ENCLOSURE 3

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UNITED STATES
NUCLEAR REGULATORY COMMISSION

IN THE MATTER OF: **DOCKET NO:**

BEAVER VALLEY II

APPEALS MEETING

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NUCLEAR REGULATORY COMMISSION

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In the Matter of: :

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BEAVER VALLEY UNIT 2 : DOCKET NO. 50-412

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(Meeting Between the NRC and : :

Duquesne Light Company) : :

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Nuclear Regulatory Commission
Conference Room P-110
Phillips Building
Bethesda, Maryland

Thursday, February 28, 1985

The meeting convened, pursuant to notice, at 10:38 a.m., Hugh Thompson, Director of the Division of Licensing, Chairman.

NRC Staff Presenters:

H. THOMPSON, Chairman
J. KNIGHT
V. BENAROYA
W. JOHNSTON
T. NOVAK
V. NERSES
R. FERGUSON
T. STANG
T. WAMBACH

Duquesne Light Company Presenters:

J. CAREY
G. KURTZ
E. EILMANN
E. SING
J. HARDING
G. BEATTY
F. COLLINS

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P R O C E E D I N G S

MR. THOMPSON: Good morning. I would like to welcome you all here.

I think we are getting a little later started, but we decided that we would at least hear your side of the story before we made the decision today anyway.

(Laughter.)

Actually this is my first backfit appeal meeting, and I thought I would just like to set out a little bit of the background as I understand it, which is is why it is being held at my level since this is the first particular appeal that I think we have had on this issue.

Normally in accordance with the NRR procedure, the first-level appeal will be handled by Tom Novak, who is the Director of Licensing. But because of Harold Denton's interest in this particular activity, he asked that the first level be handled by the division level so that the appeal process could be handled expeditiously and we could get a resolution of this issue in a more timely fashion than the other procedures would normally be set forth.

Specifically I think this meeting today is being held to respond to your letter dated February 13th addressing and requesting a meeting with respect to the fire protection in the cable spreading room.

I know who I am, but for the record, and we are

transcribing this meeting so that we will all have a clear record of the proceedings, I am Hugh Thompson, the Director of the Division of Licensing. On my left is Tom Wambach, who is one of my technical advisers for the particular results of this backfitting meeting.

On my right is a vacant chair which Dick Vollmer will be appearing and sitting in later also to advise me in making my decision.

I think it might be appropriate now if each of the individuals at the table identify themselves. I guess it might be as easy to start with Jim Knight on the right over here, and kind of indicate your position and why you are here today.

MR. KNIGHT: I am Jim Knight. I am acting as Director of Engineering, the area that is responsible for fire protection.

MR. JOHNSTON: I am Bill Johnston. I am Assistant Director of Nuclear Engineering responsible for this area.

MR. BENAROYA: I am Vic Benaroya, Chief of Chemical Engineering responsible for this area.

MR. NURSES: I am Vic Nurses, the Project Manager.

MR. SING: I am E. K. Sing, Project Manager for Beaver Valley 2.

MR. KURTZ: I am Gene Kurtz, Duquesne Licensing.

MR. CAREY: Jack Carey, Vice President Nuclear, Duquesne Light Company.

MR. EILMANN: Irv Eilmann, the licensing engineering with responsibility for fire protection, Duquesne Light.

MR. THOMPSON: Since this is recorded, if any individual who is not at the table would like to make a statement or is called upon, if you would please identify yourselves for the record. And I am sure she will, if you don't, ask you to identify yourselves. So it is just a matter to keep the record straight.

What I would like to do to start off this morning is to ask the staff which respect to the fire protection control for the cable spreading room to identify our current requirements both from a procedural aspect and a technical aspect, that is what needs to be supplied to the staff and how that is done.

And I would like to address, to the extent that there are some questions that arise in this area, that we look at them in two contexts. There is compliance with our current regulations procedurally and technically.

MR. JOHNSTON: Vic Benaroya will make the staff presentation.

MR. BENAROYA: On March 10, 1982 the Commission approved the final rule, 10 CFR Part 50.34(g),

documentation of differences from the standard review plan.

MR. THOMPSON: Well, let's see, this particular one now you are telling me is a procedural or technical ---

MR. BENAROYA: Procedural.

MR. THOMPSON: So the first point you are going to discuss is the procedural aspects?

MR. BENAROYA: Right. This rule requires certain applicants, those applications adopted after May 17, 1982, to identify and describe all differences in design features, analytical techniques and procedural methods between those proposed for a facility and those given in the acceptance criteria of the standard review plan.

Mr. Denton's letter that you have sent us also copies says: "The standard review plan represents the most definitive basis available for specifying NRC's design criteria and design guidelines for an acceptable level of safety for light-water reactor facilities reviews. All NRR staff reviewers will have to make an explicit evaluation finding in SER's to provide justification and appropriate bases for accepting the applicant's documented deviations."

So this is the procedural part that we have to write in our SER's to agree with your deviations.

MR. THOMPSON: So I can understand the issue, first off, there is a requirement that you document the. FSAR, and in accordance then with the 50.34(g), because of

your docket date, there is the requirement of 50.34(g) to identify the deviations from the standard review plan and to describe where you differ and the basis for your difference and what you are approaching to provide an acceptable level of safety, an equivalent level of safety.

Let me ask you, Gene or Jack, as far as you understand the procedural requirements, that is consistent?

MR. KURTZ: Vic said it correctly. It is to the acceptance criteria of the standard review plan.

MR. THOMPSON: To the acceptance criteria of the standard review plan.

MR. KURTZ: That is correct.

MR. THOMPSON: I think we are all in agreement on step one; is that right?

(Nods of affirmation among the parties at the table.)

MR. THOMPSON: Okay.

Vic, do you want to proceed to describe the technical requirements then?

MR. BENAROYA: The acceptance criteria is spelled out in the SER 9501 and says it is 10 CFR 50.48, design criterion 3, design criterion 5 and then it says these are implemented by meeting the BTPCMEB-951, Reg. Guide 178 and Reg. Guide 101. So that we refer back to the BTPCMEB 951.

Now usually it is either Appendix A to the BTP

of APSCD-951 that you do it or CMEB, we give you that option, and I understand you picked the option of CMEB-951.

MR. THOMPSON: Let me understand, Vic, if I am not correct. The regulation for which we are meeting is 10 CFR 50.48, paragraph (a), and the regulation that applies is only paragraph (a) out of CFR 48, or it is paragraph (a) and paragraph (e)?

MR. BENAROYA: That is right.

MR. THOMPSON: The the staff's acceptable way to implement that paragraph (a) is identified by a footnote in 50.48(a), and it is footnote 3. And footnote 3 then references two items. One is the Appendix A, the branch technical position APCB 9.5-1, particularly for plants that were operating or under various stages of design or construction before July 1st, 1976. I just want to follow this thing correctly.

And then it also says see Note 4, and Note 4 then gives a few other permissible alternatives to satisfy the Appendix A, the branch technical position APSCD 9.5-1.

Now what you have just identified I think is the standard review plan. Would you tell me how precisely the standard review plan relates to these documents that are in the regulations, that are identified in the regulation.

MR. BENAROYA: Okay. Appendix A to the BTP was developed for operating plants and plants under

construction prior to 1976. It has two columns there, applications adopted, but construction permit not received as 7/1/76, and plants under construction and operating plants.

MR. THOMPSON: And Beaver Valley 2 falls into which particular column.

MR. BENAROYA: Plants under construction and operating plants for that time. However, this BTP was revised and approved for issuance in 1978. It was ASB-951, and in 1981 CMEB-951 where it included also the requirements put at guidelines of Appendix R at the instructions of the Commissioners.

MR. THOMPSON: Okay. To get to that point, is that your understanding, Jack or Irv or whoever?

MR. CAREY: Well, that is right. Our understanding has always been that we were duplicating No. 1 Unit, and that really includes what we did to meet all of the requirements that came along, including Appendix R fire protection requirements which started out to meet the same branch technical position.

And on No. 1 Unit this is really what we have done is duplicated or attempted to duplicate on No. 2 Unit a gas suppression system backed up by conveniently located hose stations and certainly supported by training for the fire brigade to assure that in the event it was necessary

to provide some additional cooling to a fire that the gas system had not either fully extinguished or had not cooled to the point where there was concern that there might be a re-extinguishment that we would then utilize fire brigades.

MR. THOMPSON: I think you have gotten ahead of where I am in my thought process.

MR. CAREY: I think so.

MR. THOMPSON: I guess I was trying to clearly identify existing regulatory requirements. My understanding is that Beaver Valley 1 comes under 50.48, and I guess I will ask the staff here, would you verify it was B, C and D?

MR. BENAROYA: That is correct.

MR. THOMPSON: Whereas Beaver Valley 2 comes under 50.48 A and E, paragraphs B, C and D do not apply to Beaver Valley 2.

MR. CAREY: That is correct, but I guess that we assumed certainly, and that is what our case was, that we would design the system to be adequate and, if it did deviate from these A and E requirements, that we would submit a request to have the system reviewed, and we certainly did anticipate acceptance of the design of our system and I guess that is where we are at.

MR. THOMPSON: I think that is why we are at the meeting here.

MR. CAREY: That is right.

(Laughter.)

MR. EILMANN: With regard to what we feel were the requirements and guidelines applicable, I think the staff has captured that fairly closely as to what we understand.

If I may recap what I think I heard, which may be different or may not be, is that Beaver Valley Unit 2 is required by 10.48, which is the requirement, the regulation to satisfy the criterion 3 of the general design criteria.

Now we feel that we will demonstrate that or have demonstrated that. But the staff has told us that the method in which you should demonstrate that is by evaluating your plant in accordance with Part 50.34(g) with the SRP. And the SRP which is applicable to us is that SRP which was in effect six months prior to our docket date, which is CMEB 951. And 951 is, as we understand it, a compilation of Appendix R and the old CMEB position.

Although Beaver Valley 2 is not per se by law required to meet Appendix R, we do so by its incorporation into this SRP branch position.

This branch position also contains, as I understand it, the requirements of the old APCSB 951, and by doing so the staff has in its last page of that document deleted Appendix A.

It has said, and I don't have the page directly in front of me -- if you want to read that, Gene.

MR. KURTZ: Yes. The title is "Appendix A to Branch Technical Position ACSB 9.5-1, Guidelines for Fire Protection for Nuclear Power Plants Docketed Prior to July '76 (August 23rd, 1976)."

"The guidelines of this appendix have been incorporated into BTPCMEB 9.5-1, and therefore this appendix has been deleted."

MR. EILMANN: Now if we get into the further specifics of what the branch technical position requires of us, I think we will discuss that further at that point.

MR. THOMPSON: Okay.

Vic, I guess could you then maybe proceed on. Since that has been established, could you maybe summarize in essence what the heart of the staff's position then is with respect to the current SRP that you referenced.

MR. BENAROYA: First of all, before we go into the positions in branch technical position, there is a discussion section explaining why and how we got there, and the main reason was the Browns Ferry fire.

It says there, as a result of the Browns Ferry fire we learned or we should take some lessons. One was use of water in electrical cable fires, and the other one was establishment and use of fire areas.

By the way, in the use of water in electrical cable fires, it says you should use water if at all possible. It also tells you where you shouldn't use water. That is when you have electrical equipment there and when you can show that there would be some adverse effects.

Now in the BTP we have a section under C-7-C that is applicable for the cable spreading room. That is on page 45. And we also have some guidance for cables in general on page 34 and 35 under Section C-5-E(2).

Now when we looked at the main cable spreading room requirements or guidance, it says that the primary fire suppression should be an automatic water system. It also says that use of foam is acceptable.

Then it goes on to say that cable spreading rooms should have at least two remote and separate entrances. I understand that Beaver Valley 2 does have that.

It says an isle separation between tray stacks at least three feet wide and eight feet high should be provided for manual fire fighting. Whether that is available to meet that requirement or not is a question.

Hose stations and portable extinguishers are to be installed immediately outside the room. I don't recall that you have at both entrances, that you have ---

MR. THOMPSON: I think if it is not in the

requirements, I will ask them to describe it.

MR. BENAROYA: Okay. Because some of them we have reviewed and have approved deviations already is what I am trying to show.

MR. THOMPSON: I see. Okay.

MR. BENAROYA: I know that one was inside, and if you had one outside, I don't recall when I was there.

Area spoke protection, which you have provided.

Continuous life style heat detectors for cable trays inside the cable spreading room you have not provided, but we found that since you already have a good smoke detection system it is not necessary for your cable spreading room.

Drains to remove fire fighting water should be provided. I don't believe you have that.

A separate cable spreading room should be provided for each redundant division. If this is not possible, a dedicated system should be provided. You do not have separate cable spreading rooms, and we have agreed that an alternative shutdown system might be adequate provided it is properly desi ned and installed in your plant instead of a dedicated shutdown system.

The ventilation to each cable spreading room should be designed to isolate the area upon actuation of any gas extinguishing system in the area. You have said

that you have done that, but we have not reviewed that area yet as to how you are going to do it.

These are the requirements and the status of what you have in your plant.

Now in the last couple of years we have had two Stone and Webster plants that have come in with CO2 systems.

MR. THOMPSON: I think you have just gotten the requirements stated. Are you going beyond stating the requirements now?

MR. BENAROYA: Yes. I am telling how we have been looking at them again as part of the requirements.

MR. THOMPSON: Do you need to go beyond that at this moment?

MR. BENAROYA: Yes, I should, because we had two plants that have come in with CO2 systems alone, and we said maybe after nine years that we have been implementing these guidelines successfully maybe we should have a look at them again. And we convened the fire protection consultants that we had used for the development of these guidelines to find out whether there should be a change.

MR. THOMPSON: Let's see, Vic, to make sure. Are you telling me that you have made a change to this SRP?

MR. BENAROYA: No, that we are looking at it again from a technical point of view of whether we should

make any changes or whether the basis is good based on the consultants that we have used.

MR. THOMPSON: I think for right now that you have pretty much stated what our regulation is and what we have, in accordance with the regulations, established as what is an acceptable approach to us.

Now I would like to turn to Duquesne and allow you to describe your technical system and why that provides a level of safety that is equivalent to that proposed by the staff and why you believe that should be acceptable.

MR. EILMANN: The reference of mr. Benaroya to Section C-7-C is the one that we have used in our analysis of evaluating against whether we have satisfied what the staff has asked for.

MR. THOMPSON: We are talking about the same document.

MR. EILMANN: The same document.

MR. THOMPSON: So there is no disagreement on either side as to where we are here.

MR. EILMANN: That is correct.

MR. THOMPSON: So this has been the C-7-C, page 9.51-45, Revision 2, dated July 1981.

MR. EILMANN: That is correct. And as we have read this in a general sense, first, before we get into some of the specific issues that it talks of, we looked at

Section C and the first paragraph did discuss and imply that water systems should be installed and the types of systems that should be used.

We also in our interpretation, although it may be vague or unclear, but we also read that in the following page of that same section that that first paragraph discusses when gas systems are installed drains should be adequately sealed and gas extinguishing systems should be sized to compensate these losses. Then the last paragraph once again talks about gas systems and ventilation systems.

And it is our feeling that interpreting this entire section that the staff has given us what they think should be installed, but they have also told us that if a gas system is used, what also is acceptable, and that is adequate drains sized to the loss or to compensate for the drain loss and ventilation systems implying that perhaps gas systems, in our opinion, is also an acceptable means in this section.

The test on the first page of what cable spreading should have, as Mr. Benaroya has gone through it ---

MR. THOMPSON: Let's see, maybe it would be helpful for me if we started with the very first paragraph. Is that where you are going to start?

MR. EILMANN: We can start at the first paragraph

and simply say that the primary system for Beaver Valley Unit 2 is a CO2 system.

MR. THOMPSON: Okay. I guess what you are saying is your CO2 system provides the same level of fire protection as a water deluge system.

MR. EILMANN: And we contend that it provides an equivalent safe system in the whole picture of what we have with the defense in depth with detection, suppression and with fire fighting capabilities.

MR. THOMPSON: I guess I am trying to get you to go through that discussion and provide your technical basis for that assumption and position that you just stated, and then I would like to walk through each of the steps as they go through and I think that will kind of help us understand precisely where we are and where we are going.

MR. EILMANN: Okay. The design of Beaver Valley Unit 2 utilizes a defense in depth approach to fight fires for fire protection such that in each fire hazard a suitable combination of fire prevention, fire detection and suppression and safe shutdown capability is provided for that hazard.

Beaver Valley 2's position is that the primary fire suppression for the cable spreading room is an automatic total flooding CO2 system with hose stations and fire brigade as the backup to the CO2 system.

DLC believes that the CO2 system with the hose stations as backup provides an equivalent level of safety for the specific conditions of the Beaver Valley 2 cable spreading room.

The level of safety is achieved by the defense in depth approach. More specifically, DLC has an alternate shutdown capability totally separated and electrically independent from the cables spreading room, and this alternate shutdown system can bring the plant to a safe shutdown condition. The CO2 system and its backup hose stations are all designed to meet NFPA codes.

And, finally, Duquesne Light contends that it has adequate access and fire fighting conditions in the cable spreading room to extinguish any fire hazard in that room.

In conclusion, Beaver Valley contends that the CO2 system with the hose station backup is a safe and adequate fire protection system for our cable spreading room.

MR. THOMPSON: I guess what I was trying to get a better feel for, and I think you have given me your kind of integrated summary ---

MR. EILMANN: Our position, yes.

MR. THOMPSON: And I think I understand your position basically being defense in depth.

MR. EILMANN: Okay.

MR. THOMPSON: As I was understanding procedurally the comparison, that you were to provide the equivalent level. As I read the standard review plan here, it talks about the primary suppression and it also talks about the hose trays and portable extinguishers. So as I would read this position, it would say you have a suppression system as well as a manual backup.

So I am trying to get your professional opinion and your professional technical basis on comparing the water suppression system, which is described here, and comparing that with the CO2 system that you have. Is it the same on time and it is the same on the capability of putting out fires.

I am trying just really to understand that system.

MR. KURTZ: Our position is that we believe the SRP addresses gaseous systems. Even though it says in there that the primary suppression system should be water, we believe that it does have allowances in there for when gaseous systems are in fact used, that that is also inclusive in that SRP.

MR. THOMPSON: As I read the sentence, and I understand what you are saying, I just want to go through the English, it says "The primary fire suppression in the

cable spreading room should be an automatic water system.

MR. KURTZ: That is correct.

MR. THOMPSON: Do you want to go sentence by sentence?

MR. EILMANN: Well, no. We are just saying it should be, but on the next page they say "When gas systems are used," which implies to us that gas systems are also an acceptable means.

MR. THOMPSON: I understand that that paragraph was placed in there because of people who used a dual purpose, that is who have both automatic water or have water and gas systems. I mean I could get around over to that, but certainly as I read through this that is my understanding of where the staff came from, though it doesn't mean that one of itself. I am trying to get back down to the technical fire protection capability of the CO2 system.

If the CO2 system is adequate technically to put out the fire, then I think that is a key issue that I need to understand.

MR. EILMANN: Let us address the design of our system, and we will go with it from there.

MR. THOMPSON: Okay.

MR. EILMANN: The first point before we get off, is it is not clear to us. I mean the point you have made,

that gaseous systems, that the reason it is in here is in combination with a water backup. Since the words have been removed from the old Appendix A, it is not clear to us anymore that that is still a requirement of the staff.

MR. BENAROYA: It is not a requirement.

MR. JOHNSTON: The way we understand the standard review plan is where it says that the primary purpose or the primary thing ought to be an automatic water system, that the utility would in effect have asked for a deviation and explained why it is okay to do it a different way.

But the procedure, and I bring it up because I am talking procedure and not technical, but the standard review plan has an acceptance criteria, as referred to here, that says the prime way of doing it ought to be thus and such. And if the utility chooses to do it that way, he just comes in in a normal manner.

If he wishes to do it a different way, he comes in in a formal way and ways I don't want to do it that way. I want a deviation and I want to do it in the following way for a good and sufficient reason.

What we are really talking about here is that the utility should ask for a deviation from putting in the the automatic water suppression system and then give some of the reasons perhaps that we have heard. But the fundamental thing is that it should be a request for a

deviation from what the acceptance criteria call for.

MR. THOMPSON: What you are saying is that procedurally that is what others have done when they have not used ---

MR. JOHNSTON: When they wish to do it a different way, which others have indeed done. But they have always come in and asked for a deviation and given us the reason why.

MR. EILMANN: I don't believe that we are required to file a deviation, but we have concluded in our FPER the fact that we look exception to a specific concern that has been said, which should be automatic, and we identified that in our FPER.

MR. KURTZ: That was docketed in May of '80.

MR. THOMPSON: What I am interested in today is understanding the technical capability of your fire suppression system and what fires it will put out and the time frame that it will put them out.

You obviously have done this analysis and I guess I don't have the benefit of it.

MR. EILMANN: Okay. Let me give you some general design of the system. I don't know how specific you want to get. You are talking about time frames to suppress fires, and I am not sure to what extent you want to get into each of these areas.

MR. THOMPSON: Okay.

MR. EILMANN: First of all, we have a double shot CO2 system to start up front. Now the backup from there, the detection we have is called an early warning detection system and it is smoke actuated. We also have installed in our cable spreading room IEEE 383 cable, which ---

MR. THOMPSON: Back up slightly. I need to understand a bit more about the double shot then.

MR. EILMANN: Okay. I was going to start with detection and then work down to how we apply the double shot.

MR. THOMPSON: Okay. Then maybe it would be helpful to me for you to to cite which of the areas in the standard review plan you have no differences strongly as you understand your system, and that way I can immediately eliminate any problem with those right off the top. Now in the area of smoke detectors you obviously I guess have, since that is part of it.

So the systems as you step through it, you can say that is in total compliance or not. So smoke detectors, you can start with smoke detectors.

MR. EILMANN: What I am trying to define for you is so that you get a concept of our entire system and why we feel CO2 as it fits into this entire system is the best for our cable spreading room. It starts out with detection,

which we have two systems. One is an early warning system, which senses by smoke, and we feel ---

MR. THOMPSON: This is protection only?

MR. EILMANN: Yes. And we feel that the smoke as a result of our IEEE 383 cables, which seem to smolder and generate smoke first, will help us to detect a fire in its early stages.

The second detection system is an actuation system which requires two detectors to go off to actuate the CO2 system. The CO2 system then is on a time delay after an alarm is sounded and 30 seconds later will dump its first load of CO2, which is approximately 9 tons of CO2. We have designed this system in accordance with the codes, which says we will maintain 50 percent concentration for at least 20 minutes.

We have designed the room to be minimum leakage with appropriate pressure relief, such that we don't have any other safety concerns.

MR. THOMPSON: So that means doors are tight, and if you had had drains, like we said in here, the drains would be sealed or whatever it is.

MR. EILMANN: Yes. We have also established for the room a three-hour barrier, which includes walls, doors and fire seals which are in the penetrations going to other rooms and they are all three hours.

MR. THOMPSON: Okay. One quick question. On your activation by two detectors, are those your two early warning detectors, or these are two other type of detectors?

MR. EILMANN: They are a separate detection system.

MR. THOMPSON: And these particular items detect on heat or on ---

MR. EILMANN: On smoke.

MR. THOMPSON: Heat and smoke?

MR. EILMANN: Just smoke.

MR. THOMPSON: Just smoke. Okay. So you have got early warning and then you have something that I guess is less sensitive -- no, it is not less sensitive?

MR. EILMANN: No.

MR. THOMPSON: It is not less sensitive?

MR. HARDING: My name is Jack Harding and I work for engineering of Duquesne Light. The early warning enunciate in the control room only. We also have the actuation system, which is a similar system with the same sensitivity. We have installed a cross-zone system there. So that when on detector picks it up we wouldn't automatically dump the CO2. We have to take two detectors and cross-zone and then it would actuate the CO2 system.

MR. THOMPSON: But neither of the detectors that

actuates the CO2 system are part of the early warning system?

MR. HARDING: The early warning is a separate system. We have two independent smoke detection systems in the area.

MR. EILMANN: Now one of the reasons we feel the detection system is important is that by smoke actuation, unlike the fusible links in a water system, we can get our CO2 into the room a lot quicker and a lot earlier to prevent a deep seated fire from occurring.

MR. THOMPSON: Jim, did you have something to add?

MR. KNIGHT: Yes. You also mentioned three-hour barriers. Could you define that a little better for me separating what from what, an inclusive three-hour barrier and everything is separated?

MR. EILMANN: This entire fire area, which includes the cable spreading room is separated from all areas of the plant by a three-hour fire barrier.

MR. THOMPSON: That is other fire zones and not internal here?

MR. EILMANN: That is right.

MR. THOMPSON: Okay.

MR. EILMANN: The other concerns within the plant that we have is in order to comply with the Reg. Guide 175

at Beaver Valley 2 we are having to install covered trays and bottoms in I would say roughly say all but only a few of the trays. We feel that with this condition CO2 will b the only suppression device that can get into or penetrate these covers and these bottoms to suppress a fire within those trays.

MR. THOMPSON: So these covered trays and bottoms, as they are presently designed, are for purposes other than fire barriers?

MR. EILMANN: That is correct.

MR. THOMPSON: But they would, as you believe, inhibit water from penetrating these. That is, are they essentially waterproof trays?

MR. EILMANN: They solid covers and solid bottoms. There are no vents in those.

MR. BENAROYA: May I ask a question?

MR. THOMPSON: Okay.

MR. BENAROYA: Wouldn't those trays also act as an oven in case there is a fire?

MR. EILMANN: It could, but water will not penetrate the trays to put the fire out inside where gas will go in and smother, and we feel that is a safety significant of gas over water.

MR. THOMPSON: Now you have had your fire protection consultants look at these trays?

MR. EILMANN: Yes, we have.

MR. THOMPSON: And they have done a technical evaluation of the oven effect versus the water effect or whatever?

MR. EILMANN: I don't believe we have gone into that type of analysis, no.

MR. BEATTY: I would like to make a clarification. Presently we don't plan to have tops and bottoms on all trays. It may be that some some trays will have tops and not bottoms and some will have bottoms without the tops.

MR. THOMPSON: Could you give me some feel for how both tops and bottoms?

MR. EILMANN: An example would be that you have a set of say 15 trays in the room and each tray will be separated from another tray by either a cover or a bottom. We may separate three by putting the cover and bottom on one tray to separate these together.

So as we go down, the only ones that will not be separated may be the top tray and the bottom tray will not most likely contain a cover or a bottom. All others will contain one or the other.

MR. THOMPSON: So I would infer that the majority of the trays will have tops and bottoms, although the top top and the bottom bottom might not.

MR. EILMANN: Yes, 95 or so percent.

MR. JOHNSTON: All trays will have either tops or bottoms, but only half the trays will have just one or the other.

MR. EILMANN: No.

MR. JOHNSTON: Most trays are not going to have both a top and a bottom. You will have a bottom on one and a top on another and that is the way they will go all the way down, which means that only half the trays, you going to only have as many metal plates. So you are going to have the same number of metal plates as you have got trays, or otherwise it would be two on a tray. You are going to have one for one.

MR. BEATTY: Mr. Thompson, can you give us what your understanding is?

MR. THOMPSON: Yes. My understanding then is that maybe one-third of the trays would have both the top and the bottom cover from the last discussion of the way it was. Is that a generally correct understanding?

MR. CAREY: I believe that right now about 50 to 60 percent of the trays will have tops and bottoms. Now we are continuing to, as part of our qualification testing program for this Reg. Guide 175, to evaluate whether there will be any additional trays where we can do without either a top or a bottom. But right now we are talking over 50

percent, and probably 60 percent of the trays will have tops and bottoms.

MR. THOMPSON: Thank you.

MR. EILMANN: As I mentioned earlier, the suppression system, the CO2 suppression system is designed in accordance with NFPA codes. It has the appropriate soak time and at the end of that soak time we have the option of dumping another load CO2 or entering the room with an appropriate fire fighting brigade.

The procedures for doing that are in writing right now.

MR. THOMPSON: Do you mean in preparation when you say in writing?

MR. EILMANN: Yes, they are being prepared now.

MR. THOMPSON: You mean they are not quite written, but they are being written.

MR. EILMANN: Right. And we right now will most likely follow those guidelines that we have used on Unit 1, which is a trained fire brigade person will examine the situation prior to dumping the second load of CO2.

MR. THOMPSON: Is the second load of CO2 dumped from the control room or is it dumped locally?

MR. EILMANN: It is manually dumped from a local panel, which is near the CO2 tanks, which is a floor or two up in the auxiliary building which is nearby.

MR. THOMPSON: So you have to dispatch an operator to that local panel who is then going to be in communications with the fire brigade at the control room and the decision will be made whether or not to dump at that time?

MR. EILMANN: Yes. That local area contains a lot of the fire protection information. It contains the computer and some of the detection devices that are duplicated in the control room, and a brigade member will visit that area prior to doing anything in the 20 minutes in which the soak time is taking place.

The second shot is manually actuated and is another full 9-ton shot that will be dumped into the room with an equivalent 50 percent concentration 20-minute soak time.

MR. THOMPSON: Okay.

MR. FERGUSON: Hugh, I would like to ask for a point of clarification. In your response to us in August of '83, Question 280.13, you state that the CO2 system would have an extended discharge to maintain the design concentration in the room. Is any part of this extended discharge part of your second shot, or can you maintain one full shot, the extended discharge for the soak time, plus another full shot?

MR. EILMANN: No. The design of the system is set

up that we will dump more than the required CO2 into the room than is required to maintain the 50 percent concentration, and that additional dump is to compensate for whatever leakages may exist or may occur prior to the dampers closing for pressure relief and so forth. We don't bleed.

MR. FERGUSON: So your extended discharge statement in here means that instead of discharging let's say for two minutes to get in exactly 50 percent, we will discharge for two and a half minutes and put in 60 percent and let it bleed down?

MR. EILMANN: Yes.

MR. FERGUSON: Thank you. So then you have two such shots capability.

MR. EILMANN: Yes, sir.

MR. FERGUSON: Thank you.

MR. THOMPSON: Just for my own understanding then, how in Unit 1 do you decide to make the second shot?

MR. EILMANN: That is a decision of the fire brigade after they have examined the situation.

MR. THOMPSON: I see. In Unit 1 what is the general procedure. I am not hold you as memorizing the details of the procedure. I just want to understand. Do they enter the room, do they feel the door, I mean what do they do to make that decision that they need a second shot?

MR. EILMANN: Okay. The understanding, and like you said I am not with the exact details, is that the brigade will enter the room in a fire fighting mode fully dressed in their gear with fire hoses to protect themselves in case the fire has not been suppressed.

They will enter the room with this hose and search out and try to identify where the fire is at and if in fact it has been put out. Entering with the hoses it is felt that after the brigade enters that we will probably never use a second shot because the brigade will put it out with the hoses. But if it is still too much of a fire, they will recede from the room, close the door off and manually actuate the second CO2 dump.

MR. THOMPSON: Now when they enter the room, and I guess since it is full of CO2 they will be in Scott air packs and whatever other life supporting and sustaining system, and that if it has been a bad fire and I guess you have a lot of smoke and a lot of other I guess activities that make visibility difficult, how are these fire fighters able to find out where the fire is when they are in there?

MR. EILMANN: I believe our early warning detection system, the actuation one, is a smart system and tells us on a computer where in the room the fire was initiated and where the alarms are going off so we know ---

MR. THOMPSON: Does it compute how the fire is

propagating or anything like that?

MR. EILMANN: No. It tell us the first detectors that go off.

MR. COLLINS: The system will continue on a printout to actually print out as each detector goes off what detector by number and some kind of a code to give us the location of where that fire was and how it will spread.

MR. THOMPSON: So it kind of gives you a spreading aspect of the fire.

MR. COLLINS: Right.

MR. EILMANN: Eventually they will most likely all go off.

MR. COLLINS: There is one other point though. The CO2 system itself has a tendency when it starts discharging large quantities of CO2 to actually start sending off a further degree of the detectors because it itself is a gaseous system and it says okay, it is gas, and it doesn't know that it is the CO2 or fire.

MR. THOMPSON: So what I would conclude from that, and correct me if I am wrong, is once you initiate the full discharge if you had a fire, you most likely then would have all of your detectors, smoke detectors initiating?

MR. COLLINS: Probably, yes.

MR. EILMANN: Now the brigade would enter the

room and to go the area which they have identified on the computer as being the first 10 or so detectors going off identifying that specific location as where they will pursue or try to identify whether the fire is still there or not.

MR. THOMPSON: I guess now I get to ask my question of how good is the CO2 in putting out the fire compared to ---

MR. EILMANN: We contend that CO2 is equally as safe as water in putting out both electrical fires as well as exposure fires.

MR. THOMPSON: Would you explain what your technical basis is for that decision and explain to me how they are the same?

MR. COLLINS: The CO2 systems, there are two different fire fighting modes of suppression. Water puts out a fire by heat removal and CO2 puts out a fire by basically eliminating the oxygen.

By maintaining a 50 percent concentration of CO2, which has a higher degree of penetration ability than the water, we feel that in a cable tray it will seep in and actually be pulled in by the fire has it consumes the oxygen around it and by itself will pull the CO2 into the fire removing the oxygen and putting the fire out.

Now Mr. Benaroya has talked about the heat and

oven effects. We feel with the early warning smoke detectors that the heat generation will not be that large to have a smoldering heated area that if we eliminated all the CO2 it might reflash.

Also with the IEEE 383 cable you have to have a relatively good size exposure fire or heat source to reignite this cable. The cable is designed to be self-extinguishing.

The trouble if we used water, first of all, it would greatly ---

MR. THOMPSON. I just want to get that understanding. If a fire starts of "X" magnitude, and I will let you tell me what "X" is, it should be big enough to trigger the gaseous system and then it will dump the 9 tons in or 9-plus tons in and it will put a fire out in how many minutes? You tell me what the fire is and than I am going to ask you to do the same thing with the water. The fire will be bigger with the water before the system actuates, and I am just trying to understand the two types.

MR. COLLINS: To give you a set time is impossible because you have got what you call an incipient growing fire and it depends on how fast ---

MR. THOMPSON: Well, give me whatever your calculations of how they would basically design the system.

MR. COLLINS: Well, basically we looked at using

the 72E systems and we located our detectors according to 72E.

MR. THOMPSON: I have to say I don't know the 72E system. So if you will tell me how big a fire does the 72E system ---

MR. COLLINS: At the time that particular design code did not have a design fire size. At the present time it does, but we have not gone back as of yet to reanalyze for that particular condition because the fire sizes for the new updated code is for a smooth flat ceiling which we do not have. As a matter of fact, I think there are very few power plants that have what we consider a smooth flat ceiling.

MR. THOMPSON: Right.

MR. COLLINS: We have designed based on air turnover rates and from manufacturers, Combustion Loading and some others to the best ability of the industry to provide the most adequate coverage we could get with our smoke detector systems. This will pick it up usually in the early stages of a fire usually when it is smoldering.

MR. THOMPSON: Okay. Well, maybe you can explain that then. I mean give me some feel for when you smoldering, how many cables have to smoldering then before you get enough.

MR. COLLINS: Just one or two.

MR. THOMPSON: And your basis for that is you have done some testing, cable testing or other people have done cable testing of this 383. So you have got test results which say 383 cable smolders in the following way and produces "X" amount of smoke?

MR. COLLINS: No, we have not, and I don't think anybody in the industry has done this kind of analysis.

MR. THOMPSON: Well, you made a big deal about the 383 cable and its smolderability. I am just trying to understand.

MR. COLLINS: Let me see if I can explain this. Usually in a smaller fire I do not generate a large amount of heat. I generate a large amount of smoke. That is just because of the way the fire is designed. I don't get complete combustion and I generate a large amount of smoke. My smoke detectors will pick up on smoke and I have a very low heat release rate in the order of, off the top of my head, I think it is somewhere about 250 BQ's for a second or a minute. I am not too sure. I don't have the code with me or I could look it up. It is a very small fire.

I would have to go to a flaming fire normally with actually flames coming out of the fire before I would generate enough heat for a heat detector to operate. As a matter of fact, for the type of head you see here, based on studies done at Factory Mutual, I need a flame height of

approximately five feet before these particular ---

MR. THOMPSON: Five feet?

MR. COLLINS: Five feet flame height before there will be enough heat generated to melt these links.

MR. THOMPSON: All right. I am trying to get then how you have come to the conclusion that a combination of the quick smoldering 383 cable and the quick discharge of the CO2 system is the equivalent of the faster putter outer of the fire from the water system with that later initiation system. Can you just tell me how you made that decision?

MR. EILMANN: I think that is an overall concept. We have talked about the tray covers and we talk about sprinkler system ---

MR. THOMPSON: I am just asking how your technical people got to that decision.

MR. EILMANN: And it is a combination of those covers and the water initiating than the CO2 would initiate that the CO2 will penetrate and the water will simply form like a curtain effect trying to get into these trays while the CO2 has already penetrated and put out the fire.

MR. THOMPSON: So what you are saying is that it is your best judgment as fire protection engineers, designers in this area that that system does the same, but that you don't have a technical, you know, no studies or

anything of that nature that you rely on? Is that essentially a correct understanding?

MR. COLLINS: That is correct.

MR. KURTZ: But also because, to fall back on the original case, we believed we were following the guidance of the standard review plan which stated when gaseous systems are used. That was part of the logic in selecting the CO2 system.

MR. EILMANN: And NFPA codes identify also the various fires and so forth, and we have designed to meet these codes, which says if we have met that code that the National Fire Protection Agency is saying that that system will do the job.

MR. BENAROYA: I don't think so.

MR. KNIGHT: Is there a presumption in your thinking, and I seem to detect it, that the fire we are talking about has been internally generated and that it is as a result of say an electrical short in the cable as opposed to an external fire?

MR. HARDING: Not really.

MR. EILMANN: That is our major concern, but we don't feel that there will be those types of fires. Exposure fires are controlled administratively and there is not enough type of exposure material or transient type materials that would generate a large enough fire.

MR. BENAROYA: Doesn't the guideline specifically state that you should look at ---

MR. THOMPSON: Wait, wait.

MR. BENAROYA: Sorry.

MR. THOMPSON: You will have your chance.

MR. BENAROYA: No, I mean h is saying something that is contradictory to the guidelines.

MR. EILMANN: We have looked at all potential fire hazards in the area, all potential combustibles, and in most all cases the worst combustible in the case of the cable spreading room are the cables. It is not an exposure fire and there is no oil in that room. So the worst combustible is the cable. So that is what we have designed the hazard around ---

MR. THOMPSON: Why don't you tell me the worst combustible there is.

MR. EILMANN: --- the worst fire loading and the worst fire hazard potential for that room.

MR. THOMPSON: And that is the cables from an internally generated fire?

MR. EILMANN: Yes, sir.

MR. THOMPSON: Okay. Now can I just walk through the other aspects of the standard review plan, two remote and separate entrances for access by fire brigade personnel.

MR. EILMANN: We have at least that.

MR. THOMPSON: An aisle separation between tray stacks at least three feet wide and eight feet high.

MR. EILMANN: All right. We don't have in all places in this fire area a three-foot wide aisle or an eight-foot high passageway. We do have generally in most all areas we have that, but there are areas where it is less than that. But we still feel that a brigade member with a full pack can enter with a hose and successfully fight a fire, and we train and we have a training program that gets that accomplished and demonstrates it.

MR. THOMPSON: Do you have kind of a schematic that I can see that gives me a feel for generally what areas that create the difficulty?

MR. EILMANN: We have a slide, but it doesn't show the -- well, yes, I can do that.

(Slide.)

MR. THOMPSON: Do you have a copy of that for the reporter?

MR. EILMANN: Yes, we do.

This figure is not in the fire protection report. It was simplified from several figures that are in the report. The report contains maybe a smaller version of this in Figure A-1-A, and this has been in the staff's hands for several months. But this is a simplified version

of the larger version so that we could at least work with it.

The cable spreading room, which is part of the large fire area, sits at an elevation of 725 and has two entrances, stair entrances with hose racks in the entrances.

We have access to this cable spreading room into this area to fight fires in this general area. We have access from here into this area here to right this. Now our access is a little tight at this point. As we enter into the room here we have two areas where we have cable trays running on the floor that you have to go over which might it a little tighter than the eight foot, and we have an area over here in which we have some cable trays about shoulder height which makes you go under.

MR. THOMPSON: The shoulder height you are saying?

MR. EILMANN: Yes, it is shoulder or breast height depending upon I guess who is standing here. But it requires a person to get down low enough to crawl through to get underneath that tray, which is roughly about this area, is it not, Jack, to access into this area to fight a fire that may be existing in this area.

MR. THOMPSON: Now when we looked at that, did you consider a deviation from the standard review plan and

submit ---

MR. EILMANN: We have identified in the fire protection report that we do have aisles that are not adequate I believe in Appendix 6 or something.

MR. THOMPSON: And then you describe why what you had was adequate? I mean I am just trying to understand. We talked about earlier the reason you didn't do the water suppression because you thought a gas suppression system was approved in here where the standard review plan really talks about the three-foot wide and eight-foot high aisle separation.

MR. EILMANN: I believe what we said in there is that we felt that we didn't meet the actual numbers, but we felt we had an equivalent amount enough to fight the fires, and to demonstrate that we can fight a fire we have still met the same intent of this guideline.

MR. HARDING: We have submitted that within our FDER. We have that listed as a difference to the SRP.

MR. THOMPSON: And you have evaluated that difference?

MR. HARDING: We provide a justification, yes.

MR. THOMPSON: And the justification was that you have run 12,000 fire brigade members through that and they all have no problem fighting it, or what was your justification?

MR. HARDING: Basically it is stating that the cable spreading room is accessible to the fire brigade from three remote and separate entrances and sufficient aisle separation between the cable tray stacks is provided for adequate accessibility for the fire fighting. The stations are located at each end of the cable spreading room and at the cable tunnel interface.

We are capable of providing a hose stream coverage to the entire room and thus enhancing manual fire fighting capability.

MR. THOMPSON: Would you say that one more time, the last thing.

MR. HARDING: The hose stations are located at each end of the cable spreading room and at the cable tunnel interface and are capable of providing the hose stream coverage for the entire room and thereby enhancing the fire fighting capability.

MR. THOMPSON: Okay.

MR. EILMANN: I guess what we are saying is that we have certain conditions due to the layout of our cable spreading room that limits the access, but we have I think compensated for it by our accessibility and fire fighting capabilities.

MR. THOMPSON: Okay. I certainly can't tell from this schematic where the four-foot high barrier ---

MR. EILMANN: You really can't tell that from drawings because we don't have section views down the aisles that shows you the walkways. That is not the typical drawing that is designed for electrical cable trays.

MR. THOMPSON: All right.

The other area that he was talking about accessibility for the cable tunnel area, we have a hose here and we have an entrance up here, which is a ladder form that gets into this area, the fire area this way.

MR. BENAROYA: Is the hose station inside or outside?

MR. EILMANN: This hose station is inside the room.

MR. JOHNSTON: The other two are outside?

MR. EILMANN: The other two are located in the stairwell outside the fire area.

Let me throw up the other drawing.

MR. THOMPSON: I think we had some concern with the vertical cable trays. Have you covered where those are located?

MR. EILMANN: We can do that on this slide if you want to do that. I just want to also show you this so you can get a sense of the layout of this fire area.

MR. THOMPSON: Okay.

(Slide.)

This is the control room at basically ground level. Not shown in here should be another wall. This is an access room between the two units. Then the Unit 2 buildings start about here and covers this portion of the cable tunnel and over.

The cable spreading room sits right below the control room and is separated by a three-hour barriers, and it is part of the fire area which consists of this cable spreading room, the cable tunnel area and the instrumentation relay room which contains the switch gear.

MR. THOMPSON: Is that kind of to scale such that the cable tunnel area looks like two and a half times the length of the ---

MR. EILMANN: Yes, pretty much so. The cable tunnel has got about a 25 or 30-foot ceiling. Now the vertical runs, since you brought it up, there are two areas where we have vertical runs. The worst of the areas is down here on the cable tunnel where the lines come down here and they turn up and they go outside of this fire area. They actually go into the auxiliary building. We will have three-hour fire stops in those penetrations, but there is a vertical climb here of 20 foot, which is what we have measured.

The other area ---

MR. THOMPSON: Would you consider that -- when

you said the most difficult ---

MR. EILMANN: That is our worst case.

MR. THOMPSON: So that would be your heaviest fire loading? I just want to understand when you say worst case. It is worst case from accessibility?

MR. EILMANN: Well, no. The presumption is that a fire in a vertical tray has more of a chance of propagating faster because the source is above it. So we are saying that the fire at the bottom of this tray would have a potential of spreading and growing faster than a fire in a horizontal tray. So in that case this could be the worst fire condition if a fire started over.here and spread out.

MR. THOMPSON: And I guess that is the furtherest, or I can't tell from this one where your hose is. Maybe you could show me where that is on the other slide.

MR. EILMANN: Yes, sir.

(Slide.)

This is located at this point here at the end of where we have provided some type of separation. We have separated the trains in although at the end they somewhat joint back together.

It is located at this point here where we have access from this stairwell to this hose and access from this way with an internal hose to fight this fire from two

directions. There is a rack right here and one here.

MR. THOMPSON: Okay.

MR. JOHNSTON: Those in both cases are inside the room and not in the stairwell outside the room?

MR. EILMANN: That is correct.

MR. KNIGHT: So your earlier remark that the fire brigade enters with a hose. So the concept that they enter with the hose at the ---

MR. EILMANN: We have rack at a level above this which the brigade will use to enter this room, and as they enter that room if the fire is on that rack and it burns up that hose, then we will bring in an additional hose and assemble the hose and fight the fire from there in that direction. But we do have a hose at the next level. I did not show it here because at this elevation there is not a rack in this hall. It is at the second elevation up, and that hose will be used to enter that room with a fog spray type of device.

MR. KNIGHT: Just while we are at it, that is an internal barrier that I am seeing there?

MR. EILMANN: Ceiling to floor, yes.

MR. KNIGHT: A ceiling to floor three-hour barrier.

MR. EILMANN: Yes, sir.

Now the other vertical run ---

MR. KNIGHT: Let me ask one thing. Exactly what is that barrier separating?

MR. EILMANN: It is separating our two redundant safety trains.

The other vertical run is located in this area of the fire zone. It starts down at the switchgear room level and it runs up this fire wall into the cable spreading room and turns out in the cable spreading room and is spread to its appropriate area to go to the control.

There is no seal in this area because this is one fire zone. We feel that this one is a 12 or 15-foot vertical run, but because it is in the same fire area, it will be the same fire suppression in putting it out, contradictory to this one which has to go into which has the potential to go into another fire zone. This is more of a concern to us than this one is because it is the same fire zone, the same suppression and same effort.

MR. THOMPSON: So then as you look at it your major concern, or most difficult one then is the vertical cable runs that in this case would be the right-hand ---

MR. EILMANN: That would be my opinion, yes.

MR. THOMPSON: Well, I am asking for your opinion.

MR. EILMANN: I mean that has the potential for the largest hazard at that point.

MR. FERGUSON: Just as a point of clarification you keep mentioning switch gear although the room is instrumentation and relay. Would you clarify what is really in there. Is it all instrumentation, relays and 4160 switchgear?

MR. EILMANN: This is out of the fire protection report. It is this room here, and this is all switchgear equipment down in here.

MR. FERGUSON: It is the power for the switchgear?

MR. COLLINS: No, it is not power. The only power switchgear in that particular area, if you look up to the right-hand side there is a small, little enclosure. That is the only power switchgear in the area. The rest of it is basically instrumentation and process rapid relays.

MR. FERGUSON: Okay. What is the power to switchgear ---

MR. COLLINS: It is an MCC room. I am not actually sure, but I believe just for ventilation of equipment up in the control room. It is not high power. It is 480 voltage.

MR. FERGUSON: Okay. There there is some 480 voltage and ---

MR. COLLINS: And that is about all there is there. It is not a big concentration.

MR. FERGUSON: I had a follow-up question there, if I may. You are providing an alternate shutdown system. Is that alternate shutdown completely independent of this whole area, the instrumentation and relay room and this 480 volt and MCC room, it is independent of all three of those areas?

MR. COLLINS: Yes.

MR. FERGUSON: Okay. Thank you.

MR. THOMPSON: Now since we are talking about the alternate shutdown capability, do you have that submittal to the NRC yet?

MR. EILMANN: We have submitted in various sections of our FSAR and FTR information relating to alternate shutdown and safe shutdown capability. We still have open with the staff some concerns relating to the spurious signal actuation which we are presently in the process of answering. We are doing an analysis to try to determine if there are things that we have not counted for that we have to take care of. But we have submitted our safe shutdown approach.

MR. THOMPSON: Okay. So the staff has a complete description of your alternate shutdown capability.

MR. EILMANN: Yes.

MR. THOMPSON: Good.

I think I want to walk through the next two or

three items.

One, hose stations and portable extinguishers installed immediately outside the room. I think you identified those. Are there any exceptions? I don't remember any.

MR. EILMANN: We have some inside the room, but we do have outside the room to access to all areas.

MR. THOMPSON: Smoke detectors you have.

MR. EILMANN: Two systems.

MR. THOMPSON: Continuous line type heat detectors for cable trays inside the cable spreading room.

MR. EILMANN: No, we don't, and we have submitted an exception from that in our FPR.

MR. THOMPSON: Okay.

MR. EILMANN: I understand that that is not something typically the staff has requested of utilities.

MR. THOMPSON: A separate cable spreading room, and we talked about the remote shutdown.

Ventilation system to each cable spreading room designed to isolate the area upon actuation of any gas extinguishing system in the area.

MR. EILMANN: Our gaseous system will be set up so that it will be isolated and the pressure relief will be to an outside area and not to another room.

MR. THOMPSON: And separate manual activated

smoke venting that is operable form outside the room.

MR. EILMANN: I am sorry. Where are you at?

MR. THOMPSON: It is the last sentence, separate manual actuation smoke venting is operable from outside the room should be provided for the cable spreading room.

MR. EILMANN: We have that. Right now that is in the form of portable ventilation fans.

MR. THOMPSON: Can you explain that a little bit. You have portable fans that you have to go into the room and you open the doors?

MR. EILMANN: Once the fire is out, we have identified that we have suppressed the fire, the brigade will bring in portable ventilation fans and clear the room of smoke and CO2 by ventilating it to the outside air.

(At this point in the proceedings Mr. Vollmer entered the room.)

MR. THOMPSON: Joining me here is Dick Vollmer, who is the Deputy Director for Inspection and Enforcement, and I think also had a major role recently in a fire protection steering committee activity.

I guess I would like now to hear from the staff their major concerns with the proposal that Beaver Valley has.

MR. EILMANN: I wanted to clarify the last statement I made. We can use the existing ventilation

system. We can turn that back on and empty the air, but that is not most likely our preferred mode. Rather than run it through our filters, we would rather try to dump it to the outside.

MR. THOMPSON: Okay.

Jim or Bill or Vic or whoever would like to give a ---

MR. JOHNSTON: I would like to ask a couple of questions for clarification on which I have might have perceived something different than what I think they said.

MR. THOMPSON: All right. Please clarify your own understanding of the situation.

MR. JOHNSTON: Let me ask first, in the discussion of the detection and rapid putting out of the fire, there was a discussion of smoke and smoldering as the beginning of the fire and therefore the smoke detectors would operate.

Since you are operating on the assumption that the fire is not going to initiate in the cable trays due to an electrical short pretty much because of the 383 qualified cable, but it is more likely to be initiated by an external fire, an external fire will not start by smoldering and gradually building up. It will start out as some kind of a relatively large flame due to a liquid or something of that sort. So there is a five-foot potential

flame rather than a cigarette burning in a corner somewhere that would be the initiating thing. I don't believe that you covered that aspect of it.

The second point being I believe you mentioned probably also having delay on the initiation of your CO2 system. Given that the initiation may be from an external source, the things that open up, the fusible link or whatever it is, what is the real difference in the time that the water system might detect and begin to act against the fire and the CO2 system when you allow that the CO2 system has to have a delay in it of a minute or so at least to let the people that might be in the area get out of there so they don't get killed. I would like some further explanation of that aspect.

Secondly, there was a discussion of some difficulties in the access requirement. When you read the information there, I didn't really hear, and I guess I would like you to read again where it is that you said that you had the difficulty in accessing certain portions of the cable spreading room and that you therefore were providing some kind of an explicit statement as to why it was okay. I just heard a general statement that never admitted that you had access difficulties. So I would like you to read that over again, since I thought that is what you were supposed to be reading to us.

Then, thirdly, the access to the portion of the cable room there where the vertical trays are located. You did mention that that one of your sources of difficulty. Part of the way of dealing with that would be to talk about the ease of access to that area and the ability to bring the fire hose into that area because you mentioned that, for example, that certainly the closest places do not have a hose station outside the door. I think in connection with the requirement here hose stations immediately adjacent to the door outside, and I thought that you indicated that you did not always have hose stations outside immediately adjacent to the door. If that is the case, there should be some discussion of a deviation to that area.

But more importantly, how does that difficulty affect the ability to maybe get in and deal aggressively with the fire that would be located where the vertical trays are?

Those are some questions that I would like to see further discussion of.

MR. THOMPSON: What I would like for them to do is clarify that issue, but such that you can describe what safety concerns you have with their approach.

MR. BENAROYA: May I add one more concern here?

MR. JOHNSTON: All right. Let Vic add another concern and then we can discuss this.

MR. BENAROYA: I heard you say that you do not believe in exposure fires occurring, and I thought that that was a specific requirement and that experience has shown that this is a concern.

MR. THOMPSON: Let me focus on this.

One, you have a concern about exposure fires. At least from the discussion you consider an exposure fire of maybe a five-gallon can of what, I don't know what we have for exposure fires, but I just want to understand what your safety concern is. So it is an exposure fire and it also appears to be access and capability to manually address the vertical cable runs in both locations.

MR. JOHNSTON: Well, let's just say in both locations.

MR. THOMPSON: And the safety significance of those are that, one, experience has shown that exposure fires are ones of major concern in our experience and, secondly, is that maybe you can explain the vertical cable -- the question is accessibility to manually fight ---

MR. JOHNSTON: It is the problem of accessibility to manually fight the fire in the area of the vertical cable trays, particularly at the far end of their drawing. And the other thing was that since the hose station is located in the room that would presumably be used to fight that one instead of being outside, to what extent that is a

further hinderance on the aggressive fighting of that fire.

MR. THOMPSON: But again that is a manual capability to fight that fire.

MR. JOHNSTON: It is a manual capability, right.

MR. THOMPSON: I think I have got it down to two issues, if I am not too far away.

MR. KNIGHT: If I may, I think there was one other. In Bill's earlier discussion he was ---

MR. JOHNSTON: The restricted access.

MR. KNIGHT: Well, I was thinking of the timing.

MR. JOHNSTON: Oh, the timing, yes. The difference between the timing ---

MR. KNIGHT: Just how real is the distinction in timing given the presumption of let's call it an external fire.

MR. CAREY: I would like to make a comment on that. In my opinion, an exposure fire in the cable spreading room or a cable tunnel, that the chances of that is so remote as to be darn near zero, and that is for the reason that, No. 1, you don't have any large rotating equipment or any other type of equipment that would require people to bring in solvents and other types of combustible materials into these particular areas. They are not passageway areas and we don't use these areas as a means to get from one place to another.

The only time we have individuals in those areas after a plant is in operation certainly is to pull another cable in. Otherwise, there is really nobody ever in those areas. They are not work areas.

MR. THOMPSON: Are those areas controlled and have they got the key locks and the ---

MR. CAREY: Yes, they are.

MR. THOMPSON: --- and the people who are able to get to those are those who are just Beaver Valley employees or operators and maintenance folks ---

MR. CAREY: That is correct. There are really no maintenance people that even have to enter those areas during the normal course of operation. Now of course you do get operators that go into the relay room from time to time. Certainly if you have a breaker, and most of those relays are associated with a turbine generator and other switch gear and you do have operators that make an entry to look at the relays and see whether there are any targets up and reset any relays on account of operating. But this is not an area that is a normal passageway for anybody other than the normal operators, and we do get some instrument people that enter those areas from time to time for calibration.

MR. THOMPSON: If exposure fires or exposures were a valid concern, and I am just saying hypothetically,

what would your fire protection plan be?

MR. CAREY: We believe that the CO2 with the 20 minutes soak time is adequate to take care of any cable fire. The exposure fires, you know, these places, there is nothing in there that is combustible really. We certainly rigidly control the solvents and types of materials with fire protection all over the plant.

MR. THOMPSON: I understand.

MR. CAREY: In our opinion, the CO2 is adequate to put out a small exposure fire from some small can of solvent and in all likelihood it could do that prior to having that fire spread to the cables in the room.

We feel that certainly with the 20 minutes soak time and the ability to provide a second shot after inspection that the system that we have designed is certainly adequate for the types of fires that would occur in that area.

MR. THOMPSON: All right. So your design wouldn't be any different if you had exposure fires, as I understood whatever you were saying ---

MR. CAREY: I would say that I certainly would not, particularly in this area, design a system whose chief function was to fight exposure fires because of the fact that exposure fires are really not the types of fires that occur in these types of areas. We just don't really heavy

combustibles ---

MR. THOMPSON: I understand that. I am not saying that they were. I am just asking about the system. Would the system be the same from a fire protection design aspect?

MR. CAREY: We certainly have utilized CO2 to protect for exposure fires on turbine generator bearings and these types of locations and it has certainly done a very adequate job and it certainly is acceptable to the insurers and they certainly prefer that type of protection.

MR. EILMANN: Let me add to Mr. Carey's statement, and that is the exposure fire, CO2 is going to work on a cable fire or an exposure fire or any kind of fire. The soak time that is built into CO2 is for a cable fire. So it keeps it out long enough so that it won't be flashed. You don't need the soak time on an exposure fire. Once you smother that fire on a rag or something, the chances of it reigniting are very small.

CO2 will equally put out an exposure fire as well as it is going to put out an electrical fire. It is designed to do all.

MR. THOMPSON: From your fire protection and technical background, in your professional judgment, you would make no difference in designing the system if it was an exposure fire as well as the cable fire?

MR. CAREY: I certainly believe that if it is an exposure fire with a solvent and what-have-you that once you get that out, the chance of reignition is very low. But I think that if it is some other type of combustible material, you certainly do need the soak time to allow the time for the cooling, or otherwise there is the potential for reignition.

MR. EILMANN: Cable fires are the worst fires. If we were going to design for an exposure fire, we may redesign it and we may make the system less, and it may be less than a 20 or 30-minute soak time because we don't need that entire soak time.

MR. JOHNSTON: Excuse me. Maybe they are not understanding my question, because the reason I brought up the external fire is that the external fire is the ignition source for the cable fire. That is the point I wanted to make. That is where you get your combustible load. It is the initiating source and that is the point I was trying to make.

The point that I thought they wanted to make, and that I also want to make though is that the time that you get at it is indeed important, but I am wondering if there is really any difference between the two types of systems.

You will not initiate your CO2 system

instantaneously when you get your electrical signal because you don't want to kill people that might be in the room. Therefore, there is a delay time that you put in there of some certain amount of time.

I was concerned with the statement you made that you would get a long delay you in starting a water suppression system and I would also like to get on the record that you will also have a long delay in getting the CO2 system actuated, too, and for good and sufficient reasons.

MR. EILMANN: I have two points, and maybe we should address these points now rather than waiting until later on.

First of all, before we get off of the exposure fire, the exposure fire may initiate the fire. Once we put out the exposure, we have eliminated the source of the fire. The 383 cable should not support its fire. That is what has been tested and reports have said it will not sustain a flame. So once we get rid of the exposure fire, we get rid of the source of the fire.

MR. THOMPSON: Even if it is energized is what you are telling me, right, the cable, even if it is started?

MR. JOHNSTON: Well, you get a big enough fire going and the cable will burn. If it is a little bitty one,

they are perfectly correct. The point is the 383 will burn like any other cable once you get it going.

MR. EILMANN: And that is where the soak as applied will also put out then the fire in the electrical cable.

Now I want to get down to the issues you made, and I think we will talk about the delay thing first and then we will talk about the accessibility concern that you had.

First of all, I guess I want to say one thing and I don't know if Frank wants to add to the time delay. We have the capability of varying our initiation of CO2 from zero seconds to 60 seconds, and usually a time delay is applied, as you have indicated, Dr. Johnston, for the safety of the personnel inside.

We have alarms that go off on early warning when the first detector goes off and we have alarms that go off when a CO2 system goes, and obviously we want to get personnel out of that room to prevent any other safety type hazards to the personnel. e have chosen 30 seconds because we feel that is the amount of time it will take if someone is in there to get out.

As far as the response, by the time the actuation goes or the CO2 system is triggered by the smoke detector and the 30 seconds, I am not -- do you have an

exact time? We did a study of a fire.

MR. COLLINS: The exact times are pretty tough to do. We did a quick study based on some work that Ron Alpert at Factory Mutual did to look at the heat generated at the ceiling due to an exposure fire. We took what we considered would be probably the most probable exposure fire which was, and remember now I am trying to do this off the top of my head, I think it was like two gallons of paint, which we figured that is about normal because they have administrative controls that nobody is going to bring in a five-gallon can. And we said this would be our most likely fire.

The fire to ceiling was less than 600 degrees Fahrenheit. Now it takes time for a fire to develop even to get up to that and the fire will spread out. The further away that you are from that source in a radial distance, you drop drastically the actual temperature.

Now most sprinkler systems are designed 165 or higher for this type of application. There is also a time delay built into a sprinkler because you have to heat up the solder for it to melt. You have to have that much heat.

So to give the actual times you would have to do a test, but I would say that at best the sprinkler system would go off at the same time as the CO2. From what I have seen in tests done by Factory Mutual as to how fast smoke

develops versus how fast the actual heat develops, I would say that the CO2 even in a reasonable size exposure fire would probably go off before the sprinkler system did.

MR. EILMANN: Even with the 30 seconds?

MR. COLLINS: Even with the delay.

MR. JOHNSTON: One point of clarification that I don't think has come out yet. You can design a sprinkler system to go off in a millisecond if you choose to design it as such. You can have an open head deluge system, which some utilities have, in cable spreading rooms, and make it as far as you want as far as response time. So it is not a good comparison of the CO2 and the sprinkler system. It all depends on how you choose to design it.

Another clarifying point is with portable extinguishers, and I am talking about the exposure fire, I don't believe you can get an "A" rated portable extinguisher with CO2. I don't think you can obtain an "A" rating.

The point that I am trying to basically make is that for "A" type fires, which is paper or something along those lines, if you have that type of fire CO2 is not as effective as water.

Now when you say you have taken into consideration all types of exposure fires and the CO2 will be as effective as water, that is not a correct statement.

MR. EILMANN: Does that imply that CO2 will not put that fire out?

MR. JOHNSTON: I am not saying that. I am just making a point that CO2 is not as effective as water.

MR. THOMPSON: All right. Does anybody else have anything on this exposure aspect again?

(No response.)

All right. Let's move on to the next issue.

MR. EILMANN: The other item I believe you had dealt with accessibility.

Jack, do you want to go over that again?

MR. HARDING: You wanted a clarification of what we stated in here?

MR. JOHNSTON: Yes. I would like you to read it again I guess because I didn't think it really said anything at all about you had any difficulties with accessibility as far as that upper cable spreading room. It is more the words you read to us rather than the picture slides.

(Slide.)

MR. HARDING: To read the words again, they are in Appendix A-6 of the fire protection report. It states that "A three foot by eight-foot high aisle separation between tray stacks is not provided in the cable spreading area."

MR. JOHNSTON: I didn't hear that the first time.

MR. HARDING: I read to you the justification. Here we are coming out and stating that we do not have three foot by eight foot. The justification is that the Beaver 2 cable spreading room is accessible to fire brigades from three remote and separate entrances, which are the two stairwells and in that area we have a vertical ladder to up.

"Sufficient aisle separation between cable tray stacks is provided for adequate accessibility for fire fighting. Those stations are located at each end of the cable spreading room and at the cable tunnel interface providing hose stream coverage to the entire room and thereby enhancing the manual fire fighting capability."

Then, as was pointed out earlier, basically our aisleway comes down into this way. So therefore we really can't get up here. What happens is we can come down this way and we can come down this way and we can get at these areas. We feel that we can reach any area in this cable spreading room with a fire hose with a man fully dressed. That is what we were trying to state with our justification.

MR. EILMANN: Jack, point out where the vertical runs are at in that room and indicate the accessibility to that.

MR. HARDING: The vertical runs are basically down in this area. They have come up from the floor below, come up here and are going into the trays this way. We feel that a man can come right through here.

This is one of our tight spots right in this area.

MR. THOMPSON: When you say a tight spot, give me again a feel for what a tight spot is.

MR. HARDING: This specific area being tight is where we have a tray that is on the floor and you have to go over.

MR. THOMPSON: When you say on the floor, having not been there ---

MR. EILMANN: It is about a foot or foot and a half.

MR. THOMPSON: It is a foot and a half off the floor ---

MR. EILMANN: Yes.

MR. THOMPSON: --- that you have to step on a ramp up over it?

MR. EILMANN: We will have a platform over it so you can walk over it. The point I want to add to Jack's is that the vertical trays are located prior to the point where you have to crawl under. So the obstacle getting to the vertical problem in this room is just going over that

one cable tray, but you do not have to go under the under the other hazard in that access route which is underneath the tray to fight a vertical fire. We only have one concern in that access route.

MR. THOMPSON: To clarify the issue, when you go on this foot and a half tray, what type of clearance do you have for the people in there? Is it still eight feet?

MR. HARDING: I guess it would be six foot or so. I do not think we have the full eight feet when you go over this.

MR. THOMPSON: And what is a normal, healthy Duquesne fire fighter fully equipped with this helmet and Scott air pack, what do you consider that, six/two ---

(Laughter.)

I do have a human factors background very slightly.

(Laughter.).

MR. EILMANN: We have some operators that are five foot two.

(Laughter.)

MR. CAREY: I would say probably six/two with a hard hat on.

MR. HARDING: I think Frank would like to make a clarification.

MR. COLLINS: In this particular area we are open

to the ceiling, and I believe in even stepping over I think we are pretty close to the eight feet because that ceiling is 10 feet high.

MR. THOMPSON: Okay.

MR. BENAROYA: I am sorry. I didn't understand that. You have that clearance everywhere?

MR. COLLINS: No, no, no. I am saying when we are stepping over ---

MR. BENAROYA: Oh, that is where you are stepping over.

MR. COLLINS: --- we have the clearance to the ceiling.

MR. BENAROYA: But there are other areas where you don't have it.

MR. CAREY: Yes.

MR. EILMANN: The other concern that you had was the other vertical run. You may want to point that out in the access routes and the widths and stuff that we have for that one.

MR. HARDING: Basically I would have to think we do have three foot and eight foot to come in here. We have an aisle all the way around this area here. The other vertical runs would be down in here. We feel that we have no problems meeting the three foot and eight foot all the way around this area here.

MR. THOMPSON: I just want to say when you say "you feel," I mean, you know there was not enough that even you had to go out and measure.

MR. HARDING: Me and the staff, excuse me.

MR. JOHNSTON: We visited the plant and of course did this same walkdown that we are talking about. Although we certainly didn't take measures with us either, I am not so sure that you have got eight feet around ---

MR. HARDING: Around this area?

MR. JOHNSTON: ---around through in that area. To me I remember it being a bit crowded in spots. Now maybe my memory isn't right, but are you sure that you have got eight feet and no cables crossing over the top of that thing?

MR. HARDING: From here all the way around I can guarantee that we have no problem in this area. Our tight spots are in the cable spreading room itself.

MR. JOHNSTON: Well, I know they are tight.

MR. COLLINS: We have also a concern that now this aisle is probably somewhat restricted in the three-foot width by the structural supports that come out, and every once in a while you have about a two foot or two and a half foot that you have to go around down this aisle to penetrate this way. But we do have access this way into this area from the level below.

MR. JOHNSTON: I thought you said you can't get there from there. You have got to use the ladder to get there.

MR. EILMANN: To get to this ladder we can go this way and we come in the level below and access that ladder and come up.

MR. HARDING: There is a room underneath here.

MR. JOHNSTON: Right.

MR. EILMANN: We can come into this room up a set of stairs that are here and access that ladder from this way as well as down that tunnel. This way there is plenty of access and no restrictions. That way, widthwise it is somewhat narrow.

MR. THOMPSON: With that clarification, Biil, do you want to reidentify your major concerns or I guess significance as you see them?

MR. JOHNSTON: Take off the one on top I guess and leave the other one.

(Slide.)

I think the concern is still the access aspect of it in that if you had a fire in the cable spreading room area and wanted to get to it, you might have trouble with your air packs and stuff to come in your stairway and go through that thing with your two-foot things that you mentioned to get to it to climb up the ladder to get into

that corner of the cable spreading room that you have.

I know you want to suggest that you can use the other stairwell and go through the instrument room and up the vertical ladder, but I suggest that since those are pretty much the same area that you are going to be essentially dealing with the fire and its effects. You sort of have to pass through the fire and effects in order to get to that ladder if you have to come in from that bottom stairwell. The preferred way would be to come in the other way, and it would be awkward with junk on your back I think.

I guess, Hugh, that is the point. I guess I am still more concerned though with really the access down there to that end and the fact that you don't have a hose station outside the door. I think I still feel that is the real problem and I think you sort of said the same thing.

MR. THOMPSON: Let me understand. Our major concern would be the capability of the current in depth design fire protection system to put out a fire in the cable tunnel from my far right end in a combination of either the CO2 suppression system or its backup manual fire fighting with water capabilities. Is that the major concern? You are concerned with that particular area?

MR. JOHNSTON: Well, yes, we are, and I think

that is one reason why we suggested that we would like to see a fixed suppression system in that area. The other area has got some importance to it, too, the cable spreading room area. There are some problems of access there.

MR. WAMBACH: Especially, Bill, I guess you mean up in that upper right-hand corner?

MR. JOHNSTON: Yes, I think that is one of your difficult spots. I don't know what kind of cables explicitly or what systems, but the point is that I think that is an area that you will have difficulty to get into and I think you can help yourself by some water up in there. We are not suggesting that you take out the CO2 system or that you substitute a water system as your prime defense either.

MR. EILMANN: I guess that we feel that we do have access to that and we do do that and it is part of our training exercise to train the fire brigade to know how to fight a fire in every area and how to access it and how to get hoses and they do go through carrying hoses and packs to assure that they can do that and they are aware of how to do that. We feel that that area is no less penetrable than the other areas we have to get to in the cable spreading room.

MR. THOMPSON: Tell me which areas you are talking about.

MR. EILMANN: I am talking about in the cable spreading room.

MR. THOMPSON: Which is CB-2?

MR. EILMANN: Yes.

MR. THOMPSON: Okay. Now have you all considered any possibilities of some other activities to suppress fires at this other vertical run in the cable tunnel in the CT-1 on the right-hand end?

MR. EILMANN: Well, first of all, we feel that the CO2 will put the fire out.

MR. THOMPSON: Okay. I am not sure that I asked that question. Have you considered anything else?

MR. EILMANN: You said have we sought anything else. We don't see that we need to because we feel the CO2, both applications, if necessary will put it out, and the fact that we have more than adequate access that we can fire fight that.

Now the concern is that there is not a hose immediately outside that door. That is correct. It is up a level or two. I believe it is up two levels about 20 feet away where you have to run down a 50-foot hose to enter that room.

MR. CAREY: If that were the only problem I wouldn't see any problem with putting a hose station outside that door.

MR. JOHNSTON: Well, you should ask for a deviation anyway. I don't believe you have.

MR. EILMANN: We have not, sir. That is correct.

MR. THOMPSON: Jim, do you have any other particular comments that you would like to make sure I am aware of or any member of your staff?

MR. BENAROYA: Well, I don't know if it is appropriate now to start looking at some of the aspects of the CO2 system itself and why it has some drawbacks in comparison to water.

MR. THOMPSON: Well, any information you would like for me to be aware of, I am more than happy to be aware of. So if you would like to identify something, maybe now is the appropriate time.

MR. BENAROYA: We have sent to Duquesne Light our concerns about the CO2 systems which are considerable in length. But the key one is reliability, and of course the main thing that I don't think has been settled yet, namely, the ability that you cannot remove heat. Therefore, if heat is still there and you open the area and you introduce air, you have a reignition and also its toxicity.

MR. EILMANN: Well, let me maybe ask a point of clarification here. We have received these questions and we are working to address them, and we feel we will be able to satisfactorily address them . We feel that is a question of

just making our CO2 system satisfactory. Is that the concern of this forum that if a person puts in a water system you would question whether the water system is adequate.

MR. THOMPSON: If the CO2 suppression system is not reliable and adequate, obviously that is a concern of this forum. May I should ask you what is your design reliabiity and do you have some approach that addresses that?

MR. KURTZ: I think what Irv was trying to say is that that would be part of a normal design review meeting that we would conduct with the staff if in fact the CO2 system was the acceptable means to go. We are looking at those, but we haven't evaluated them.

MR. THOMPSON: What is your reliability of the system? Maybe I need to understand. Do you normally shut the system off when anybody is in the cable spreading room?

MR. EILMANN: The only time the system is normally turned off is during construction efforts, and that does not occur during normal plant operation. When the system is turned off our procedures are such that a fire watch is planted and that person does nothing more than watch for fires and he is responsible for deactivation and activation of that system.

MR. THOMPSON: So essentially you have then a

reliability or availability of the system 99 percent of the time in operation.

MR. EILMANN: Yes.

MR. THOMPSON: it is virtually a hundred percent of the time.

MR. EILMANN: We have never had an LER on the Unit 1 system that has reported that system inoperable or unreliable.

MR. THOMPSON: Let me ask you, are there any differences or could you identify the differences between the Unit 1 and the Unit 2 cable spreading rooms?

MR. EILMANN: Well, we have the same systems, the same CO2 systems. I would say the accessibility is about the same in both rooms. Unit 1 has similar problems in accessibility as we have.

MR. THOMPSON: Do you mean with respect to the location of your system? Essentially you have got the same design and same location for the access and same internal jump-over tray and jump-over tray and duck-under runs.

MR. EILMANN: Yes.

MR. KURTZ: Bear in mind that is not a duplicate picture or anything like that.

MR. KNIGHT: I would like to explore that just a bit. If it is not a duplicate, are there some

characteristics you could describe, for instance, the same number of hoses, the same length of hose run?

MR. EILMANN: Well, the hoses are designed for the room. The hose may be 100 feet or it may be 50 feet depending upon how far it has to reach. So that would be specific to each hose rack in each unit.

MR. KNIGHT: But are you telling that say if a fire protection person looks at Unit 1 that you have got a comparable situation?

MR. CAREY: The situations are comparable. They are not identical because they weren't designed at exactly the same time and we have got probably a few more cables through the No. 2 Unit cable spreading room because of the difference.

MR. KNIGHT: The general relationship between the instrumentation and the cable trays and such are the same?

MR. CAREY: They are generally the same, yes.

MR. THOMPSON: Jack, is there any question that you have or any particular item that you want to make sure that I am aware of? Obviously now is the time to put your foot forward in whatever you want to do.

MR. CAREY: We do exercise not only our own fire brigade, but during our last emergency drill we brought in local fire companies and they had no problem at all accessing the cable spreading room and the leads tunnel on

No. Unit and stringing out hoses. So we don't truly believe that there is any real problem with a manual entry into these areas with fire hoses.

MR. THOMPSON: Well, we have summarized a couple of issues. One is that you have initiated or would plan to initiate sufficient -- I mean, you don't expect there to be many exposure fires or any storage of 55 gallon drums or anything like that in the cable spreading room, and that you have confidence that your fire brigade training provides prompt access to those areas which may be in need of a manual backup fire protection support during any event that you would be aware of, both the smoke, the matter of the smoke and whatever fire might be still going on in there.

MR. CAREY: That is correct.

MR. KURTZ: I think it would be interesting, if we are talking reliability, to see the analysis or discuss the analysis of the unreliability of water and the possibility of the inadvertent actuation of water causing disability of safety related components on the system.

MR. THOMPSON: You said you have done a study on that?

MR. KURTZ: No. I think we would be interested in seeing the staff's reliability analysis of that.

MR. THOMPSON: I mean, I am not sure that is the

purpose of what we are here for.

MR. CAREY: That is not what we are here for.

MR. THOMPSON: Bob.

MR. FERGUSON: There is just one issue under reliability that hasn't been put on the table. One of the concerns with CO2 systems is the discharge into the pressurizers. They mentioned that they are designing a vent release to the outside and that sort of thing. But there have been occasions in an LER where the CO2 system discharged. The door was ajar and wasn't latched. It blew open and the CO2 when out. That is one kind of a failure which the CO2 system is subject to that water systems are not, and it is the same sort of thing with doors or the dampers don't work properly and all that sort of thing.

MR. BEATTY: These are security doors.

MR. EILMANN: These are security doors, and if they are opened there is an alarm. And if by chance someone has stuck a piece of wood and they will not close upon that signal, someone will know they are not closing. If there is nothing to obstruct their closure, they are automatic closed doors and they are spring closed.

MR. THOMPSON: Well, let me understand and, Bill, I will get to you in just one second, if appears to me that the access is one of the key areas. As I go through my deliberations it may be that I would want to visit the site

to see the access and the capabilities to manually provide the backup. So I will notify the Project Manager is that is the appropriate thing.

Certainly from what I see right now, that is a key issue, and without having other than the overview and side review, it might be fairly appropriate for me to actually be able to see that. So I think that pending any other, you know, the video camera through here with the fire brigade walking through, I guess I would probably plan to make a visit to the site.

Bill, you had something?

MR. JOHNSTON: Yes. I forgot to ask a question that I should have asked, and that has to do with the fire hose access into that vertical cable tray area. What is the length of the fire hose that you have got coming in from that stairwell two stories up or whatever, or coming in from the stairwell down into CT-2 and going down that long corridor? I believe you put a scale on there, but I think we are talking more than a hundred feet from where you will hook your hose in and allowing for losses and stairwells and so forth. Will you have to add extensions onto your hose to reach that end of thing or can you reach it with your as you have it.

MR. COLLINS: Are you saying from the actual hose stations in or beyond?

MR. JOHNSTON: From outside.

MR. COLLINS: All right. Now you are saying that we can't use that hose station at all?

MR. JOHNSTON: You may find there is no hose there because it got burned or something. So I have to ask that kind of a question. Will you have to hook up other hoses in order to have enough hose if you have got to some in from outside in the corridor?

MR. COLLINS: We would probably have to run a second link of hose on the original hose if we assumed the loss of all the hoses within the space.

MR. JOHNSTON: Well, one of them is located half way down which you could conceivably use, but the other one is right inside the door and I don't know if the chances are as likely with that one, but that happens to be the one where you have got the furthest distance to go to get to the door in the first place.

MR. EILMANN: The fire brigade has additional hoses, and if we would lose that hose an additional member of that brigade would bring in another hose and hook it up to that station and fight fires from that point on.

MR. JOHNSTON: To another part of the plant.

MR. EILMANN: Yes. Well, they have them in their fire fighting brigade room which is right off the control room. So they would bring additional hoses and replace one

if it were burnt up. If the fire is obviously in that area, then we can reach that to that point.

MR. THOMPSON: Do you want to make a summary statement of where your basic safety concern is, Bill?

MR. JOHNSTON: Okay. Our basic safety concern has to be that while we would have every reason to believe that the CO2 system would be designed and presumably would do its thing, we can never be sure. Now the CO2 system, if it doesn't get to a fire quick enough may not be able to handle the deep seated fire and it is often necessary in many other plants that we have discussed, we very much assume that they are going to have to use water even if they have a CO2 system. And our focus very often then has been what is the accessibility since the assumption is very often made that you have got to go in there with water even though the CO2 has discharged and done most of its thing.

So I think our concern has to be those aspects of this particular plant in which the CO2 system does not do its full thing and you have to go in there and do something else. And to the extent that you have a difficulty of getting access to those areas, particular the vertical region, because from a safety point of view there is a larger collection of combustibles and a larger consequence of getting a larger fire going. But that is a point of focus.

The point is you have got to be able to get water in there to do it. We think it would be a better system in the overall sense, reliability, the ability to put the fire out and the minimum of trauma on the rest of the plant and the people involved if there were a fixed water system in there covering portions of that area which we have identified as being particularly difficult, which would be available manually for their use if they ever needed to use it.

MR. THOMPSON: So you believe that the acceptable level for fire protection would include the system as currently designed with at least a backup fixed water suppression system on the vertical cable tray run in the cable tunnel, the CT-1?

MR. JOHNSTON: I don't mean just around the vertical cable. It would have to go down the tunnel a ways from it, but it is certainly that area.

MR. THOMPSON: The portion of the location, is it five or ten feet? How many feet are you talking about?

MR. JOHNSTON: About 40 feet, back to where that hose is that might that might get burned perhaps.

MR. THOMPSON: Okay.

MR. JOHNSTON: But I think they should also consider the problems in the cable spreading room, CT-2 itself, as another candidate to look at, because I think

there is a concentration. We are not anxious to have water dumping down on instrumentation or cabinets any more than anybody else. But I think that you can look at the possibilities of putting some dams in there up above where the verticals are so water wouldn't necessarily run down or look into some aspects of that which might alleviate some of the problem. But we are not intending to take a flat requirement that you put water all through that place. That would not be appropriate.

MR. THOMPSON: Well, I appreciate everyone having come here today. I think we will try to get everyone a copy of the transcript when it is available.

Would you like to make a summary statement?

MR. CAREY: I would just like to make one comment, that certainly with the cable trays, and particularly in the areas where we have cable tray covers top and bottom, there is still a possibility that you can have a deep seated fire that a water suppression system wouldn't reach either, and that under any circumstances that we would still have that problem.

MR. THOMPSON: Let me understand, you are not recommending that they remove the CO2 system at all; is that correct?

MR. JOHNSTON: No.

MR. BENAROYA: We have many plants with CO2 -

systems in addition to water.

MR. THOMPSON: Does anyone else have any comments, particularly those who have managed to sit through this?

MR. BENAROYA: May I make just one comment about what Jack had asked about Beaver Valley 1. It is irrelevant to this. If you want, I can hold it, or if you want, I can say it.

MR. THOMPSON: I only wanted to know if there were physical differences between the two.

MR. EILMANN: I have just one question that maybe you can answer. What is the process? You are going to take this from here and what is expected?

MR. THOMPSON: The process is that normally --let's see, I think I have a general guidance here that the Project Manager -- that I am supposed to make a decision within 60 days following this meeting.

This is the January 28th, 1985 memorandum from Darrell Eisenhut, Director of the Division of Licensing to All DL Staff, and the subject is Plant Specific Backfit Reviews.

Is there anybody who doesn't have a copy? This is only 25 cents.

(Laughter.)

This particular procedure now is at Step 8

because of the decision by the Director of NRR to have the Director of Licensing at the first appeal. So normally this should be resolved within 60 days.

Of course, if the staff and the utility are able to discuss and reach agreement in the meantime during my deliberations, obviously we will be delighted.

On the other hand, I will most likely schedule a site visit to the plant based on the discussions today.

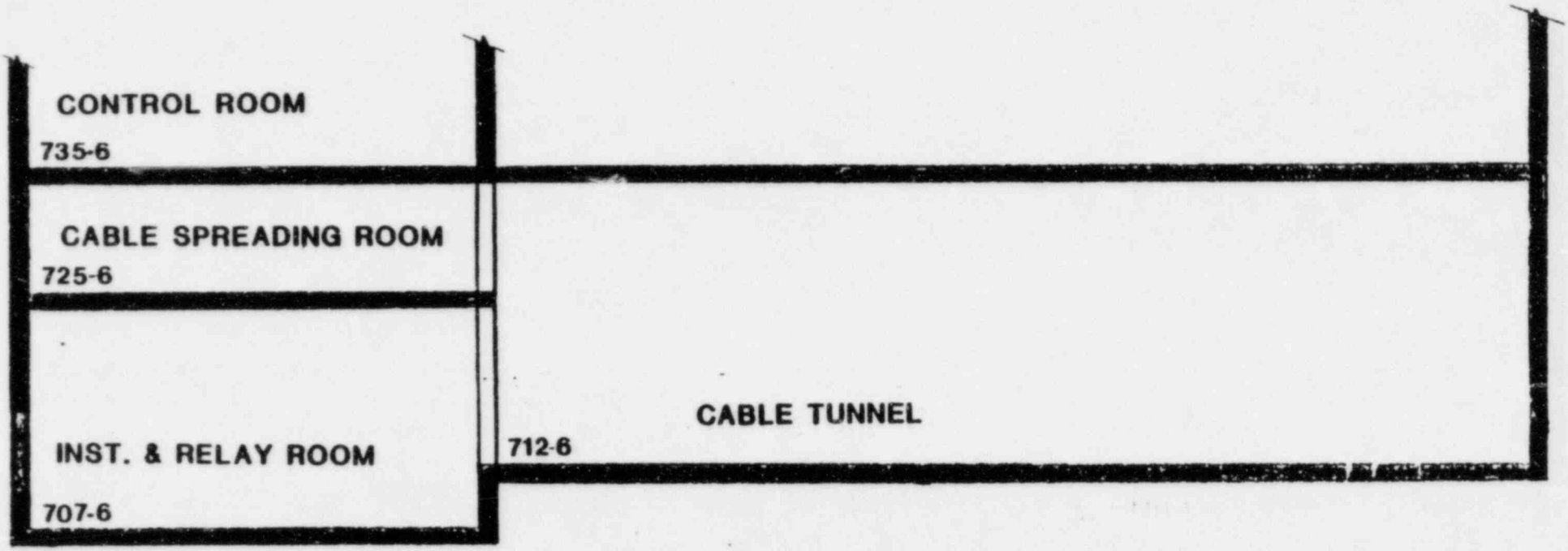
Jack, thank you very much. Gene, Jim, Vic and Bill, thank you all very much.

(Whereupon, at 12:45 p.m., the meeting adjourned.)

- - -

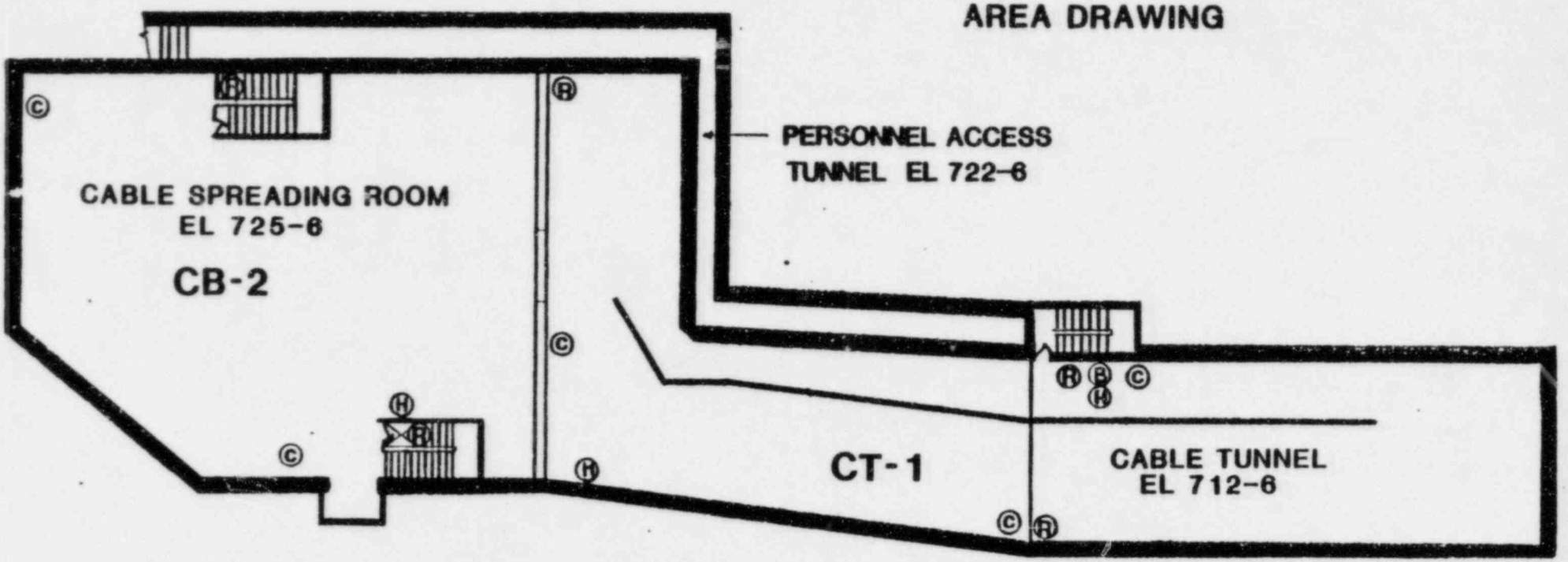
CONTROL BUILDING/CABLE TUNNEL

FLOOR ARRANGEMENT



CABLE SPREADING ROOM/CABLE TUNNEL

AREA DRAWING



Ⓒ PORT FIRE EXTINGUISHER(CO_2-20LBS(PRELIM. LOCATION)

Ⓡ HOSE RACK(APPROX. LOCATION)

Ⓑ FIRE ALARM BELL(APPROX. LOCATION)

Ⓗ FIRE HORN

0 20 40

FEET

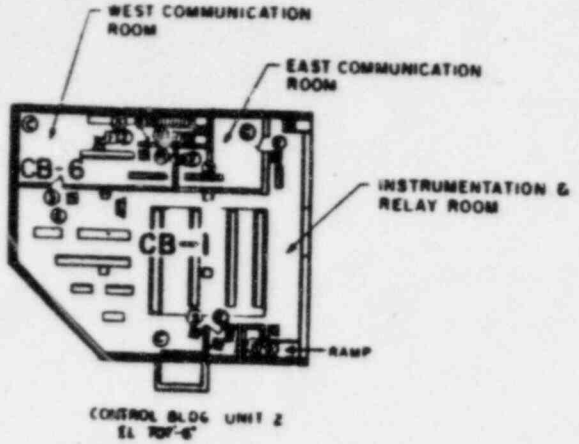
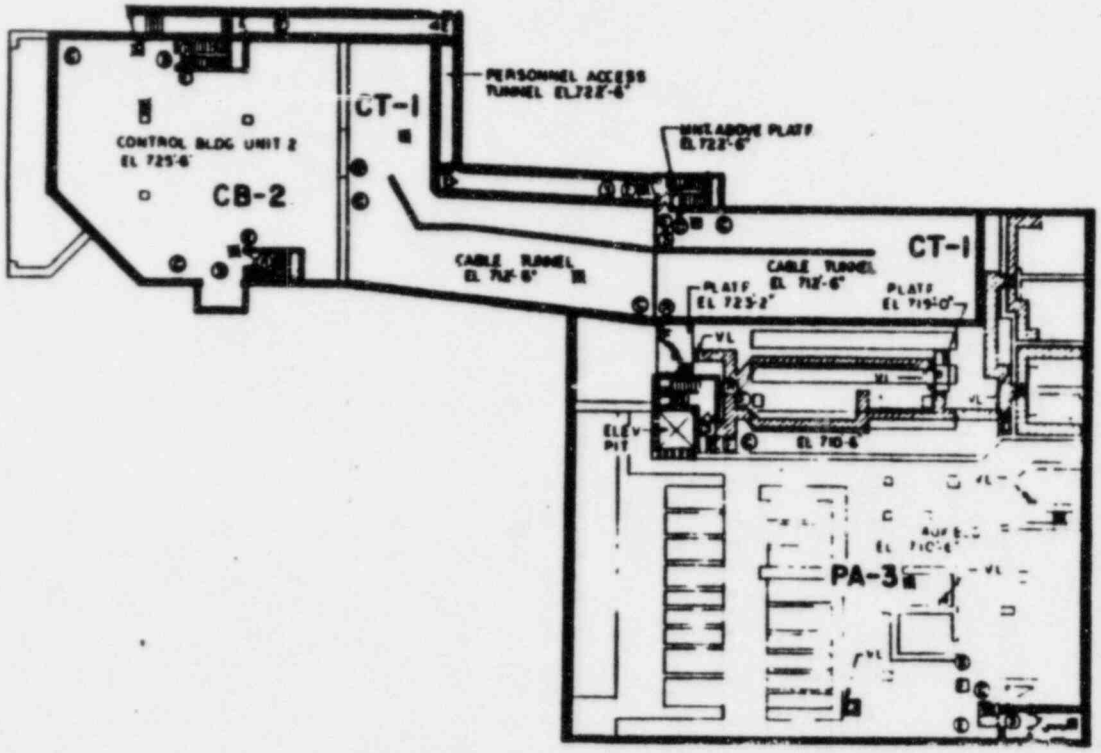
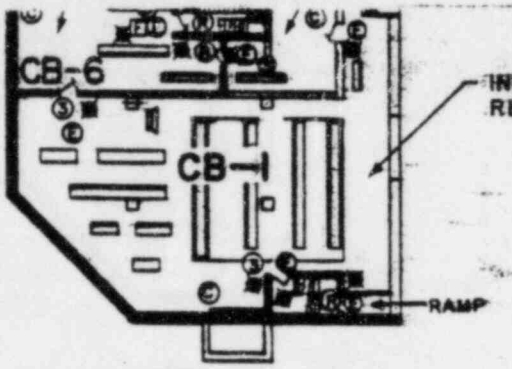


FIGURE A1-1
FIRE HAZARDS ANALYSIS PLAN ARRANGEMENT-PERSONNEL ACCESS BETWEEN BUILDINGS LOWER ELEVATIONS
BEAVER VALLEY POWER STATION UNIT 2

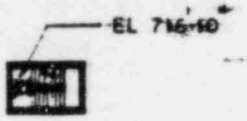


SYMBOLS

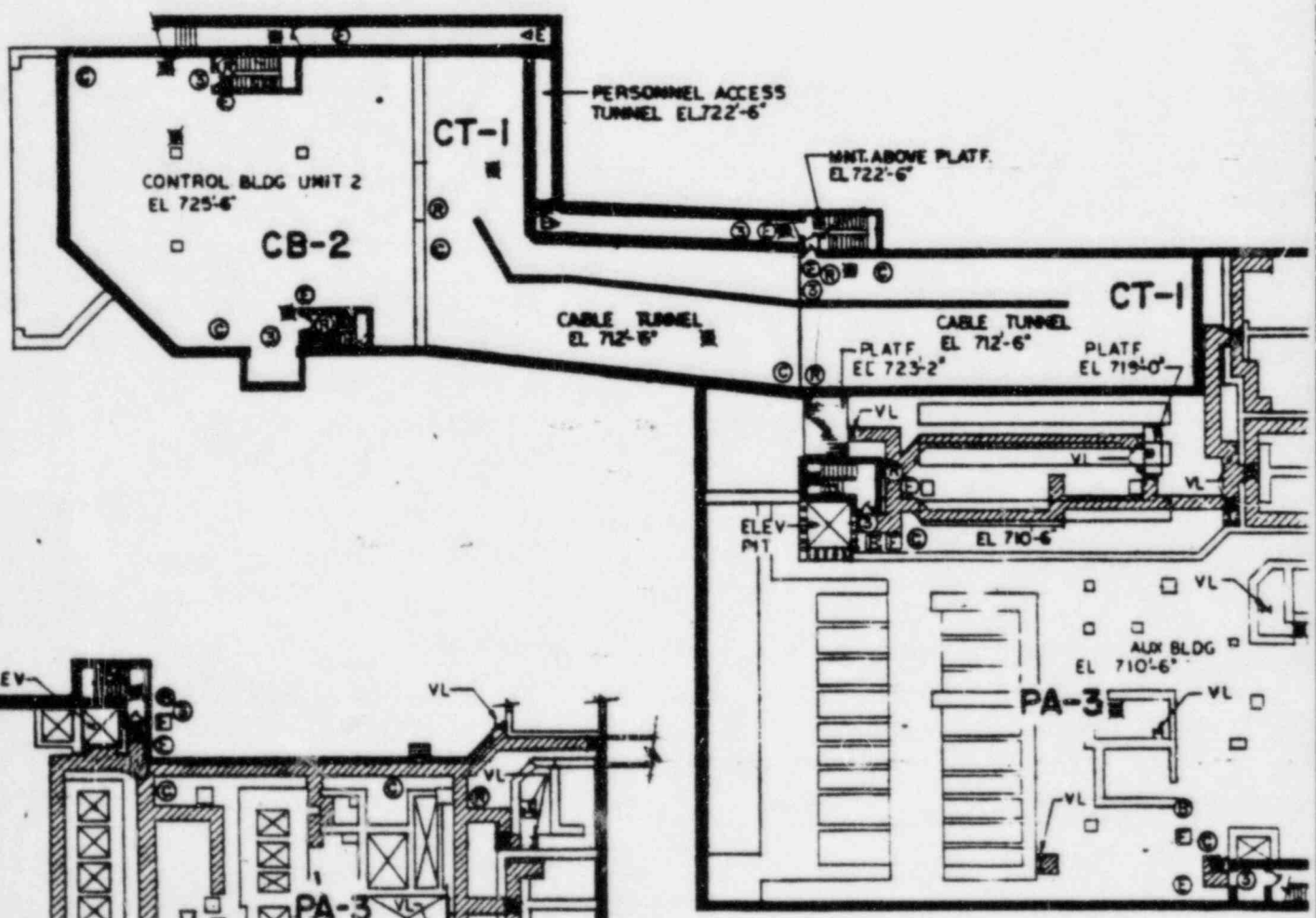
- 125V DC BATTERY EMERGENCY LIGHT
- (E) EXIT SIGNS OVER THE DOOR EITHER PARALLEL OR PERPENDICULAR TO THE WALL AS WILL BEST IDENTIFY
- DIRECTIONAL EXIT SIGNS
- (B) FIRE ALARM BELL (APPROX LOCATION)
- (F) FIRE ALARM STATION (APPROX LOCATION)
- (C) PORT FIRE EXTINGUISHER (CO_2-20LBS (PRELIM LOCATION)
- (H) HOSE RACK (APPROX. LOCATION)
- c REINFORCED CONCRETE
- B CONCRETE BLOCK WALL
- MB INSULATED METAL SIDING
- (3)(3) FIRE DOOR RATINGS (HOURS)
- ——— THREE(3) HOUR FIRE BARRIER WALL
- - - - - TWO(2) HOUR FIRE BARRIER WALL
- — — FIRE ZONE
- ////////// SUB-AREA



CONTROL BLDG UNIT 2
EL 707'-6"



PART PLAN
ABOVE EL 707'-6"



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

JAN 2 8 1985

MEMORANDUM FOR: All DL Staff

FROM: Darrell G. Eisenhut, Director
Division of Licensing

SUBJECT: PLANT SPECIFIC BACKFIT REVIEWS

As a followup to the meeting of January 3, 1985 of DL professional staff, this memorandum is meant to summarize several key features of management of plant specific backfitting. This memorandum should be taken as the interim guidance to the management of backfit reviews in NRR pending revision to the backfitting procedure being prepared by the DEDORGR staff. This procedure should be used for OR reviews and OL reviews and is aimed at assuring that the staff or Licensee/applicant identified backfits are subject to a disciplined management review.

The key features for more effective management of backfits include:

1. The Project Manager should continue to develop a frequent healthy dialogue with applicants and licensees regarding backfitting reviews.

2. The Project Manager should inform applicants and licensees of this procedure.

3. If either the staff or the applicant/licensee identifies a matter as a backfit, it should promptly be entered into the backfitting management system being managed by ORAB. It is the Project Manager's responsibility to ensure that all backfits are identified. Note that present guidance could be read to infer that only the staff can identify backfits - this reading is incorrect.

4. While the matter should be entered into the tracking system as soon as it is identified, the Project Manager should request a formal written request from the utility if not already submitted. The PM should inform ORAB of all backfit issues.

5. The PM is responsible to ensure that the matter is resolved in a timely manner. Specifically, it should first be addressed by an AD Appeals Level meeting. Normally, this meeting should occur within 60 days of the identification of the issue.

6. The Assistant Director is responsible for formally documenting the results of all such Appeals meetings and forwarding a copy of such documentation to the ORAB;, to the Director:DL; and to the Deputy Director:NRR.

7. ORAB is responsible for overseeing the Backfit Management System and for alerting appropriate NRC Management of schedular delays.

8. The Assistant Directors within DL, are responsible for maintaining the appropriate briefing files for plant specific issues and for ensuring that issues requiring a Second Level Appeal Meeting are promptly brought to the attention of the Director, DL. Again, such Second Level Appeals should normally be resolved within about 60 days.

Since the disciplined management control of plant specific backfitting issues is a major issue now pending before the Staff, I appreciate your cooperation in this matter.

Darrell G. Eisenhut, Director
Division of Licensing

cc: NRR Div. Dirs.
H. Denton
E.. Case
V. Stello
T. Cox

MAR 8 1985

MEETING SUMMARY DISTRIBUTION

Docket No(s): 50-412
NRC PDR
Local PDR
NSIC
PRC System
LB3 Reading
Attorney, OELD
GWKnighton
Project Manager V. Nerses
JLee

NRC PARTICIPANTS

bcc: Applicant & Service List