operability of the plant nor degenerates the safety status of the plant

with its non-operation.

I think there should be room for some modification of systems that we are adding to the plant such that the NRC knows whether they are operable or non-operable. But I do not believe that it should become a limiting condition of operation for something which right now is not needed to operate a plant safely and is not in the futue really needed to operate a plant safely, but allows for increased safety.

MR. MINNERS: Are you talking about the SPDS?

MR. SCHELLIN: Yes.

MR. MINNERS: I guess I disagree with your comment. Not to argue with you, but just to state our position, we think to be adequately safe, plants need a safety parameter display, and that may explain our view of why we did what we did -- just to explain our view.

MR. SCHELLIN: I hear it; I don't necessarily agree with it.

MR. MINNERS: I just want to have an understanding of what we disagree on.

MR. SCHELLIN: We talked about alarms and annunciator functions. We recognie -- I would like to state this for the record -- we recognize that they are needed for safe operation and in fact for the process that the operator goes through to determine whether the conditions of the plant are going toward an unsafe condition and in what

directon they are trending and in what area of the plant that type of change is taking place.

I think we should de-emphasize some of the reliance that seems to be written in 0696 relative to the SPDS trying to bypass or ignore or make these annunciators and alarms subservient to the basic instrumentation which is in the control room.

I think it is again a function of training, the operator capability, and control room design. Along with the SPDS, that has to be looked at to determine whether something like this is giving an increase in safety or whether it is adding additional things which still have to be considered because we cannot ignore alarms and annunciators.

Thank you.

MR. MINNERS: I think that I am going to have to give the reporter a break, and so the rest of us get one. Let's take a 10 minute break until quarter of four and come back and continue the comments.

I only have four more -- five more people listed, so it should not be too much longer.

(Recess)

MR. MINNERS: All right. I would like to get started again if we may.

Okay. The next person I have on the list is Mr.

Myers of Toledo Edison.

Is Mr. Myers still here?

Very good. You have stamina, sir.

(Laughter)

MR. MYERS: I needed that break.

First of all, we will provide detailed comment to the safety parameter integration subcommittee at AIF. We are members of that, and independently, and we will take into consideration specific recommended rewording in that.

MR. MINNERS: We appreciate that.

MR. MYERS: There are a couple of areas which we would just like to make comments on today, more having o do with the philosophy and the background.

MR. MINNERS: Good.

MR. MYERS: We, like most of the others, have been in that development for quie awhile on the tech support center and an overview of emergency response capability, whether it be facilities, plans, whatever, in discussions like this on specific facilities.

Most of the functional aspects which come up and reasons why or the alternatives to have done nothing but strengthen our commitments in the activities we are undergoing now, and that includes a full fledged new construction project on its way to completion here shortly.

So as far as the company is concerned, the aspect

of emergency planning facilities is now being run by our own priorities and our own time table, since you have expanded yours.

The comany still feels liable and responsible after TMI to complete what it feels is an upgrade in a most expeditious manner.

However, we are concerned that some of the discussions which we have heard and some of the bases for some of the requirements seem to reflect either one aspect of TMI or trying to solve the complete TMI type syndrome with one piece of the pie.

And in that light, our main concern is the overall management of the accident; that is, managemnt on the utility's side, NRC's side, FEMA, which we have not even heard from here, and I am sure is rapidly developing criteria and the numbers of men to be in certain places and little requirements too.

So it is -- when we came up with our detailed faciities --

MR. MINNERS: You don't mean to infer by that that FEMA will have requirements on the utilities?

MR. MYERS: I believe they will have requirements for access to facilities in an emergency, probably the same type that you say you would like, five men in the tech support center; I would expect to see FEMA saying that the

emergency operations facilitity would have a place for a five man team from FEMA.

MR. MINNERS: I think this document already says that. It says stae aned local and other federal people.

MR. MYERS: That is right. State and local you can quantify and you have quantified your section. FEMA we have not heard from yet, and so they are in development is my understanding.

MR. RAMOS: In the revision of 0654, it might be wise that we probably should take that up in the steering committee and see if that can't be put into 0654, their manning requirements.

MR. MYERS: That coordination, though, and the access, we recognize as being in development, and therefore we try to make our approach as flexible as possible in the early stages.

And it has help up quite well to date, we think, with a few significant problems. But we do want to consider that 0696 address only one part of the aspect of TMI, anticipated transient operating guidelines, Lessons Learned, trying to eke out the one thing that it is used for in many cases to try and justify certain activities, confusion in the control room in any transient, whether it be earthquake, secondary system upset, primary system upset.

The guidelines ar set up to be sympton related so

that the training associated with the operator will cut through the mass of alarms and everything that we would expect during those conditions, the control room evaluation and modification, and other aspects.

Given that you do have the confusion anyway, you have all those parameters in there.

What about prioritization of alarms, functional relationships between the oeprator and the control board, a very important aspect in that?

MR. BELTRACCHI: Let me address that. I think you are well aware that NUREG-0585, section 7.1 did state that there would be -- the staff would issue guides for the review of the control room; the initial set of guides, I believe, were issued within the last week or two. They are admittedly incomplete, but at least it is a start.

One of our concerns in this area is in the area of alarms and their prioritizations, and we have noted this in the course of our control room audits.

And I expect you will probably see more on this issue in the future.

MR. MYERS: I understand, and it is our philosophy, just as it was observed at TMI, that the control room is too confusing during a transient, and we are anxious to support upgrading the capability of the operator to cut through that.

However, in justifying some of the activities that we mentioned here of distance from the control room, OBE requirements, statements were made, well, the SPDS will be that vehicle that will do that cutting through the confusion, and therefore it must meet the following requirements: it must meet OBE requirements.

I do not believe that is funcionally required, given the other aspects, and I think that re-evaluation of the paper commitment to OBE requirements should be taken reflecting these other areas that we are involved in upgrading right now.

MR. MINNERS: There are a variety of control rooms and for some control rooms your statements may apply; for other control rooms, I think the SPDS is the only thing that is going to save the operator from confusion.

Our problem is we are writing a document for all control rooms.

MR. BELTRACCHI: Let me also make one other statement relative to computers because I have heard quite a bit about the seismic qualification thereof. I don't know how many of you are aware, but the core protction calculator systems are SSE qualified. They are Class 1-E. They were reviewed by the staff during the period 1975 to 1978. They are currently operational at the Arkansas facility, Arkansas Nuclear Units 1 and 2.

Many of the concerns we had in that area -- and I think they were on the order of 27 safety positions -- these are all documented in NUREG-0308, which was a safety evaluation report for that review.

If that will provide any additional source of help to you, be it so identified.

MR. MYERS: I respect that, Leo, and I was involved in a lead engineer on one of the follow-on plants, not only reflecting the core protection calculators, but the CESAR advanced control room concept, and I contend that although the core protection calculators are SSE qualified, that is an animal of a completely different shape than the computer systems we are looking at to be flexible, upgradable, expandable, in the time frame we are looking at in the near future here, and I do not believe it is required based on building this to support a control room in what we would consider 99 percent of the events that it expects to see during an operational life.

Now, you cannot tell in an earthquake whether you have had an SSE or an OBE. The dispensation that youwill get by knowing that your equipment is qualified to an OBE will be of little value if you do not know whether the information it is giving you has still survived.

So I am concerned that we are getting into an area that the operator would then go into detailed evaluation of

the SPDS, ignoring the transient to try to get his equipment revalidated to make sure it is reading correctly.

And I think the ATOG arrangements, the control room upgrade, and the fact that we can guarantee the plant is safe for an SSE without this -- and my understanding is that this is our condition.

Now, you mention it is a safety function, but on a probabilistic approach, you can eliminate an SSE and go to an OBE. I would contend on a probabilistic approach, you could go below that.

MR. MINNERS: Your problem is even heightened -- this is just a discussion. If the SPDS were not given any seismic qualification, then if any earthquake came along, what would you -- and he looked at his SPDS, he would not know whether it was valid or invalid. He would have to go back to the control board.

So your problem is heightened, the one of which youhave an earthquake and the oeprator does not know what to do.

MR. MYERS: The oeprator knows exactly what to do based on the response of the plant. A plant can be shown to respond both from the control board and from the SPDS. We are not replacing the control board. We are going through a lot of evaluations to make sure we know what to loo at to determine status of the plant through ATOG, and we are going

through a lot of evaluations and modifications in the control room so that we can reinforce that and guarantee in the safety related aspect we have covered that.

So, it is another -- you know -- you consider it a safety function; I think the basic philosophy on my side is it is an oprator aid. And in many of the diagnostics, manual capabilities have been developed and discussed that could derive the data with an additional operator or whateverplotting that data to give you the initial diagnostic capabiity of a very confusing event.

I think that needs to be looked into much more and can be an acceptable approach to a well engineered computer system installed in a good structure with very rreliable power supplies, considering the other activities.

And that is the approach that we are taking, I believe, that is consistent with the AIF activity.

And I think it does deserve some consideration on your part again or reconsideration.

Thank you.

MR. MINNERS: Mr. Gurican of I & ME.

MR. GURICAN: Yes. I belong to the American Electric Power Service Corporation, a parent of the I & ME Company, and we are also members of the AIF safety parameter subcommittee and we fully support what Mr. Myers has just stated.

I would also like to comment on a few things here that we went over this morning and again this afternoon.

I would not like to beat to death the unavailabiity question here. I fully conconur that the SPDS will be an aid to the operator and help make power plants more safe and by eliminating some of the confusion of all the alarms, perhaps, that come about during an event.

And I feel that you may want to have a limiting condition for operation based on unavailability for that portion of this integrated system for the four functions you mentioned in this NUREG document.

However, I strongly disagree that any limiting conditions for operations are required for the technical support center, the emergency operations facility, or the Nuclear Data Link. I say this because I believe that in light of the Kemeny Commission an in light of the NUREG-0578 and NRC's own Lessons Learned task force and the development of the actions required in those Lessons Learned documents, both NUREG-0578 and 0585, neither of those documents have address the limiting condition for operation of these facilities, but do stress the need for emergency operations facilities to better aid the utility and the NRC and state and local governments to address emergency operations.

We fully concur with the idea of having adequate

and sufficient emergency operations capability and we have moved along that line since the issuance of NUREG-0578 to build a technical support center by 1/1/81, and now we are facing new requirements with a new scheduled deadline which we don't believe is particularly fair.

But we may be able to meet those requirements regardless of that fact.

Now, to address a specific question that I have that may not have been asked earlier and one regarding communications.

Under the technical support center communications, you indicate that the TSC shall have designated telephones for NRC personnel to be used to communicate with the EOF and outside locations.

I assume one telephone to the EOF is sufficient; I would like to know how many pay hpones you would like to the other outside locations?

That is my only questions.

MR. MINNERS: Mr. Craig of WPPSS.

MR. CRAIG: My questions have been address already.

MR. MINNERS: Mr. Keopfinger of Dusquene Light?

Mr. Bremmer of Dairyland.

MR. BREMMER: Yes. The people of Dairyland would like to express that we are a co-op. There is a big distinction.

My first question: have there been any cost estimates performed on what this change will mean to a utility?

MR. MINNERS: The whole facility?

MR. BREMMER: The whole bag.

MR. MINNERS: Yes, there have been. In the NRC action plan on Three Mile Island, there are some cost estimates for each action item in the plan. And these are action items; I forget what the numbers are now.

MR. BREMMER: Okay. Do you know what type plant was being considered when they came up with these numbers?

MR. MINNERS: An average plant, whatever that meant.

(Laughter)

MR. BREMMER: What is an average plant? One gentleman mentioned something like a 1000 megawatt unit.

MR. MINNERS: It was probably closer to a 1000 megawatt unit. You must understand that the reason the cost estimates were put in the action plan wa not to try to make cost estimates for a utility's purpose but to give a relative ranking of the cost of these different items sc that the decisions or priorities could be weighted by cost.

That was one of the elements in weighting priorities, and so the cost estimates are very rough cost estimates. We think they are good enough for their

purpose. We don't think they are good enough for somebody to go up to the public utility commission and say this is what it is going to cost or even come close.

So -- you know -- we did not deal with your kind of plant; your kind of plant -- you know -- is out at the end of the spectrum and some of that stuff is marginally applicable.

MR. BREMMER: I was referring specifically to the TSC, SPDS,EOF, and NDL. That was of of my main concerns.

MR. MINNERS: I would imagine on this that those facilities would be about the same cost no matter how big the plant is; everybody has the same systems and the same data.

There is small variation whether you have a 50 megawatt plant or a 1000 megawatt plant. You have all the same systems, the same safety functions. You are going to have about the same cost, I would think. I cannot see a big difference.

MR. BREMMER: Unfortunately, that would be extremely difficult for units of a very small size. I was wondering if any special considerations will be given to units, the earlyplants, the ones of less than 250 megawatts thermal as FEMA has given in the emergency plan?

MR. MINNERS: So far it has not, and if you think yououcht to get a special dispensation -- if I may put it

that way -- I would suggest that you write someone asking for it.

I think you are a very unique case.

MR. BREMMER: I just wanted to point out some of the unique features and I do not disagree with many of the reasons behind soe of the additions in the new systems and some of the post-TMI actions that have been required.

It is a matter of implementation, and it can be extremely difficult for old units. For instance, at our unit, we essentially, except for newly added equipment, have no class 1-E equipment. We may be fortunate that we do not hve a Class 1-E computer from some of the discussions mentioned today.

We were originally considered a zero seismic area. We have no seismic criteria right now, although we are in a battle to maintain the minimum seismic criteria that we can.

As far as redundant power supplies go, when we start talking about reliability and such, originally we had one essential buss; now we have three.

The capability of the original buss is approximately 130 amps. Our second and third busses are eight amps each, interfacing the original equipment that we are saddled with to try to develop the remainder of the outputs of which there may be upwards of 100; this was

built with Foxboro equipment.

Basically on these current loops, you can hang 600 ohms of load. The equipment is very difficult to get from Foxboro any longer. Most of these loops are put to the full extent that they can be.

In addtion, the adding of new transmitters, new loops, we have been adding them throughout the years. We would have to make in some cases new penetrations in our reactor vessel to do this.

The reliability-unavailability factor at our plant, we do not have a great deal of problem with what has been written in this because our logics are basically one out of two. Our instrumentation has to work.

A very disturbing general comment is the attitude that we see many times expressed from the NRC. Being a small utility, everything that we have to comply with is very important. It is a very important cost consideration.

You gentlemen this afternoon alone have made small comments like, "What is a little more cost, two or three more people, press the right button, only one little thing, only two more wires."

Each of these, if you really get down into the nuts and bolts area, is a considerable dollar commitment.

To come to some specifics, I discussed this with our project manager in the NRC; when I call to get cost

estimates on some of the equipment to comply with the TMI changes, I no longer identify myself as being with a reactor.

First, I give them the criteria of what I want a system,a component to do. In three cases that I will mention here, I was trying to buy hydrogen analyzers, which by the way we have -- are losing an argument.

We do not have zirconium clad fuel; we have stainless steel clad fuel. The source of hydrogen in the event of an accident at ourplant would be extremely small, yet we still have to buy two hydrogen analyzers.

MR. MINNERS: Hydrogen recombiners are not being installed in plants because of --

MR. BREMMER: I did not say recombiners. I said analyzers. The first one that we found by a company -- and I have documentation to back up these statements -- was quoted at $2000.

When they found out we were going to use it for a TMI fix, they had a special TMI package: $54,000 for essentially the same thing. The major change that we could finally determine from that was they changed their copper tubing in the unit to stainless steel. That is the major change. We cannot afford $54,000 additional for a unit like that.

And in needing two of them -- we have an approximate million doillar budget for hardware for next

year.

Another case, an air compressor company quoted us a $900 cost for one that met the criteria that was required. When they sent us the quote in the mail, it went up to $5000.

We have tried hard. We were going to by the end of this year-- as a result of this meeting, we are going to have to regroup. We did not get a copy of this document until we walked in here today. Our technical support center was going to be by the end of this year, having 28 inputs going into it through a computer, and it would have been available shortly after the beginning of this coming year with the Nuclear Data Link if you had asked for it and if it had been required.

We have been moving on this, and in this direction all the work I have done to date with these new requirements -- you know -- it is wasted.

We cannot salvage what we have proposed and make them meet this requirement.

MR. MINNERS: Did you get your oar in with AIF when that document was being developed?

MR. BREMMER: Part of my problem is within the last four or five months, I have joined this utility, and I have been involved in the industry, but I have not specifically been able to address this problem. That is

unfortunate.

MR. MINNERS: Okay.

MR. BREMMER: Another case, in trying to meet the deadline by the end of this year, we went out to buy certain radiation monitors. The vendor was billing them as being fully qualified; at the time they were the only ones billing it as being fully qualified to the requirements specified in the TMI documents.

After ordering it, because of the long lead times involved, we found out it was still undergoing qualifications. We asked for specific information to continue our detailed design and found out they could not supply it.

So vendors are not only increasing their prices, they are misrepresenting some of their materials that they are trying to sell to us.

And in mentioning specific equipment, this is very bad because we have had very few people to go to to supply us this equipment, and when they know there is a small market for a short period of time, they are going to jack that price up.

And we cannot afford it. Larger utilities are going to outlast us; we may be the smallest plant, but we don't intend to be the first one to go under if we can help it.

MR. MINNERS: Do you think we are specifying particular equipment? We are trying not to.

MR. BREMMER: We get forced into ordering it, and there is one person we can go to and mentioning this one computer that is seismically qualified, that is bad.

In another case, even Foxboro tried to make a change in safety related systems; they insisted we drop our 10 CFR 21 criteria. They insisted before they supply it. Our plant will not be allowed to operate after January 1 if we don't make the change by the end of the year.

So what do you do? It is the only compatible equipment that we can use. We dropped the Part 21 and we bought it and we put it in because we want to continue to operate.

I would also like to say with many of the requirements that are being required -- we are being required to meet -- and as I mentioned before, I don't disagree that we have to upgrade some of the things, but we are looking at the SPDS, the TFC, the EOF, the NDL, the environmental qualifications.

Our plant did not have them when it was built. We are havig to go back and next month we have a very important meeting on environmental qualifications. It is going to be a significant change.

The emergency plan -- the sequence of events

recorder, we don't have one of those, but we are being pushed closer and closer to it, and alternate shutdown panel.

I would propose in order for us to meet all these requirements, that we are almost going to have to reinstrument our plant because we do not have like the newer plants do, isolation amplifiers that may have an extra one or two or three signal taps.

Ours are a closed loop. Our TSC was going to be hard wired. We in all cases but one were able to rob signals out of non-safety related loops to feed our TSC; the one because we cannot interface to it; it has the maximum instrumentation on it possible, we are hanging a clamp-on ampmeter on it. We cannot add another transmitter.

We are planning to follow this up with a detailed -- with our concerns and ask for a detailed description of the parameters that you want from us and other plants of an older nature, of a small plant nature.

We will propose following our FSAR versus specific criteria mentioned here in the NUREG in that seismic -- other environmental conditions. Our control room, if hit by a tornado could be ripped right out.

There is some question in our group as to what habitability means. We will address that qustion later also. The project manager, Jim Shea, for our unit said that

feedback of the nature of the problems we were running into in procuring equipment, that we should try to air it as frequently as we can to allow you to help, to help make you aware of the problems we are running into.

In good faith, we were trying to meet the July 1 deadline, 1981, and we are making plans for July 1, 1982.

We have spent considerable manpower, money, and right now I see very little of what we have done today as -- to date as salvageable.

MR. MINNERS: Mr. Given of Sargent-Lundy.

MR. GIVEN: I have a few additional questions, and I don't think we got them addressed earlier today, one of which deals with the data base for the emergency facilities.

They have pretty much entirely been denoted as being Reg Guide 1.97; however, one of the requirements in the technical support center is to be able to evaluate plant conditions leading to the accident, and I am not sure that with the Reg Guide 1.97 data base you can really evaluate the conditions leading to an event, accident,whatever this happens to be.

I am wondering if the two requirements are really consistent.

MR. RAMOS: 1.97 are minimum requirements. In most cases there will have to be some additional items that are plant specific that you will have to put in there.

Those are the very minimum requirements that we see.

MR. GIVEN: What you are saying is we have to put in more parameters than what the requirements really are.

MR. MINNERS: You have to satisfy the function; if the minimum parameters in 1.97 don't satisfy that function, you would have to put in more.

MR. GIVEN: Also, one of the items that was brought up when we were talking about the schedule for implementation this morning left me a little bit confused: I am not sure what the lead time is for submittal of the design for these emergency facilities for plants that are not operating or are near term operating license plants.

In other words, there should be a lead time in which this data would need to be submitted in order to ensure an operating license by a certain date, and I am not sure what that span of time really is.

MR. RAMOS: NUREG-0694 lays our those requirements that must be met before you get a fuel load or low power license and also for a full power license. And in some cases, specifically to meet the requirements of 0654 -- for example, for a full power license, you have to meet the requirements for 0654 which says that you have to have the TSC and the EOF, and it means that you have to meet 0696 requirements because that is where the criteria for the facilities is laid out.

MR. GIVEN: But we were discussing this morning -- one of the items on your schedule showed --

MR. RAMOS: You have to back up from the date that you are shooting for for your fuel load to meet the ultimate requirement of June of 1982 if you are coming on line before then to get your criteria in -- your design in for review.

So I don't know when your plant is due to come up.

MR. GIVEN: Some of the plants I am thinking of, we would be looking for an operating license after June of 82, even --

MR. RAMOS: So you back that up to whatever time frame is required to meet the requirements of 0694.

MR. GIVEN: That is the question I am asking.

MR. MINNERS: If they are after June of 82, they are going to have to meet those June 82 requirements in order to get a license.

MR. GIVEN: When does the design have to be submitted for your review?

MR. MINNERS: We have not specified that, and we are leaving that to the licensee people to say, hey, I need so much time to get this reviewed so I make my license on time.

We don't tell you when to submit your FSAR.

MR. RAMOS: You have to back it up from when you want to make your fuel load and decide how much time it

takes you to install the equipment in the facilities and that it is going to take us roughly a month or two months to review and approve your proposal.

MR. GIVEN: Okay. A month or two months or three months is the number we are looking at.

MR. RAMOS: Yes.

MR. MINNERS: Do you want to know how long it would take us to review a proposal?

MR. GIVEN: Yes. We would have to have the plan submitted by January 1. Right?

MR. MINNERS: Right. You better sit down with your project manager and work out a schedule. We can give you an off the head number of what it might take, but that does not mean that the people would be available to do the review.

There has to be some scheduling. You have to go to your project manager and work up a schedule of when you can get your license and when you have to submit stuff. That is what project managers are for.

MR. RAMOS: That is what we are doing in some of the cases that are looing for a low power license, fuel load, low power license for November 82, for example.

MR. GIVEN: And the implementation schedule that you showed us this morning, then, is strictly for operating plants or near term licenses?

MR. RAMOS: Yes.

MR. MINNERS: And it also defines the time in which plants that get a license after that date are going to have to meet the requirements.

So if you get a license after June 1982, youhave to meet those requirements.

MR. GIVEN: Will the staffing requirement documents for the TSC and the EOF provide guidelines for what type of displays and how many displays will be required in each of those faciities?

MR. RAMOS: Our analysis will go through that; it was not our intention to provide you that because AIF and other industry people have told us they don't want us to tell them that.

MR. MINNERS: We will make it available to you, but it won't be a requirement.

MR. GIVEN: That is why I say guidelines. I am not saying a requirement; I am saying guidelines.

MR. MINNERS: I will show you our analysis and you can take what guidance you want from it.

MR. GIVEN: One last question --

MR. SHAH: How do you get that number?

MR. RAMOS: As I said earlier this morning,we are in the process of developing that, and it should be ready in about two months.

MR. GIVEN: The last question I have concerns the Nuclear Data Link and one of the requirements of the Nuclear Data Link is the capability of providing data for 30 minutes pre-event. I wonder how that is taken care of in relation to the real tie data being transmitted after the event or after you initiate the transmission.

MR. MINNERS: Okay. Relative to that, I know we had two schools of thought. One was transmit it continually or periodically. That school of thought was -- the rationale for that school of thought was it would validate the fact that the Link was operational.

Okay, the more limiting case was he one where you would transmit it after you had detected that you had an event, say, like a safetyinjection and let that automatically initiate the transmittal.

I think if you sit down and look at the numbers on it that 30 minutes -- that past 30 minutes of date could probably be transmitted within the first minute of the event -- okay -- or at lest the feasibility study proved that that was the case.

MR. GIVEN: So that last 30 minutes of data would be sandwiched in within the other data.

MR. BELTRACCHI: Yes, within the first five minutes of the event you could probably not only send the last 30 minutes of data, but also each minute of collected

data or each minute of sample data. Okay?

MR. RAMOS: You are asking us to give you an answer on something that has ot been completely defined by I & E and Research.

MR. BELTRACCHI: That will come out in an interface spec that is yet to be specified.

MR. MINNERS: That ends the list of people that I have in front of me.

Are there anyother people that would like to make comments?

The gentleman in the back. Please identify yourself.

MR. BURNS: I guess I hsave more of a question: if you could talk a little bit about the power supply requirements for the habitability equipment for the tech support center and the EOF.

What are your views on the requirements for that?

MR. RAMOS: Your question again, please?

MR. BURNS: The power supply questions for the habitability equipment for the EOF and the tech support center.

I guess what I am basically getting at is: a reliable power supply, is that sufficient, or are you --

MR. RAMOS: We gave you an unavailability factor of .001.

MR. BURNS: That applies to?

MR. RAMOS: That applies to all the equipment.

MR. BURNS: I was reading that to be instrumentation for data collection and not necessarily the --

MR. RAMOS: We gave .001 for power supply just as we did for the single parameter requirement. We gave an overall system reliability or unavailability of .01. But we specified specifically for power supply that it be .001. In other words, you set up whatever power supplies you need, redundant power supplies you need to meet the .001 unavailability factor.

I am not going to tell you how to do it. I am not going to tell you to hook it up to the diesel or anything else.

That is part of your design.

VOICE: Okay. Thank you.

MR. MINNERS: What company were you from again, please, Mr. Burns?

MR. BURNS: Northern States Power.

MR. MINNERS: Yes, sir, in the back.

MR. PASSMAN: Neil Passman from the Power Authority of New York.

Habitability requirements on control rooms now go further than radiation protection. They go into gaseous

release and protection from noxious gases.

Are you requiring any of that to be included in the habitability for the TSC or the EOF?

Chlorine gas is an example.

MR. RAMOS: We did not really consider that, but it is a good point, and we will -- we welcome your comment and we will consider it.

MR. PASSMAN: Basically, our comment is going to be that it should not be there, if it is.

MR. RAMOS: Tell us your rationale for why not.

MR. PASSMAN: Basically what we are looking at here is an accident; the centers would be manned on a low probability basis.

In other words, the period of time they would be manned over the total life of the plant is expected to be very small. The probability of having a gaeous release at the time they were manned then becomes proportionately smaller than, say, the control room which is manned continuously over the life of the plant.

Therefore, we think it should not be a consideration.

MR. MINNERS: It sounds like it is the same argument for not having earthquake requirements.

MR.PASSMAN: It is more restrictive than that becaus you would -- you assume the earthquake was the

condition that presented the problem.

I don't think the gaseous release presents any additional problems to the control room people since the control room is built to protect against it.

MR. MINNERS: And the plant is built --

MR. PASSMAN: I don't think you envision manning the technical support center or the operations support center on a gaseous release.

MR. RAMOS: I think you are right. It is to be manned when you get to the alert stage, and that is directly defined in 0610 as something to do with the reactors.

MR. MINNERS: My first impression is we would agree with you, but we always puyt the caveat on we will think about it and then put our final decision in the report.

MR. PASSMAN: Okay, fine.

MR. MINNERS: Yes, sir?

MR. O'BRIEN: One more, if I may.

Without saying anything more about the process computer, I think the target is different than what I thought it was.

This business of security is a new wrinkle that came in today as far as I am concerned.

I am wondering -- again, this is what we are trying to tell you. I think we would like to see what criteria you want us to meet and then we can decide whether

we can meet it with the process computer.

But up until today I don't think we had any inkling that you were worried about the security of the software on the process computer and therefore we could not use it.

MR. MINNERS: Okay. I am glad the meeting has served a purpose, at least that one.

MR. O'BRIEN: I would like to pull your leg just a little bit on the safety parameter display. There was a statement made by one of the gentlemen up there this afternoon that could be interpreted that a plant that does not have a safety parameter display is an unsafe plant, and I don't think we want to say that.

Thank you.

MR. MINNERS: Is there anybody else?

(No response)

Thank you very much.

(Thereupon, at 4:32 p.m., the meeting in the above-entitled matter was adjourned.)

NUCLEAR REGULATORY COMMISSION

This is to certify that the attached proceedings before the

In the matter of: WORKSHOP - EMERGENCY RESPONSE FACILITIES - NUREG-0696

Date of Proceeding: August 26, 1980

Docket Number:

Place of Proceeding: Chicago, Illinois

were held as herein appears, and that this is the original transcript thereof for the file of the Commission.

David S. Parker

Official Reporter (Typed)

(SIGNATURE OF REPORTER)