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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

SUBCOMMITTEE ON REGULATORY ACTIVITIES

Room 1046
1717 H Street, N.W.
Washington, D.C.

Tuesday, January 4, 1983

The Subcommittee on Regulatory Activities met, pursuant to notice, at 8:45 a.m., Chester P. Siess, Chairman, presiding.

ACRS MEMBERS PRESENT:

CHESTER P. SIESS
DAVID A. WARD
WILLIAM KERR
JEREMIAH J. RAY
MAX W. CARBON

DESIGNATED FEDERAL EMPLOYEE:

SAM DURAISWAMY

ALSO PRESENT:

ANTHONY J. CAPUCCI
ED WENZINGER
ALLEN HINTZE
WILBUR M. MORRISON
CHARLES ROSSI
JIM WATT
CARL BERLINGER
FRANK CONGEL
PHIL STODDARD
JOE JOYCE

P R O C E E D I N G S

MR. SIESS: The meeting will come to order. It is officially 8:45 - by fiat.

(Laughter.)

MR. SIESS: This is a metting of the ACRS Subcommittee on Regulatory Activities. My name is Chester Siess and I am Subcommittee Chairman. The other ACRS members that are present are, starting on my left, Dave Ward, Bill Kerr, Jerry Ray, and Max Carbon.

The purpose of the meeting today is to discuss two Regulatory Guides. One of them is an "old friend", Regulatory Guide 1.97, Revision 3. The title is "Instrumentation for Light Water Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident."

The second item is Proposed Regulatory Guide, designated Task No. IC 126-5. The title is, "Instrument Sensing Lines."

The meeting is being conducted in accordance with the provisions of the Federal Advisory Committee Act and the Government in the Sunshine Act.

The Designated Federal Employee is Mr. Sam Duraiswamy, who is sitting on my right.

The rules for participation in today's meeting were announced in the Federal Register Notice on

December 21.

As usual, we are keeping a transcript. It is important that you identify yourself when you first speak so it will be on the record, and please use the microphone. The reporter has a microphone on the table, so I guess whether you use yours or not is not too important as long as we can hear you.

We have received no written comments from members of the public and no requests from members of the public to make oral comments.

Who is running the show for the staff, Ed Wenzinger?

MR. WENZINGER: Al Hintze is going to make the presentation on both guides, and if you are ready to start out on 1,97, why, he is ready to go.

MR. SIESS: Well, let me just introduce this briefly to the committee. Sam sent you out a package of material - I cannot assume you have read it all because I have not read it all. I will not assume you have read it all recently, I am sure you read it all at one time or another because it includes a couple that we wrote and a few other things.

And 1.97 is an interesting Guide because it is essentially a response to something that the Committee itself brought up - I forget how many years ago - about

instrumentation to follow the course of an accident. It seems to have grown following TMI. We have seen two revisions and we have seen drafts of this revision, I believe, twice.

I think that I would like to focus the discussion this morning primarily on the changes that have been made since we saw this last. Several of these changes are in response to comments or criticisms that were made by the Subcommittee or by the ACRS.

I won't limit the discussion strictly to the changes - in fact, I don't know how I can. The Committee can obviously ask questions on it if it wants. But I would like to concentrate on the changes, and I think that is what Mr. Hintze will be emphasizing; and then there are other things we can take up.

Are there any questions from members of the Subcommittee before we let Al dig in? OK.

MR. HINTZE: When Revision 2 of Regulatory Guide 1.97 was issued in December of 1980, there was an outstanding question regarding Radiation Exposure Meters (continuous indication in fixed locations). One of the purposes of these monitors was to identify radioactive releases from otherwise unmonitored release points from the containment as a means of helping to detect a breach of containment. The question involved the number and

location of the fixed location monitors necessary to accomplish the intended function.

Since guidance for the number and location of the fixed location monitors was not provided in Revision 2 of Regulatory Guide 1.97, the criteria for these measurements were tied to a study on emergency radiological monitors then being conducted by the Radiation Assessment Branch of NRR.

The results of this study were recently published in NUREG/CP-2644, dated April 1982, which concluded that the use of a fixed location area monitoring system to determine the magnitude of an unmonitored release could not provide sufficiently reliable technical information to be of use in a decision-making process in the event of an emergency situation.

The NRC staff agrees with the technical evaluation of the study as documented in a memo from Roger Mattson to Karl Goller dated July 29, 1982, and the Radiation Exposure Meters (continuous indication of fixed locations) has been deleted from the guide. These are on pages 14 and 24 of the tables in the guide.

Another change which has been made in the guide pertains to the Primary Containment Radiation monitors.

Another change which has been made in the guide pertains to the Primary Containment Radiation monitors. In the judgment of the NRC staff, as documented in a memo from H. Denton to R. Minogue, dated August 12, 1982, the specified degree of accuracy (which was a plus or minus 20 percent) for the Primary Containment Area Radiation monitors - which is now given in pages 9 and 18 of the guide - is an unnecessary burden on sensor design and calibration and is an unjustified recommendation.

Any errors due to energy spectrum will be small for most geometries early in an accident. Later in the accident, correction factors can be applied to compensate for energy spectrum when required for a more accurate measurment. This change involves the deletion of the plus or minus 20 percent phrase in Note 7 on pages 9 and 18 of the guide.

A third change involves the Radiation Exposure Rate monitors (those located inside buildings or areas, that is, for example, auxiliary buildings, fuel handling buildings, secondary containment, which are in direct contact with the primary containment where penetrations and hatches ae located).

Further study, as documented in a letter from Harold Denton to R. Minogue, dated August 12, 1982, has

shown that detection of containment breach (such as the Type C variables on pages 10 and 19 of the guide) can be just as readily obtained, and with less ambiguity, from radioactivity monitors in the effluent path from these buildings adjacent to the containment.

Therefore, Radiation Exposure Rate monitors inside buildings adjacent to containment for the purpose of detecting containment breach (that is the Type C variables) has been deleted from the guide. However, those monitors for the Type E purposes (that is purposes where access is required to service equipment important to safety) are retained. Those are on pages 13 and 22 of the guide.

The fourth change involves the meteorological measurements. Revisions to Regulatory Guide 1.23, "Meteorological Programs in Support of Nuclear Power Plants" and Regulatory Guide 1.97 were being developed concurrently and were in agreement at the time Regulatory Guide 1.97 was issued in December 1980.

Regulatory Guide 1.23 is the source of the meteorological measurement criteria and the variables are listed in 1.97 for completeness. However, subsequent to the issuance of 1.97, Regulatory Guide 1.23 underwent further modifications as its development continued. These modifications created some differences

between the two guides. This revision of Regulatory Guide 1.97 brings it into agreement with the proposed Revision to Regulatory Guide 1.23. The changes are found on pages 15 and 24.

The fifth change involves the variable, Coolant Level in Reactor. Both industry and NRC have expended considerable effort to develop methods of measuring coolant level in the ractor as an indication of capability for core cooling.

As pointed out in SECY-82-407, "Implementation of TMI Action Plan II.F.2 (NUREG-0737), it is probably not possible to develop an unambiguous indication of water level in the reactor.

However, it was concluded that it would probably be sufficient to require a void indication or inventory tracking system to supplement the subcooling monitors and the core exit temperature monitors to determine the capability for core cooling. Consequently, the variable Coolant Level in the Reactor has been changed to Coolant Inventory as provided by SECY-82-407.

Other substantive changes are:

The variable BWR Core Temperature on pages 8 and 9 of the guide are not being recommended at this time pending further development and consideration as

stated in Supplement 1 to NUREG-0737.

For the PWR variable, Core Exit Temperature on pages 17 and 18 of the guide, the range for operating temperatures from 200 degrees to 1650 degrees F are deleted, leaving the recommended range of 200 to 2300 degrees F, since all plants should have the 2300 degree F capability as provided by NUREG-0737.

The Implementation section - which has been passed out, a modification of it has been passed out this morning - was modified to agree with Supplement 1 of NUREG-0737, which provides that the implementation schedule should be negotiated by the applicant or licensee with the NRC project manager on a plant-specific basis.

Subsequent to the issuance of Revision 2 to Regulatory Guide 1.97, a contract was issued to Idaho Nuclear Engineering Laboratory to conduct an independent evaluation of the guide to evaluate the understandability of the guide and to determine if its provisions could be met with state-of-the-art instrumentation.

The preliminary results of this study revealed some areas where clarification would be helpful and where minor changes in instrument ranges could be made which would not compromise the measurement objectives

but would be more consistent with practical instrument capabilities. These changes are incorporated in Revision 3 of Regulatory Guide 1.97.

The major change to the guide, which was for clarifivation purposes, is in the re-formating of the qualification criteria for Categories 1, 2 and 3 variables. The criteria are now in tabular rather than narrative form. This makes it easier to see the differences in qualification requirements between the various categories. Other changes are editorial and are readily identified in the comparative text of the draft guide.

MR. SIESS: Al, I might have missed something. That change from Coolant Level to Coolant Inventory, that is just for the PWR?

MR. HINTZE: Yes, sir.

MR. KERR: Why does it use "level" in one case and "inventory" in the other? You are talking about -- I have forgotten which is which, maybe it is the PWR you use "inventory" for.

MR. SIESS: The "level" is in BWR and "inventory" is in PWR.

MR. KERR: Because the measurements are made in the same way, I think. I wondered why in one case you refer to "level" and the other case "inventory."

MR. HINTZE: I can't answer that, other than the fact that the PWR was the more difficult one and we have been concentrating on trying to measure levels.

MR. KERR: Well, the implication would be that you are measuring different quantities in the two cases, I would think, since in one case you are talking about level and the other case inventory.

I wondered if it really was meant to be different.

MR. WENZINGER: In the case of the boiling water reactors using differential pressure is a reasonably good way of measuring level.

MR. KERR: But you use differential pressure in the PWR.

MR. WENZINGER: That's correct, and that is not a very good way of measuring vessel level, particularly with the pumps running.

MR. KERR: I guess I just don't see why it will measure level in one case and not measure level in the other case.

MR. SIESS: Since the BWR is a boiler --

MR. KERR: Because it really does not measure level.

MR. SIESS: -- it does not seem to me that it measures level there any better than it does in a PWR.

It must become two-phased at some point in the core.

MR. CARBON: Yes.

MR. WATT: Jim Watt. On the boiler it is part of the normal control instrumentation to monitor some level indication.

MR. KERR: But it really doesn't measure level for the BWR any more than it measures the level for the PWR. In both cases it measures what one might call condensed level.

MR. WENZINGER: That's correct, collapsed level.

MR. SIESS: I think the point, gentlemen, is simply: this is semantics. But by making the change in one and not in the other somebody starts looking at it and says, "Why did they do that? What is the hidden significance of this?"

MR. KERR: It seems to me "inventory" makes sense in both cases, but I may be missing something.

MR. WENZINGER: No, I think you are right that "inventory" does make sense in both cases. I don't see any reason why the PWR would not be changed to the "inventory."

MR. HINTZE: Since the question had not been raised, I guess we had not discussed it.

MR. SIESS: You know, you can call it

inventory or you can call it level in quotes, and it would not make any difference to me.

MR. WENZINGER: I think it would be more appropriate to call it "inventory" for both cases.

MR. HINTZE: Do you have any objection to that, Jim?

MR. ROSSI: I would proceed a little cautiously in this area. My name is C. Rossi from the Instrumentation and Control Systems Branch.

I think Mr. Watt made a good point that on the BWRs, "level" has always been used, and I believe that by "level" it has been actually a level in a down-cover sense. So, I think it does have a meaning.

And on BWRs it has always been used as a basic control parameter and a basic safety parameter, whereas on the PWRs they operate essentially solid within the reactor coolant system, and "level" has just traditionally not been an important variable from the standpoint of either safety or control. It is really the total mass within the system that you would have tried to control and maintain in the PWR.

MR. SIESS: That doesn't make any sense.

MR. KERR: The differential in a PWR does not measure total inventory, it measures collapsed level in the vessel.

MR. ROSSI: For the BWR now, you are talking about?

MR. KERR: I am talking about the PWR.

MR. ROSSI: Well, I do not even think that it necessarily measures that on the PWR because you have to be very concerned about the pressure drops that are caused by the reactor coolant pumps and close to the core, and that sort of thing.

I don't think any of that was particularly taken into account when the PWR vessel and core were designed.

MR. KERR: If you talk about "inventory" in that case, at best you can measure the collapsed level when the thing is dead.

MR. ROSSI: OK.

MR. KERR: Yet, you use "inventory" in the PWR case and it seems to me that --

MR. SIESS: It seems to me that what the staff is trying to say is that they want to use level for the BWRs because they are willing to accept the existing "level" measurements for the future for BWRs, that we don't want to change the name.

If that is what you mean, there ought to be some way of saying it rather than hiding it in the words.

MR. ROSSI: Well, I also think that on the

BWRs that traditionally a considerable amount of thought and design effort has been gone into maintaining what they have always called level in the BWRs. Its normal operation is that that is the important parameter, whereas with PWRs it is not.

I think that the pressure drop situation in BWRs is - and this is getting somewhat out of my area - different than in the PWRs from this standpoint.

MR. SIESS: But is it a fact that you are willing to accept the existing level measurements in the boiler?

MR. ROSSI: That is basically correct.

MR. SIESS: As meeting the requirements of Reg Guide 1.97.

MR. ROSSI: That is basically correct, yes.

MR. SIESS: And you have a feeling that if you changed it to say "inventory" that there would be some implication that you wanted something different than the present "level" measurement.

MR. ROSSI: I don't know that that latter was a consideration.

MR. SIESS: Well, that is what it sounds like you are saying, that you are defending the words on the basis of the fact that you are willing to accept the tried and true.

MR. ROSSI: Well, certainly, I think on the BWRs the level is indeed true and tried because it has been used for many years and it is used during normal operation in the controls of feedwater.

MR. SIESS: Well, I don't really see the reason why the fact that it is used during normal operation makes it particularly useful during an accident condition.

MR. ROSSI: Well, I think the fact that it is used during normal operation means that a lot of thought has gone into what that measuremewnt means, over the years.

MR. SIESS: OK.

MR. ROSSI: And I think that is an important factor.

MR. SIESS: OK, the interpretation of a measurement.

MR. KERR: But has not a great deal of thought gone into what it means during normal operation, and not a lot of thought of what it means during an accident? That would have been my feeling.

MR. ROSSI: That may be true, but I think it is less of an extrapolation to figure out what it means during an accident on a BWR than on a PWR.

MR. KERR: We certainly had some situations at

which the level measurement was misleading in terms of what was in the core in what I call "abnormal" or perhaps an accident.

MR. ROSSI: I think that when you are making a comparison with PWRs and BWRs that you might better compare the level measurement in the steam generator on a PWR with the level measurement in the core on a BWR. I would consider those two things to be more analogous than "level" or "inventory" within the core.

In fact, the level in a steam generator on a PWR is indeed, I believe, included in Regulatory Guide 1.97 and you have all the same problems there that you got within the core. You got lots of void within the tube region of the steam generator and what we are measuring is the differential pressure out in the down-comer and that you call "level."

So, I think when you are doing that comparison that that is a better analogy than just looking at the core.

MR. SIESS: The differential pressure and the down-comer are different from the differential pressure inside the core?

MR. ROSSI: I can't answer that question.

MR. SIESS: I couldn't figure out a good reason for it unless there was a heck of a lot of flow,

friction drop of something.

MR. CARBON: We certainly have a different friction drop with differential pressure.

MR. SIESS: And why is it in the down-comer because that is where the pressure taps go?

MR. KERR: Yes.

MR. ROSSI: Well, I think in the down-comer you have something that is very close to really a true level, and you want to have a lot of void and that kind of thing in the down-comer. You have water that you measure the level. That is a very similar situation in my mind to what you have in steam generators on a PWR.

MR. SIESS: But if I am really interested in the level, it must be the level in the core I am interested in. That is what I am trying to keep cool, not the down-comer.

MR. ROSSI: But again, there is a close relationship.

MR. SIESS: If it is boiling in the core there is a close relationship?

MR. ROSSI: I think there is a close relationship between what you wawnt inside the core and the level that you are measuring in the down-comer around the BWR. Certainly, that is the situation on the PWR and the steam generator.

MR. SIESS: I guess I could interpret that another way and say that if I know the collapsed level in the down-comer, I know something about the inventory, which tells me something about how much there is to cool the core.

MR. ROSSI: I also am not sure that you are really talking about a collapsed level in the down-comer because I think at least in a steam generator on a PWR, it is not collapsed level that you are worried about in the down-comer, it is level in the down-comer.

MR. KERR: Mr. Rossi, I mean, what you want is what is in the core. You don't really care what is in the down-comer. You measure what is in the down-comer because you have a feeling that that will tell you what is going on in the core.

MR. ROSSI: That is correct.

MR. KERR: And what you want to know in the core is the inventory in the core, which will provide cooling, I think.

MR. ROSSI: That is correct. I claim that is analogous to the situation on a steam generator, on a PWR where you are not interested in what is in the down-comer. What you are interested in is the mixture of whatever - if it is water in void or water in steam - within the tube region of the steam generator. That is

what cools the core on a PWR when you are using the secondary site as your cooling.

MR. KERR: Which is an argument which means inventory to me.

MR. ROSSI: For the steam generator.

MR. KERR: And the BWR.

MR. SIESS: Let's back off from it a minute and let's see if I can understand what this means if I were a plant owner.

For a BWR, it seems to me what the Reg Guide says is that the system of level measuremewnt that has been used for a number of years, with all the different ranges, is acceptable for Reg Guide 1.97. Is that what it says?

Are there any other criteria against which to compare?

MR. HINTZE: Would you state that again?

MR. SIESS: For a BWR the requirement for coolant level in reactor, which is one of the Type B variables, is satisfied by the conventional --

MR. KERR: Existing.

MR. SIESS: -- existing level measurement, Delta P measurement systems that BWRs have had all these years.

MR. HINTZE: I think that has been accepted as

correct, yes.

MR. CARBON: May I raise a question before you leave that?

MR. SIESS: Yes.

MR. CARBON: But that won't give you the level in the core when flow rate changes, will it?

MR. SIESS: No.

MR. CARBON: So, it is not giving you in the core.

MR. SIESS: No. As I understand the staff's position, this requirement of Reg Guide 1.97 for BWRs is satisfied by the existing so-called water level measurements.

MR. ROSSI: Well, certainly by a system based on that general principle. I think that over the last few years there may have been - I am not absolutely sure of this - some changes in range requirements and how the indicators were calibrated, and that kind of thing.

MR. SIESS: There have been some changes to get a reference level.

MR. ROSSI: Yes. But basically the methodology we are accepting on the BWRs.

MR. CARBON: Can I still interject before we leave it?

MR. SIESS: No, let me finish this. I am

trying to find out what it means and not whether it works.

MR. CARBON: OK.

MR. SIESS: I will come back to you.

MR. CARBON: Fine.

MR. SIESS: Now, in Table 2 for PWR variables there is one now listed as coolant inventory, and what is acceptable to the staff on that is, it has been the subject of a couple of NUREGs and I don't know what else. There is a Westinghouse system acceptable, a Combustion system acceptable, a B&W system acceptable with certain modifications; right?

In essence, there is no existing system, previously existing system, and there are always new ones. And this is what this refers to; right?

MR. HINTZE: That is what this refers to, right.

MR. SIESS: And, let's see, is there a footnote that refers to one of those NUREGs or a SECY that says Westinghouse Delta P is OK, and Combustion's thermocoupler is OK?

MR. HINTZE: I believe we have a footnote there, page 17.

MR. SIESS: It does reference to W&W but it does not reference to -- is there a formal position yet,

that is, a SECY went up, proposing approval of the Westinghouse Delta P and the Combustion thermocouple, is that approved yet?

MR. WATT: SECY-82.407 addresses that. It essentially agrees with the Westinghouse and Combustion systems.

MR. SIESS: Is that referenced anywhere in the Reg Guide?

MR. HINTZE: We just mentioned it in our presentation. It is not referenced in the Reg Guide.

MR. SIESS: OK. But there is a footnote in there that essentially includes what 82-407 says about B&W, doesn't it?

MR. HINTZE: Right, on page 17.

MR. SIESS: Well, I understand now how this is to be implemented. Max, I will come back to your question.

MR. CARBON: Yes. The question I have is on the BWR, the differential pressure in down-comer will give you a measuremewnt of flow rate, but it will be different for a given pressure drop, depending on the amount of the vapor-liquid mixture and therefore a function in both the flow rate and the power level.

It is not real clear to me how you get from the pressure drop in the down-comer to the level of the

coolant or the inventory in the core. It is not clear to me why this satisfies the requirement in 1.97.

Is there some simple explanation of this?

MR. ROSSI: Well, on my part I am not an expert on the pressure drops through the core in relationship to the weater level or whatever in the down-comer. I think if you really want to get into the details of that, I suspect the people that can talk about that knowledgeably are not here today.

Certainly, you should not infer from the remarks that I have made on why I think it was done this way, that I am an expert on pressure drops. But I would again come back to the fact that on the BWRs, they have always depended on what they called "level." It is measured in a certain way from DPs to tell you what was felt to be necessary, what was going on in the core for normal operation to maintain core parameters within ranges where you won't get into core damage or anything like that. Initiating safety systems, many years of experience, and a lot of design effort has gone into it --

MR. CARBON: Yes.

MR. ROSSI: -- is what I am really saying rather than that I understand all the details in the pressure drops.

MR. CARBON: But I think you are also saying what I think Dr. Kerr referred to, an awful lot of experience under normal conditions at the edge of normal.

MR. ROSSI: Well, that is experience but do keep in mind, when accident analyses are done in either of these plants, they are doing it in terms of measurements and how those measurements are really related to the parameters that were important during an accident.

I am quite sure that has been the case in the PWRs. Again, I am not an expert on those pressure drops, trying to explain all that.

But you know, when the accident analyses are done they are done in terms of what they call "level" on the BWRs, and it has not traditionally been the situation on PWRs since they don't have an analogous measurement for primary systems.

I do think they have an analogous measurement on the steam generators.

MR. WATT: It falls in the post-accident monitoring.

MR. SIESS: I want to get the cast straight here. The three people at the table are from Standards or Research, as it is called now.

Where are you guys from?

MR. ROSSI: I am from NRR, the Instrumentations and Control Systems Branch.

MR. WATT: I am from Research and Standards Coordination.

MR. SIESS: Are the rest of these NRR people?

VOICE: Yes.

MR. SIESS: OK, I just want to get who is talking from what point of view, who is writing this and who is enforcing it.

(Laughter.)

MR. CARBON: Can you gentlemen answer my question?

MR. KERR: There is a third group, and that is who understands it.

(Laughter.)

MR. SIESS: That is a smaller group.

MR. CARBON: I honestly don't understand how the Delta P down-comer satisfies the requirements for inventory on the core in PWRs. I presume it does, but I don't understand it.

MR. HINTZE: I am not going to answer it either.

MR. WATT: This is Jim Watt. Remember that we are talking about decay heat period and we are talking about a measurement in the down-comer. And with reduced

power you would expect the level to approach that of the driving force which is in the down-comer.

It is close to accident monitoring. The Delta P in the down-comer is close to it, certainly it represents the collapsed liquid level in the core and it woul be very close to it during post-accident monitoring.

MR. ROSSI: If I can add a little bit more. I have had some experience on PWRs with level calculations in a steam generators and in relation to what is assumed an accident analysis.

And what was done there was that you can do calculations of the amount of void and the amount of actual pounds of water within the tube region of a steam generator as a function of things like power, pressure in the steam generator, and down-comer level which is called DP. And those kinds of calculations are indeed done for the steam generators on PWRs.

And then, when you do accident analyses you have a relationship between what you are measuring - which is this DP and the down-comer which is close to level but it is also affected by pressure drops and flows and other things like that.

But that is taken into account in the calculation. So, when you do an accident analysis you are doing it, relating what you are measuring to what is

really going on in the tube region in terms of void and so forth.

I am making an assumption - I am less familiar and I have not done those calculations on a BWR - that that same type of thing is indeed done on the BWR.

Now, I have been involved to some extent with the ATWS Task Force where they have, General Electric has been preparing emergency operating procedures for ATWS which involve such things as lowering the major level down following an ATWS in order to get a certain void within the core between the power level down. And there, I believe -- well, I really know that they have done calculations on how the aactual void and mass, and reactivity within the core are related to the thing they are measuring, which they call "level" again, as a function of pressures and temperatures, and that kind of thing.

So, I think that the real issue is that you have to be able to relate what is going on in the core to the thing you are measuring, rather than very closely exactly reproduce the thing you really want.

MR. CARBON: You need to be assured there is something unique, for each partial drop measurement that you are getting something unique in the core.

MR. ROSSI: Well, unique or correctable,

usable at least in some way. I think that in some cases you have to make some corrections to the readings that you get or you have to maintain the level of reading higher because of various pressures and other effects.

MR. CARBON: Thank you.

MR. SIESS: Let me see if I can summarize it. There does not appear to be any real good reason for using "level" in one place and "inventory" in the other.

But I think it is clear to me anyway as to what the staff expects to be done in response to this Reg Guide for BWRs.

It is not all that clear in the Reg Guide. But for BWRs they are willing to accept the existing Delta P "level" measurements, and for PWRs their position is essentially that of SECY-82.407, accepting the Westinghouse and CE systems and accepting B&W with some modifications - which I don't think anybody has quite come up with yet.

Now, whether that is a proper position I am not prepared to say. We have discussed this in another forum a number of times and I do not recall the Committee having raised the kinds of questions we raised today about the BWRs. It seems we devote most of our attention to the PWRs.

So, I guess I am willing to assume it is a

question of semantics. The Standards people are willing to change both to "inventory."

NRR seems to think that changing "level" on BWRs to "inventory" implies somethig different than what they have been doing, and they are willing to accept what they have been doing and prefer to keep it "level" to keep the picture clear.

MR. ROSSI: Yes. The last statement I would strongly agree with.

MR. MORRISON: Chet, I am not sure that Standards is willing to change the BWRs to "inventory" either. I think "level" is the term that is commonly used. We received no comments or objections to the use of that term and I would be very reluctant to have to change the term "level" to "inventory" for a BWR.

MR. SIESS: I think that is the reason. By changing the term there you would imply something different than what you have been accepting.

Now, for PWRs there is no similar problem because you are requiring something completely different. It has been explored and all the angles to it have been looked at. So, changing it there makes some sense and it puts emphasis on a new technique. Changing in the other place would be wrong because it would take the emphasis off of an existing technique.

That is the way I see it.

You want to let it ride, gentlemen?

MR. KERR: I just asked why. I now understand it is tradition. I am in favor of tradition.

(Laughter.)

MR. SIESS: Are there any other of these particular changes that anybody would like to discuss?

I would like to have an explanation of what the revised implementation section means. You know, I know the words but I need to understand.

MR. RAY: I have trouble understanding that, too.

MR. KERR: Not knowing what is in Supplement 1 to 0737, if you will explain. I want to find out what we are discussing.

MR. SIESS: The single sheet, Bill.

MR. KERR: OK, excuse me.

MR. HINTZE: If you remember, the CRGR minutes indicated that we needed to work out an implementation statement with the ELD, and what I passed out this morning was in response to that requirement of CRGR for their approval.

MR. RAY: But it seems to say the same thing that you had on 1.97. I am having trouble understanding what the changes mean. There are changes in the words,

but the intent, English-wise, means the same thing to me.

MR. HINTZE: You are right. Legal people like to have their own way of expressing things.

MR. SIESS: Now, let's take it up. For new plants, CBs after June 1, 1983 it is applicable. That is the same in both versions, right?

MR. HINTZE: Yes, sir.

MR. SIESS: Now, for plants with OLs issued before June 1, 1983, RCPs issued before --

MR. HINTZE: That is everything, everybody else.

MR. SIESS: That is everybody else.

MR. HINTZE: Yes.

MR. SIESS: Should meet the provisions as specified in Supplement 1 to NUREG-0737, right?

MR. HINTZE: Yes, sir.

MR. SIESS: Now, that is what the new one says. The old one said, "Should develop a plan as outlined in," right?

MR. HINTZE: That's right.

MR. SIESS: And this is more specific, it says, "Should meet the provisions as specified in Supplement 1 to o737."

What does Supplement 1 to 0737 say?

MR. HINTZE: We provided a copy for you. It

says essentially, as far as the schedule is concerned, the same thing that we say here.

MR. SIESS: Does it require that everything in Table 1 be implemented?

MR. HINTZE: Eventually. The legal people are a little bit concerned that if we just said --

MR. SIESS: Forget about the legal people, Allen, just tell me what a plant that is operating - let's take a specific plant, Connecticut Yankee-Hoddam Neck - what do they have to do to meet this? Do they have to meet all the requirements?

MR. HINTZE: All the requirements with the exception of the qualification of some of the instruments.

MR. SIESS: That is in 737?

MR. HINTZE: That is in 737.

MR. SIESS: But the schedule for doing it is something that should be negotiated.

MR. HINTZE: That's right.

MR. SIESS: With the project manager.

MR. HINTZE: That's right.

MR. SIESS: And the project manager for Hoddam Neck is going to be a regional man one of these days; isn't he?

MR. HINTZE: Probably.

MR. KERR: In the revision where it says, "Meet the provisions of this guide as specified," does that mean meet them as specified, or the provisions as specified?

MR. HINTZE: As far as the list of the variables, there is no question that they have to have those measurements.

MR. KERR: No, I am trying to find out what the statement means. See, "as specified" could refer to the provisions, or to meeting the provisions, or to both.

Is it talking about the provisions as specified in 0737, that is, Provisions 1 through 10; or is it talking about meeting them in a way which is specified in 0737, or both?

MR. HINTZE: It means -- let's see if we can find what you are talking about.

MR. KERR: I am talking about the sheet that was distributed this morning.

MR. HINTZE: Yes.

MR. SIESS: Sam is getting a copy.

MR. KERR: Somebody must have written this and had something in mind. What did the writer mean to say?

MR. HINTZE: He tried to say this, it says, "It is acceptable to reply on currently installed equipment if it will measure over the rates indicated in

1.97, even if the equipment is presently not environmentally qualified."

MR. KERR: So, the provisions.

MR. HINTZE: So, that is the provision 0737 is imposing over and above what the guide says. If you just had the guide that has to have everything qualified you have to --

MR. KERR: I am trying to understand the English here. It would mean the same thing if it said, should meet the provisions specified, the provisions of this guide specified, as specified?

MR. SIESS: Let me try another wording, Bill. Suppose it said, "Shoudl meet those provisions of this guide specified in Supplement 1 to NUREG-0737?"

MR. KERR: If that is what it means. Is that what it means?

MR. WARD: No, 0737 is modifying the provisions of the guide; right?

MR. HINTZE: Modifying them by accepting existing measurements.

MR. WARD: Right.

MR. HINTZE: If they tell them what it is. If we just said, "Meet the guide," they might have to tear some things out. They have now an opportunity to propose a little different than the guide says, by this

statement. That is what we are trying to say.

MR. SIESS: Yes.

MR. WENZINGER: As specified in 0737.

MR. KERR: You see, it could mean, meet the provisions in the way that is specified, or it could mean, meet the provisions, those provisions specified in 0737, or it could mean both.

MR. SIESS: Yes. It does mean both because the way gives them a time schedule leeway which is important, and it also gives them outs.

MR. HINTZE: Right.

MR. KERR: If it means both, then that is probably the way to say it.

MR. SIESS: Well, if we understand what it means, and they understand what it means, and NRR understands what it means, I guess it's all right.

MR. KERR: It does not matter whether the licensee understands it.

(Laughter.)

MR. WARD: Would it mean what you want to if it said, "Should meet provisions of this guide as modified in Supplement 1 to NUREG-0737," is that what it means? That is what I thought it meant.

MR. WATT: May I quote a phrase from the guide, from the NUREG, a SECY document?

"It is our intent that the guidance documents themselves referred to in the enclosures are not to be used as requirements, but rather they are to be used as sources of guidance for NRC reviewers and licensees regarding acceptable means."

Now, that is the guidance.

MR. KERR: Well, if one said, "Should meet the provisions," that is not a requirement. What is it?

MR. SIESS: Well, I can find some words. You can say --

MR. KERR: Should follow the guidance?

MR. SIESS: To meet the provisions of this guide to the extent and in the manner specified in the SECY. Is that it?

SECY tells you the extent to which you must meet them in terms of equipment qualifications and the manner in which you must meet them, which includes the timing and the interpretation. I think that is what it means.

I am not sure that is not what it says if you wanted to read it loosely. There are two things involved.

MR. HINTZE: Would you say that again, Chet? Let me write it down.

MR. SIESS: I had "to the extent" and "in the

manner specified."

MR. HINTZE: OK.

MR. SIESS: Because 0737 tells you how this should be applied, with what flexibility and so forth. And it tells you the extent to which it should be applied to operating reactors, and not everything is applicable.

The list is, the qualification - not necessarily. There is a lot of leeway in there. Who has that leeway, Denton or the project manager?

MR. HINTZE: It would be the project manager that eventually is the one that decides on each individual plant.

MR. SIESS: I mean, is the project manager going to have the kind of responsibility and authority that the SEP project managers have had about accepting things?

MR. HINTZE: Jim, do you want to answer that?

MR. SIESS: That requires an uncommon amount of common sense, and I just wonder how many project managers have it.

MR. JOYCE: This is Joe Joice of NRC staff, ICSB.

ICSB will be implementing Reg Guide 1.97. the project manager will be setting up schedules,

negotiating schedules with the licensee. When there is a problem in terms of implementing the Reg Guide itself on individual parameters or variables, at that time it will be worked out between the ICSB and the licensee.

MR. SIESS: Not the project manager.

MR. JOYCE: That's correct.

MR. SIESS: So, he will not have the kind of authority as the SEP project manager had. The Technical Branch will make the final decision.

MR. ROSSI: That's correct, the Technical Branch will make the final decision, and ICSB will consult with other branches that may be involved in a particular parameter.

MR. WARD: Would you say the same approach is being taken with SECY-82-111, emergency response facilities? Project manager are going to be even busier people.

MR. SIESS: They are going to negotiate schedules but the technical implementation will be up to the Technical Branch, which is quite different from the SEP.

OK, I understand. Any other questions about the implemewntation?

The formal reference now is 0737, or SECY --

MR. HINTZE: Supplement 1 to 0737.

MR. SIESS: And what is the force of that in law? Does that have any more force than a Reg Guide? Is that a rule or regulation, or policy statement?

MR. HINTZE: It is a letter that goes out to all licensees saying, this is what we want you to do.

MR. SIESS: But it is not a backfit - is it 50.109 or whatever it is - backfit provision? I am just interested in the mechanics of it right now.

MR. JOYCE: This is Joe Joice again, ICSB.

There was a 50.54 letter on December 17. That letter went out to all operating plants, licensees and holders of construction permits. The 50.54 is the "show cause" why they should continue to operate without the implementation of the supplement to Reg Guide, to NUREG-0737.

MR. SIESS: And that is different than the backfit, right?

MR. JOYCE: Correct.

MR. SIESS: And the Commission does not have to -- let's see, the 50.54 puts it on the licensee to show why he does not have to do it?

MR. JOYCE: Yes, sir.

MR. SIESS: And 51.09 would require the Commission to show that it was a substantial improvement to safety.

MR. JOYCE: I don't know the latter.

MR. SIESS: Most of the staff don't. That is the backfit provision that has never been used by anybody. That is the way the Commission gets around having to make a finding that safety will be improved.

Any other questions about Reg Guide 1.97, Revision 3? Bill, you want to ask something about what?

MR. KERR: I have a number of questions about Table 1.

MR. SIESS: Yes.

MR. KERR: Is it time to ask those?

MR. SIESS: That is part of the Reg Guide. Let me ask one, it may be one you were going to ask when we started off.

The Type A variables is an open list, plant specific.

MR. HINTZE: That's correct.

MR. SIESS: What experience has the staff had in developing a list of Type A variables on plants? Has anybody submitted a list yet? This Reg Guide has been out.

MR. HINTZE: I don't know. It has not been enforced yet.

MR. SIESS: It has not been enforced.

MR. HINTZE: I don't know whether they have

done it on a voluntary basis or not. Joe may know.

MR. JOYCE: That is correct, Al. There have been, I guess, three or four documents that have come in on a voluntary basis in response to Reg Guide 197, Revision 2.

The staff has not looked at these documents. We are waiting for correlation with the project manager and licensees and the official submittals, so that we can start implementing and reviewing.

MR. SIESS: There are 150 plants out there, 140 something, that this is going to apply to.

MR. JOYCE: Yes.

MR. SIESS: I am not talking about the future, I worry about those. They may be standard plants.

Are you going to get separate submittals from each one of those as to what they think the Type A variables are?

MR. ROSSI: I think the answer to that is, yes, we are. However, I would like to point out that the Type A variables are the ones that are required in order to cope with an accident. The staff reviews, in my opinion, have always looked at those pretty carefully because we have always looked at any manual actions that are required following an accident carefully from the standpoint of ensuring that it is OK to use manual

actions rather than to automate them.

That has been an issue that has been brought up by essentially every review. So, I think those hve been pretty well covered in most plants. What we are talking about doing here is getting a more formal listing in one place.

MR. SIESS: Yes, but you are going to get 140 formal listings. Who is going to coordinate this? It seems to me that people that have been reviewing emergency procedures have to be involved because that is where it calls out what the manual actions are. And emergency procedures are being revised like mad these days and reviewed. Everybody is reviewing and revising emergency procedures.

MR. ROSSI: You are correct, the emergency procedures will be important and the Reator Systems Branch will be deeply involved in that review.

MR. SIESS: What is the probability that two or more or less identical plants are going to come in with a different list of Tye A variables, will somebody look at those?

MR. ROSSI: That could very well happen. But keep in mind that the reviews we do on the staff are basically audit reviews. The burden is on the licensee to pick the correct Type A variables and we will audit

what he picks to assure ourselves that he has done a good job in picking the correct ones. Comparisons will be done, but we do not intend to do an exhaustive comparison of everyone's list.

MR. KERR: Mr. Rossi, I have gotten the impression that Regulatory Guides were supposed to give guidance to the licensee as to what the staff would find acceptable. That is the reason that they come into existence as regulations, and the Reg Guide tells the licensee he can go with that regulation.

Now, it does not seem to me that this gives very much guidance to a licensee as to what a Type A variable is unless you are willing to accept whatever a licensee picks out.

If you are not going to accept just what a licensee picks out, then it seems to me some guidance might be appropriate. And to just say "plant specific," it seems to me, is not a lot of guidance.

MR. ROSSI: Well, I think there is in fact a lot of guidance already available. I believe the Standard Review Plan covers what is acceptable.

MR. KERR: Well, why is that not referred to here, rather than the terse statement, "plant specific?"

I mean, if there is guidance somewhere else that is more specific, it seems to me it might be well

to refer to it here.

MR. HINTZE: This guide is a list of variables to be measured, OK? And unless there is one variable that should fit every plant, we can't put it in.

MR. KERR: But how are you going to make a judgment, then, when you get them as to whether they are appropriate or not? Somebody is going to make a judgment, I am told. Will that just be on an ad hoc basis for each plant?

If so, what does the reviewer use as guidance?

MR. WATT: The reviewer would use the judgment of whether that measuremewnt gives the operator sufficient information to take the action.

MR. KERR: But he is going to use some criteria, I think -- maybe it is the Standard Review Plan, maybe it is something else.

If he is going to use this, why not tell a licensee the reviewer is going to make a judgment based on whatever he is going to do, so that the licensee can save himself some trouble?

I mean, he has some idea of what criteria are going to be used. It seems to me he is in a better position to give you the information you want the first time around.

MR. WATT: The emergency core cooling systems

are plant specific. the long-term cooling characteristics are plant specific.

MR. KERR: But everything in here is plant specific, likely. And yet, we have lists of stuff and for some reason for Category A, for Type A, we have a the terse statement, "plant specific."

MR. WATT: I have been concerned about this, too. But really, you have to anticipate an accident and say, when would an operator have --

MR. KERR: You had to do this for neutron plugs, for control rod position, for RCS solulable Boran concentration. I mean, you don't use those unless you speculate an accident and say, "I need this."

MR. ROSSI: Well, I think that these variables are determined by what is in the Chapter 15 analysis of the FSAR and what is in the emergency operating procedures.

MR. SIESS: I think the latter is a lot more important than the former.

MR. ROSSI: Well, it is the combination of the two.

MR. SIESS: But the emergency operating procedures tell me what is a manual action and what is an automatic action, and the Chapter 15s will not.

MR. ROSSI: Well, Chapter 15 analyses, though,

tell generally what the bare minimum required safety actions and equipment are in order to cope with an accident.

(Simultaneous conversations.)

MR. ROSSI: They are the ones that are picked in Chapter 15.

MR. KERR: We have already gone beyond the design basis accidents in Reg Guide 1.97.

MR. SIESS: What is more, we have vendors coming up with standard operating procedures. They are developing operating procedures. So, there are not going to be 140 different sets of operating procedures.

MR. ROSSI: But there are still going to be plant-specific aspects.

MR. SIESS: There will be some plant specific but every plant is not going to be unique. There are an awful lot of things similar between Millstone 1 and Dresden 2 and 3, for example, and Dresden 2 and 3 and Quad Cities 1 and 3. They are the same vintage plants and the same company, for example.

Now, I will guarantee that they will have the same. And I am not even sure they have the same project manager.

MR. ROSSI: I look at the Type A variables as being more along the lines of the Chapter 15 analyses

than anything else because the Type A ones are those where he has to have the information because in the design and analysis of the plant you are dependent in some way on a manual action to perform a safety function, rather than automating it.

I think the part about going beyond design basis accidents is basically covered by all the other parameters that are in there.

Now, the emergency operating procedures are going to include things like non-safety grade equipment that the operator might use in certain situations, and they go also beyond just the bare minimum things that are required in Chapter 15.

But there is always a question when we write one of these Reg Guides as to how much detail we provide for the licensees.

In the case of Type A ones there is not very much, but I would also like to offer that I think there is a considerable amount of an overlap in the review of those Type A variables with other things such as, again, Chapter 15 analyses and emergency procedures.

MR. KERR: This is what would seem to me to be a somewhat anomalous situation in the guide itself. It says, "The factor that is a Type A variable does not preclude its being a B, C, D or E."

Now, it seems to me in order of importance - and maybe I misjudge - but I thought that probably Type A variables are a bit more important than B, and B is more important than C, and so on. Maybe that is not the case.

MR. ROSSI: That is correct.

MR. KERR: If it is the case, it seems to me if you define something as a Type A variable, then the specifications on that instrument and that channel are such that you do not have to worry about whether it is a B, C, D, or E, you have already taken care of it.

So, I do not see why one worries about it.

MR. ROSSI: Well, we did not want to infer that if something was listed as a Type A variable and a Type B variable, that they had to have a separate instrument for the two. I think that was the reason.

MR. HINTZE: If we start listing Type B variables, we are dictating to them as to what they should have manual and what they should have automatic.

MR. KERR: I am not saying that you list them. I am saying give them some guidance.

MR. HINTZE: We do.

MR. KERR: All it says here that it is plant specific. Indeed, I think maybe it gives too much specificity in the B, C, D, and E. I was just struck by

what seemed to me to be an anomaly in terms of importance. The important variables, you say, are plant specific. Those are the less important.

MR. SIESS: Bill, the A, B, C, D, the order of importance is on a time sequence. A are those things you --

MR. KERR: I thought that I was just told that that was true, that there was an order of importance.

MR. SIESS: I believe that is incorrect.

MR. HINTZE: The Categories 1, 2 and 3 are the orders of importance.

MR. WARD: Yes.

MR. SIESS: Bill, if you look at them, A are those things you have to know in order to do the proper manual actions; B tells you whether the automatic systems are working; C tells you you are likely to have a failure somewhere in one of the boundaries - I forget what D is; and E tells you when it is outside of containment.

It gets progressively worse.

MR. WENZINGER: Mr. Chairman, may I have a word, please?

MR. SIESS: Yes.

MR. WENZINGER: Thank you.

I think we have all forgotten, and I think the

ANS would probably accuse us of having deliberately forgotten - that may be right or wrong but I won't argue it - but this Reg Guide does in fact endorse an ANS standard although the degree of endorsement is perhaps not as much as the ANS would have liked.

Let me read to you from Section 4.2 of the endorsed standard. It says, "Three classifications of variables have been identified. Operator manual actions during design-basis accident events are pre-planned. Those variables that provide information needed by the operator to perform these manual actions are designated as Type A."

No identification of a spcific Type A monitored variables is provided in this standard because they are plant unique. The process for selecting Typpe A variables is given in Section 5.1.1. "Those variables needed to asess critical plant safety functions," and it goes on to B and C.

Let me go, then, to Section 5.1.1. It says, for Type A under variable selection, "The process for selection of accident monitoring variables shall include identification of - for Type A - the design basis acident events for which manual action is required," that is one.

Two, "Pre-planned operator actions to deal

with those events."

Three, "Monitored variables needed for pre-planned operator actions."

Four, "That the monitored variables for which current value, rate, trend or a combination of these are required for pre-planned operator actions during an accident."

Now, that is the guidance and criteria that is given for Type A in the standard. We did not repeat it in the guide because we agreed with it.

MR. SIESS: Thanks, Ed, we needed that.

MR. KERR: Now, is a reviewer going to have available that ANS standard?

MR. SIESS: Oh, yes.

MR. WENZINGER: Yes, it is specifically endorsed by the Reg Guide, believe it or not.

MR. KERR: That was not my question.

(Laughter.)

MR. SIESS: There will be one copy of it.

MR. WENZINGER: There is one copy here, and I am sure the ANS would be glad to sell you additional copies.

MR. SIESS: Incidentally, Type A specifically says DBAs.

MR. KERR: And those instrumentation systems

are safety grade, are they not?

MR. WENZINGER: Yes, sir.

MR. HINTZE: That is correct, Category 1.

MR. KERR: And that is an indication of importance there, they are therefore considered fairly important.

MR. WENZINGER: Very important, yes.

MR. KERR: I have some other questions, Chet.

MR. SIESS: Yes, sir, go right ahead.

MR. KERR: Let me go to Table 1. I recognize that BWR core temperature is still an open issue. But is it really the core temperature that one wants to measure, or is that still undecided?

I do not have any idea of how one measures core temperature or even what it means.

MR. SIESS: It used to say core thermocouples, and I guess we knew what that meant. Now it says core temperature.

MR. HINTZE: That was changed because thermocouple is not a variable, temparature is a variable.

MR. KERR: That is true, but what would one mean by the core temperature, and how in the devil would one measure it?

MR. ROSSI: I think that is why we are still

considering what is going to be required in this area. I think it is premature to try to talk about it.

MR. WARD: Is it core coolant temperature?

MR. KERR: You really did not originally intend to measure the core temperature, did you?

MR. ROSSI: Again, I think the reason that this is not being implemented at this time is, we are still discussing exactly what it is we want to know and how we are going to find it out. I do not think we can answer your question.

MR. KERR: Then why not leave that line blank? That would indicate that you do not know what you are doing at all.

(Laughter.)

MR. BERLINGER: I am Carl Berlinger, Core Performance Branch.

The BWR core temperature variables you are just discussing, it really is referring to temperature measurement that was proposed to be implemented on BWRs for core exit thermocouples.

Some time ago, core exit thermocouples and the application in BWRs was questioned and there were several meetings between the BWR owners group and the staff.

As a result of the meeting, the BWR owners

group has developed a generic report which has recently - around the middle of December - been submitted to the staff, which proposes that core exit thermocouples are not needed in order to track inventory or water level in the core.

The staff will be reviewing this report, and actually there are several reports there, quite lengthy. We intend to complete these reviews in mid-summer, around August.

MR. SIESS: I have a problem with this. It seems to me what we are interested in --

MR. KERR: It was a very good answer to some question.

(Laughter.)

MR. SIESS: It seems to me that what we are interersted in is the temperataure of the plant, isn't it? If it gets above a certain temperature it creeps, it interacts with the water, hydrogen develops.

MR. KERR: He is right. Originally, what we talked about was something, and indeed this says to provide diverse indication of water levels.

MR. SIESS: Well, that is what bothers me because what I am interested in is the temperature of the stuff in the core. I guess if there is water in there, that helps a lot.

But I am not really interested in where the water is, I am interested in what the temperature is, am I not? That was one of the problems in TMI.

MR. KERR: Chet, you are very interested in what the cladding temperature is. The problem is, nobody knows how to measure it.

MR. SIESS: I know. But the thing is, the purpose is, at TMI they were so concerned about the water level nobody paid any attention to the thermocouples they had. They just assumed that they had enough water in there and ignored the fact that the temperature --

MR. KERR: Even those thermocouples were not measuring core temperature, they were measuring the outlet temperature of the steam or something close to it.

MR. SIESS: It seems to me that we are still putting emphasis on the water level and not on the core temperatures.

The object of the game is to keep the core cool, isn't it? Obviously, if it is covered with water, it is being kept cool.

MR. KERR: I guess the answer is that that is still under discussion.

MR. WENZINGER: I think that is what we said originally.

MR. KERR: I did not realize anybody ever really was talking about trying to measure core temperature. That is what this sort of implies. But, so be it.

MR. SIESS: But if you have a way of measuring the clad temperature, is that not what you would want to know?

MR. WENZINGER: Sure.

MR. CARBON: We want to know both, I think.

MR. WARD: Yes, but that is hopeless to say you are ever going to measure that. So, you try to measure what you can, and that is the core exit coolant temperature.

MR. SIESS: It would not have to be the exit temperature.

MR. WARD: You want to measure something that is representative of the condition of the core.

MR. SIESS: That's right. But this says you want to measure something that is representative of where the water level is, over in the last column.

MR. STODDARD: What you are really trying to say here is that you want to make sure that the core is being cooled.

MR. WARD: Right.

MR. STODDARD: And one way you do that is by

monitoring, say, a core exit temperature.

MR. WARD: Right.

MR. STODDARD: And if that temperature indicates that you have water for cooling, then the core is cool.

MR. WARD: Why don't you say PWR core exit temperature there, then?

MR. SIESS: The argument got to be about where you put those thermocouples, at what level in the core. I guess that is why they took "exit" out or did not want to put "exit" in. There were all sorts of proposals as to what level you could put them and so forth.

MR. HINTZE: That's right.

MR. SIESS: I just object to the emphasis that all you want to know is where the water is when what you really want to know is whether the core is being cooled.

Mr. Kerr?

MR. KERR: Remind me, at the bottom of that page, why the dry-well pressure range only goes to design pressure?

MR. SIESS: It goes somewhere else. I mean, it goes higher somewhere else, doesn't it?

MR. KERR: Yes, it does. There is probably a very good reason, I have just forgotten what it was. Well, it does not matter too much.

MR. WENZINGER: Yes, there is a reason. Recall, there are two purposes that the variable is used for. One to determine, like for Type B, whether the safety function is being accomplished, and under that it is listed.

The question of whether or not the boundary to release the fission products is being detected, the Type C purpose, is listed there as well.

MR. SIESS: But it only goes to 110 percent of design pressure there. On a PWR, where do we go to on pressure? The first thing when the ACRS brought this up was, they wanted higher reactor coolant pressure measurement, higher containment pressure measurement.

MR. KERR: On the PWR for what, Chet?

MR. SIESS: Containment pressure.

MR. KERR: Something like three times for concrete, four times for steel, as I remember.

MR. SIESS: Well, Type B still goes to design pressure.

MR. KERR: Does it? OK.

MR. SIESS: Type C still goes to design pressure.

MR. KERR: Maybe it is just because for Type B that is all you need, whereas for Type C --

MR. SIESS: Well, I am trying to find the

place where it goes up higher. Is that Type B?

MR. WENZINGER: Type C.

MR. SIESS: Type C, containment pressure goes to three tims design pressure for concrete, and so forth.

Now, what do we have for BWRs under Type C?

MR. KERR: Well, we have containment -- I don't see it.

MR. ROSSI: Primary containment pressure on the BWRs is on page 10.

MR. WARD: The same thing.

MR. SIESS: OK.

MR. ROSSI: That is primary containment pressure.

MR. SIESS: But what do you call the primary containment, the building? The dry-well is not the primary? I am confused now. It seems to me the dry-well and wet-well in a boiler serve the same function as the containment does in a pressurized water reactor.

MR. ROSSI: I think it depends on whether it is a Mark I, II or III containment.

MR. SIESS: I don't see any distinction here. The primary containment, what does primary containment mean, the building?

MR. ROSSI: I am not sure.

MR. KERR: For maintaining containment integrity one has primary containment pressure minus 5 PSI of design pressure.

MR. SIESS: But under Type C on page 10 it goes to three to four times. The primary containment has got to be the dry-well.

MR. HINTZE: It has to be the next barrier following outside the --

MR. SIESS: The vessel.

MR. HINTZE: The vessel, right.

MR. SIESS: OK, it's all right.

MR. KERR: So, everybody will understand that in one place primary containment means dry-well and in the other case dry-well means dry-well.

MR. WARD: No, no.

MR. ROSSI: I thought - and I am not a containment expert - but I thought that in the Mark IIIs if you had a dry-well, then that was surrounded by what was called a primary containment; is that correct?

MR. WARD: No, it is a secondary containment. the primary containment is the wet-well.

(Simultaneous conversation.)

MR. SIESS: The secondary has the wet-well in it in the Mark III; the primary is the dry-well. It is just confusion because eve in Type C you have two

different values.

MR. ROSSI: Well, I think we want to agree with you that we should check to see that we are calling the same thing by the same name throughout here.

MR. SIESS: Yes.

MR. ROSSI: If we are not, we will take a look at that. I do not think we can answer your question right now. But I think that has to be checked.

MR. SIESS: I think primary is the dry-well. It is the dry-well-wet-well combination for a Mark I and II, and it is the dry-well itself for a Mark III because the wet-well is outside the boundary of the Mark III.

MR. KERR: On page 9 of the same document under "Analysis of primary coolant" - I mean, it is associated with analysis of primary coolant - what is the meaning of 10 microcurie per milliliter to 10 curie per milliliter or TID-14.844 source term in coolant rod? I just don't understand what that means.

MR. SIESS: That is just another way of getting curies.

MR. KERR: I understand the statement up to the word "or," but I don't understand the implications of the "or" statement.

MR. SIESS: Whichever is greater or whichever is less, that is another way of asking it.

Does the "or" apply to the upper limit?

MR. STODDARD: Phil Stoddard, NRR, Division of Systems Integration.

The "or" is simply a second method of calculating the number. It might be useful for one of the smaller reactors. The TID 14.844 is used to calculate the ten microcuries per millimeter. The ten curies per millimeter are based on a 3800 megawatt thermal reactor.

MR. SIESS: So, the TID 14.844 is an alternative upper level?

MR. STODDARD: That is correct. You might wind up with a figure on the order, say, of two curies per millimeter, five curies per millimeter.

MR. SIESS: So, it is whichever is less.

MR. STODDARD: It is optional.

MR. KERR: Well, if it is just the difference between ten curies or two curies, why put in the TID 14.844?

MR. STODDARD: I don't recall the rationale for putting that in. It was suggested at one point.

MR. KERR: And on page 10 under "associated with," about the middle of the page, "containment and dry-well hydrogen concentration," what is meant by zero to 30 percent volume?

MR. STODDARD: Volume percent.

MR. SIESS: Volume percent.

MR. KERR: And how does an instrument measure volume percent? I would think it would measure concentration or something; correct?

MR. SIESS: I am interested in the change from bottom to top, to top to bottom.

MR. KERR: Oh, I understood that immediately.

(Laughter.)

MR. SIESS: That is one that comes under the heading of clarification.

(Laughter.)

MR. WENZINGER: That comes under the heading of making them all the same.

MR. KERR: That just means the first guy who wrote that did not know his top from his bottom.

(Laughter.)

MR. KERR: Is it really intended that the instrument measure volume percent?

MR. WATT: Yes.

MR. KERR: How can you do that?

MR. WATT: You can set them up in weight percent and volume percent. There are instruments that measure on a volume percent basis.

MR. WARD: I think that is right.

MR. KERR: I bet they calculate it, but I bet they don't measure it.

MR. WENZINGER: That is correct.

MR. SIESS: The variable provides information that says --

MR. KERR: Well, OK.

MR. WENZINGER: That is correct, definitely. The level is calculted.

MR. KERR: So, the variable being measured is not the volume percent, it is the concentration calculated.

MR. WENZINGER: Yes, that is true.

MR. KERR: Now, on the next page, 197-11, there is a key here - and maybe less here than other places. The implication, I think, that by making measurements of radioactivity one can somehow determine how much has been released, which sort of puzzles me because it appears to me that one needs information not only on concentration but also on flow rate. If one has a release point you found out how much is released.

But the emphasis seems to be, as far as I can tell, in all the places just on measurement of activity, and the reason for doing this was so that one could tell how much activity has been released.

MR. SIESS: You are talking about the Type C

variable at the to top of page 11?

MR. KERR: Yes, and then other places, too, where one is measuring activity.

MR. SIESS: Well, it says the purpose is to indicate a breach.

MR. KERR: Well, if you just want to get a breach, I don't think you need that much of a range.

MR. HINTZE: You mean you would want it to go off scale?

MR. KERR: Well, I don't know what, it is not quite clear to me what it is. It says, "Areas where penetrations or hatches are located." Now, if you put it inside an area where a hatch is located and measure its activity, that does not tell you that you have any release, it just tells you that there is radioactivity near the hatch.

I would assume that what one wants to find out is whether something is getting out, not the fact that there is radioactivity near where a release might occur.

Is it that you want to know?

MR. HINTZE: This is in the effluent path now, outside. The building is where the hatches are, but the effluent from those buildings.

MR. KERR: How do you tell that this is outside?

MR. HINTZE: The variable is effluent radioactivity, gaseous, from the buildings where the hatches are.

MR. KERR: And you just want to know that there is a breach, not how much. If you just want to know that there is a breach I do not see that you need the nine orders of magnitude range.

MR. HINTZE: Bill, could you comment on that? I think what we wanted to do is make sure that it did not go off scale, no matter what the use --

MR. SIESS: Ordinarily, if it goes off scale that certainly tells you something; does it not? I mean if ten to the minus six microcuries per cc indicates a breach, then anything more than that certainly indicates a breach.

MR. WENZINGER: There was a general philosophy in the entire standard that we would attempt to provide ranges so that the oprator, or whoever might be interested in the variable, would be informed of what the value of that variable is, and that if corrective action is being taken to fix whatever the problem is. That by having the variable on scale he would be able to tell whether his corrective action was having positive, negative effects, or no effects. That is why we wanted it on scale.

MR. SIESS: So, if we have ten to the three and you closed a valve and it went down to ten to the one, you figure you were doing some good?

MR. WENZINGER: That is the idea.

MR. SIESS: Is that a reasonable range, nine orders of magnitude to this kind of instrumentation?

MR. STODDARD: Phil Stoddard again. It is reasonable in that the instruments that have been developed typically have three separate detector rate measurement systems.

The single detector is good for no more than four, from a maximum of five decades. But the systems that are being used for this and other purposes are capable and had a nine-decade range, again by using as many as three detectors.

MR. KERR: What is an operator going to do to a penetration in a hatch to see that something has changed?

MR. SIESS: Close the valve.

MR. KERR: I am convinced.

On page 197-13, under "Area radiation" there is a specification, radiation exposure rate inside buildings or areas where access is required for service according to safety."

Now, this presumably is a fixed measuring

point. I guess I almost think on the basis of previous experience and previous NRC practice that this almost may be counter-productive because it implies that one would make a judgment about access to the area on the basis of a fixed point monitor.

And yet, we have had a number of recent incidences in which people not only did not use fixed point monitors but used portable monitors in the wrong place and were fined for poor practice.

I guess almost anybody who is going into a region like this on the basis of that would take not just one but several radiation monitors and carefully survey the region.

So, I am not sure that I understand what this thing is for.

MR. HINTZE: Well, it certainly does not preclude the use of portable monitors. What it intends is to give him an idea of what is there before he starts to go into this, otherwise he does not know.

MR. KERR: I mean, that is precisely what the monitors are for. You start out and you start approaching the source, and if it goes on a scale you back off or do something.

MR. ROSSI: I think your comment has to do with what I consider to be kind of a general philosophy

assuming these variables here.

If we are trying to look in too much detail at one particular variable all by itself, it might tell somebody about what is going on after an accident. I think really the attempt on these variables was that we implied variables that as a whole can be used to tell you the magnitude of the problem that you are trying to deal with.

And you are absolutely right, we would not use this as a single variable to make a decision. He would use it in conjunction with other variables in here and he probably would use portable equipment. This would be of use, I think, in telling someone the magnitude, general magnitude, of the problem that he is trying to deal with.

MR. KERR: In temrms of existing plants, are these likely to be in place, or is this new equipment?

MR. ROSSI: I believe it is new. Yes, it is new.

MR. KERR: I guess I can't see that, if it is really new - I am not sure what it is good for, but you thought about it.

MR. STODDARD: While this type of instrumentation is not common to all plants, there was instrumentation of this nature in place at Three Mile

Island. There is a record of one such instrument reading, I believe, 600 Roentgens, in the immediate vicinity of the sampling system shortly after the accident.

MR. KERR: Well, it was not my contention that the thing would not read or would even read incorrect. It is just that I am not sure -- well, you guys have given it a lot more thought than I have, I guess.

On page 14 I sort of wondered what the purpose of the added statement was.

MR. HINTZE: Which one is that?

MR. KERR: "It is unlikely that few fixed station area monitors could provide," and so on. "However, there may be circumstances."

It seems to me that this is giving a licensee rather confusing guidance.

MR. HINTZE: It was intended to give support to those who have already installed these area monitors.

MR. KERR: What does "support" mean? You are telling them that they have wasted their money? But how about people who have not installed them?

MR. WARD: They don't want them to waste their money.

(Laughter.)

MR. KERR: There may be circumstances where

such a system may be useful. To me this tells a licensee, "We would certainly feel good if you had one of these."

MR. HINTZE: I don't think I can respond to that.

MR. KERR: And if the decision is left to the licensee, it seems to me -- I just don't see what guidance that gives anybody.

MR. SIESS: It says if you jump the gun and put this stuff in because you thought we were going to require it, we are sorry, but maybe it will be useful.

MR. KERR: OK.

MR. HINTZE: I understand some states require it. Did not California require it, Frank?

MR. CONGEL: Yes. I am Frank Congel, NRR.

We have a little bit of circular reasoning here because the State of California required it, as I understand because we had originally required it in our first version of the Reg Guide.

But frankly, I think it has already been expressed why we put in this statement, and that is to tell those people who did install what it for whatever reasons they had that it may not be of great value.

But the analysis that we did shows that the monitors would serve --

MR. KERR: I understand what the analysis showed, I am trying to find out what guidance the licensee is getting from that statement. I gather that you are telling me he is not getting any, it was put in for a different purpose.

If that is the case, then I understand that. I just look for guidance in that Reg Guide.

Now, on the bottom of that page --

MR. SIESS: It is useful if you are in California.

MR. KERR: I do not understand the inserted statement. Can somebody tell me what that means?

MR. STODDARD: Phil Stoddard again.

That came about as the result of some theoretical objections to sampling that was provided.

MR. KERR: I want to know what it means, not how it came about. What is it supposed to tell me?

MR. STODDARD: Basically, you just go out and take the best practical sample you can, regardless of what the theory says about the sampling.

MR. KERR: Well, does not "representative sample" say that?

MR. STODDARD: That is correct, but if you look into sampling theory, well, just as an example, there are some systems that have been put in place where

the sampling lines are approximately 150 feet long.

MR. KERR: I am trying to understand what this statement tells a licensee. If I were a licensee, I would not know what I was being told. What am I supposed to gain from that statement?

MR. STODDARD: Well, first of all you are obtaining the best practical sample. It means you obtain the best sample you can.

And then you apply to that sample values that you obtained by test as to what the sample line losses are. So that you can by applying correction factors come up with results which are conservative estimates, approximations, whatever you want to call it, of actual concentrations.

MR. SIESS: Does the ANS Standard offer any better advice?

MR. STODDARD: The problem with the ANS Standard 13.1, which is dated 1969, is that the advice in there essentially tells you, you can't sample with a line that is about 15 feet long.

However, that is not quite correct in that it has been observed by some number of people that you can in fact smple over lines as long a 150, 200 feet long. You do not get a hundred-percent effectiveness, it may be only 25, maybe only 40 percent. But you do get a

sample.

What we are saying is that where you do have problems with high radiation levels and so forth, our recommendation is that you get the best sample you can. Make some calculations as to what that sample really represents in terms of the concentrations at that point of sampling, not relative to the end product, and just come up with the best results you can, applying conservative factors to assure that the results are not going to be on the low side.

MR. KERR: At page 15, in the footnote 15, what is meant by "which may be expanded and superseded by Revision 1?" Is Revision 1 not yet out and so they are saying -

MR. HINTZE: That is correct. Revision 1 is in Harold Denton's office waiting for his final concurrence.

MR. KERR: Why is that put in here, then, that it may be expanded and superseded because almost any Reg Guide may be expanded and superseded by revisions.

MR. HINTZE: Well, the Regulatory Guide 1.23 contains a lot more information than what we have got here in terms of meteorological measurements. They indicated we made this change to be consistent with it and put them in here because we wanted to let this guide

to be complete as far as the variables go.

MR. SIESS: Let's see, 1.23 is the one that requires the backup system on the ten-foot pole?

MR. HINTZE: I think that is what it is, yes.

MR. SIESS: And where is that now? We said we did not like it, and lets CRGR look at it. Where is it now?

MR. HINTZE: It is in Harold Denton's office waiting for his concurrence as far as getting it issued.

MR. SIESS: It has not gone to CRGR?

MR. HINTZE: It went to CRGR and I think it went back again the second time. The gentleman who was to talk to that could not make it this morning.

MR. SIESS: I have a faint recollection that CRGR sort of agreed with us.

MR. HINTZE: They had some problems with it, yes. It got the impression from talking to Mr. Clint Chevitz that if we can't solve that problem, CRGR can solve it. But I can't be sure.

MR. SIESS: Now, this went beyond the existing 1.23; is that not right, what is in 1.97?

MR. HINTZE: It went beyond? No, it was just different.

MR. SIESS: It was different?

MR. HINTZE: Yes. As far as the variables

went, there were different numbers in the range.

MR. SIESS: OK.

MR. KERR: On page 16, and also a number of other places where it startd with RCS pressure, why do you require 4,000 for CE plants and only 3,000 for non-CE plants? Does a CE plant burst at a higher pressure?

MR. HINTZE: I have forgotten what the rationale was.

MR. KERR: It probably has to do with ATWS, but I don't understand why.

MR. SIESS: It says that in the footnote.

MR. KERR: That is quite a difference.

MR. ROSSI: There are some differences in the plants in terms of the safety valve capacity that they have.

MR. KERR: But have you concluded it is impossible for the other plants to go above 3,000?

MR. ROSSI: I think the conclusion is that it is much less likely.

MR. KERR: And at the bottom of page 17, what is meant by trending the voids?

MR. HINTZE: You can't measure them exactly. You can measure whether they are increasing or decreasing.

MR. KERR: Why doesn't one say this?

MR. HINTZE: We thought we did by "trending." Maybe we invented a new word. I don't think Mr. Morrison likes that word either.

MR. MORRISON: That is right, it is not a word.

MR. KERR: I don't think it is a verb, at least.

MR. MORRISON: That is my objection to it.

MR. KERR: Maybe it is becoming one.

On page 18 in the footnote, "Monitors should be capable of measuring radioactive gaseous effluent concentration."

Is it really the gaseous concentration that one ought to measure, or the activity? I am not sure. It seemed to me that you want the activity, but perhaps you want the gaseous concentration.

MR. HINTZE: I'm sorry.

MR. SIESS: Footnote 8 on page 18.

MR. KERR: Footnote 8, measuring radioactive gaseous effluent concentrations. I am not sure which you want. I would have thought you wanted the activities.

MR. HINTZE: Do you have a problem with that, Joe?

MR. KERR: I do not suggest that you answer

it. Just look at it and make sure that it says what you want to say.

MR. WARD: On page 21, the cooling water system, the component cooling water temperaturre, you raised the bottom of the range from 32 to 40. I was just curious, 32 seemed like a nice number.

MR. KERR: Another place they raised it from 30 to 40, which I thought was nice.

MR. WARD: Yes.

MR. KERR: I decided that 30 must have been in for ice condenser plants.

MR. SIESS: Do you have an answer, Al?

MR. HINTZE: I'm sorry, I was writing.

MR. SIESS: On page 21, the fourth item from the bottom, the cooling water system changes from 32 to 40. That is the only change on that page.

MR. HINTZE: The only thing we can think of is that we never did get that low.

MR. WARD: I'd be sure of 32, I guess.

MR. HINTZE: The Idaho people seem to think that the ranges of instruments that were apparently there might have to change their scales, if they went down to 32. That's the only thing I can think of.

MR. SIESS: That came out of the Idaho report?

MR. HINTZE: Yes.

MR. SIESS: Bill, do you have some more?

MR. KERR: Well, there were a number of places in the guide itself where I had questions, but I think these are not changes, so maybe I should just desist at this point.

MR. SIESS: It's up to you. Dave, do you have anymore?

MR. WARD: No.

MR. SIESS: Jerry?

MR. KERR: One question. There was a reference to measuring containment temperature, and that that would require instruments in several different locations. Did that have in mind the fact that maybe, say, in something like an ice condenser you would want to measure the temperature in the lower and upper compartments, or did it mean, say, a big dry containment

where you needed to know the temperature in several locations?

It seemed to me that one might have said a little more about what one had in mind there because I was not sure.

MR. HINTZE: I'm not quite sure I --

MR. SIESS: Do you remember where it was, Bill?

MR. HINTZE: I know when we were talking about containment temperatures --

MR. KERR: It is referred to on page 3 of 1.97, and the paragraph uses an example. It says it's important that the number of points measured be sufficient to adequately indicate the variable value. For example, containment temperature may require spatial locations at several points of measurements.

Now, it seems to me that in a large dry containment, I'm puzzled that that would be the case. If you're talking about a compartmentalized containment, I could see that it might be, and I wasn't sure which one you had in mind. And indeed, it seems to me it's a fairly important point. If you think in a large dry, for example, that you need a large number of points for measurements, I wondered why. And if you aren't, then --

MR. WENSINGER: This is general guidance. If you expect there might be differences in temperatures,

whether it be a large dry or an ice condenser or whatever, if you expect that there might be different tempertures at various locations -- pockets, if you will, where temperatures might get higher -- then you ought to instrument those areas to know what those temperatures are.

MR. SIESS: During normal operation of a PWR, do you have any idea how much the temperature varies, say, in the steam generator compartment at the top of the dome, or outside the shield wall? Are there large variations?

MR. HINTZE: Do you have any information on that?

MR. SIESS: Do they keep the temperature fairly constant?

MR. ROSSI: I don't think anyone here knows.

MR. KERR: On page 4 under 1.1, the type A variable definition, it is specifically and deliberately just for a design basis accident. Then on page 1.2, the statement is made, "The sources of potential breach are limited to the energy sources within the cladding..." and so on. What is the significance of that? Does that mean you're considering tornadoes as a source of breach? I didn't understand what I was being told.

MR. HINTZE: Yes, there are probably lots of

energy sources that somebody could think of that could breach a containment but it may not be within the containment itself, as you indicated, a missile or something like that. You can't measure for those but you can measure within itself.

MR. KERR: In trying to predict the possible onset of, say, breach of containment, have you given specific thought to what sort of use would be made of the information? For example, if you measured pressure, are you doing that just as sort of a general thing because you know the pressure measurement is an indication of what is going on, or have you gone beyond that and said if the design pressure -- if we think the thing will burst at three times design pressure and one will get within, say, 2.8 above design pressure, one starts evacuating?

Has the thinking gone that far in implementing this and in talking to people about its usefulness? How far does one go in thinking about how the information is to be used?

MR. HINTZE: Dr. Kerr, that particular one was one of the variables that was in the very first 1.97 we issued at the recommendations of this committee. I think it was just an effort to not ever be blind as to what was going on inside containment.

MR. KERR: Okay, I'm not sure that I know --

MR. HINTZE: We are still battling why you go up that high anyway. What are you going to do if it gets there? We're still battling those kinds of questions.

MR. KERR: The other question --

MR. SIESS: Let me follow up on that. We have been talking in connection with degraded core accidents about containment integrity. Of course, a lot of effort is being put now on when the containment will burst. I've been trying to make the point that there are other ways you can have a release of material from inside containment. One of the obvious ones is failure to isolate, a purged valve doesn't close or some other valve doesn't close.

Everytime that's been addressed in some of the research programs, there's been an indication that well, this is something we can handle without -- just by licensing or inspection or in procedural type things. If a valve is open we close it; if a valve is leaking we can close the other valve.

Now, we were just talking a little while ago about monitoring potential leakage points. Is this specifically addressed in connection with -- I forget whether it would be type B or type E variables -- as to

what information you would need to know to determine that you have not had containment isolation and some valve is stuck open or some valve is leaking excessively? You know, it doesn't take a very big hole to have 100 percent leakage, and that's just about as good as blowing the containment open.

Has this issue -- this issue has come up more recently. This guide has been in preparation for some time, but do you think that's been addressed in here in the context that I mentioned of yes, we can find out if something failed to isolate and we can fix it?

MR. HINTZE: Phil might want to talk to that. The effluent monitors would certainly pick up any valve that was left open if it were in the normal path.

MR. WENSINGER: And there is the recommendation under type B for each of the primary containment isolation valves as a position indication.

MR. SIESS: Let me postulate a couple of things. A likely source of leakage is the personnel hatch. They leak all the time. Either one or both doors. Is this something that is monitored in any way? Is this one of the effluent monitor locations?

MR. HINTZE: That was the purpose of the original type C variables which were area monitors inside the building. Is Mr. Congilette here?

MR. KERR: When I raised the question about range a while ago, I was told that the monitors would be outside a hatch location and would be expected to monitor a leakage around the hatch. In an accident situation, I'm not quite sure how the instrument would distinguish between leakage --

MR. HINTZE: That was the problem with the area monitors inside the building. You couldn't tell whether it was inside or whether it was contained or not contained.

MR. KERR: I doubt you could tell that when it's outside, either.

MR. SIESS: What about the equipment hatch?

MR. HINTZE: The equipment hatch is in the building and has an exhaust pump.

MR. SIESS: Most of them I've seen -- not most of them, but some of them go right outside, don't they? Am I wrong on that?

MR. STODDARD: That's correct.

MR. SIESS: That's got an opening that is anywhere from 14 to 22 feet in diameter with a couple of O rings. Now I've got a pressure inside containment that's gotten up to twice the design pressure and moving up towards three times. I don't know.

Suppose I start getting distortion of that

hatch and leakage around the O rings, you know, simply because the thing has expanded 10 percent. Is there any way of detecting that? I'm not sure it makes any difference because there's nothing you can do about it. You can't close the valve very easily and turn it off.

But my point is we've been told recently that these things can be handled by procedures, monitoring post-accident actions and so forth and I'm wondering if we've got the instrumentation here to tell us when to do it and what to do.

MR. HINTZE: You remember the ring around the plant monitors, the 16 that we could not decide on, initially 16, was for that purpose.

MR. SIESS: That wouldn't tell you where it was leaking.

MR. HINTZE: No, but it would tell you that you had a place where you weren't being monitored.

MR. KERR: Or it would tell you that you had radiation penetrating the containment wall.

MR. HINTZE: But you can't tell what the source of the radiation is.

MR. KERR: I still think they're useful. Don't misunderstand me. I just think one should give as much thought as one can ahead of time to what the readings mean.

MR. SIESS: I suspect as people begin to look at failure to isolate they will come up with likely candidates and something will be done about it.

MR. WENSINGER: It seems to me we could go around with a portable monitor and see if any of the hatches are leaking.

MR. SIESS: Yes, except the shine through that hatch might make it pretty difficult to get too close to it. If I've got a concrete containment and if there's a lot of stuff inside, that hatch is going to be pretty hot.

MR. KERR: On page 19 -- Dave's got one.

MR. WARD: In the same type B where you have the requirement for the valve position indication, the guide doesn't take a closed or not closed -- the guide doesn't take a position on whether this should be a direct indication or an indirect indication. In other words, an indication of whether there is a signal to close or whether the valve is actually closed.

MR. HINTZE: There's a position in the guide that says make the measurement wherever practicable, and that should be the method of measurement.

MR. WARD: This is stated somewhere in the text?

MR. HINTZE: Yes. In one of the positions.

I've forgotten which one.

MR. SIESS: Bill?

MR. KERR: On 1.97-T3, which is under the criteria table, under category 2, "same as category 1 and the following." I guess I am not sure what guidance that paragraph provides. It sort of says -- well, I'm not sure what it does say.

MR. HINTZE: Which one?

MR. KERR: Category 2. It says "same as category 1 and the following," then there's a following paragraph. I'm not sure what a licensee is being told by that paragraph.

MR. WENSINGER: What page, please?

MR. KERR: 1.97-T3.

MR. SIESS: It's really suggesting a degraded approach?

MR. HINTZE: Yes.

MR. SIESS: Which we don't have.

MR. KERR: If it's to provide guidance to a licensee, what is he supposed to do after he reads that paragraph?

MR. SIESS: Come in in the middle and send back two rounds of questions.

MR. ROSSI: This is quite consistent, you know, with what we are doing on equipment that is

important to safety, not safety grade in general. Ax this time, we are not forcing people to apply Appendix B.

MR. KERR: I'm not trying to force them to do that. I'm trying to read this as a licensee and saying having read this, what does it tell me to do?

MR. ROSSI: Go look at your quality assurance program and do what you think is appropriate for the level of importance to safety for each of these pieces of equipment, and we are not going to give you detailed requirements for it.

MR. KERR: If this comes in as Chet says, will he not now get a list of questions? And those questions will be based on some staff criteria. Why not give -- if you have the criteria --

MR. ROSSI: I think there is work underway to get more guidance on graded QAs, is there not?

MR. HINTZE: The criteria is listed in category 1.

MR. SIESS: Actually, that's misleading because it says "the same as category 1 and the following." It seems to me that category 2 ought to be category 1 plus, and it's not; it's category 1 minus.

MR. ROSSI: You could say "except the following" instead of "and the following."

MR. KERR: If it's the same as category 1,

it's the same as category 1.

MR. SIESS: Yes. Now, I was going to ask does the staff have some effort underway now on a graded QA program for 2E?

MR. WENSINGER: Yes, we do.

MR. SIESS: If you got that settled, this would be probably a 2E type thing?

MR. WENSINGER: That's correct, but that's not settled.

MR. KERR: Why don't you say guidance to be provided by Revision 4, or something?

MR. ROSSI: I think in the meantime, we want them to give thought on their own as to what the appropriate QA is that should be applied to this, and we will not accept no QA on these things.

MR. KERR: It's one thing to give thought, but it's another thing to submit something to the NRC staff for approval or disapproval, and that is what the licensee eventually has got to do. Now, do you expect him to make a submittal before he has any general guidance, or is this -- he's going to submit something, it's going to be reviewed. Now, the reviewer certainly must have some criteria at some point.

MR. WENSINGER: At this point for the middle category, the reviewer does not have any criteria. If

the licensee --

MR. KERR: It's every man for himself?

MR. WENSINGER: If the licensee is able to propose something which can be found acceptable, he is being given the freedom to do that. And in fact, we welcome the assistance.

MR. SIESS: Incidentally, you will end up --

MR. WENSINGER: It's a difficult job.

MR. SIESS: -- with a whole range of proposals from the licensees, and each reviewer has got to make a decision on his own. These were technical reviewers, right?

MR. WENSINGER: Yes.

MR. SIESS: As I understand, under the regionalization program, all the technical reviewers will not be out in Bethesda. There are going to be technical reviewers all over the country. Is anybody going to coordinate this so that you can come up with some kind of a reasonable basis, absent the 2E?

MR. WENSINGER: I would defer that to the NRC management.

MR. ROSSI: I think at this point in time we are not doing a detailed review of quality assurance programs that are applied to none-Appendix B, but we are asking the licensees to make a commitment that they do

have a quality assurance program for all equipment that is not safety grade but is important to safety.

I believe that we have written letters to licensees asking for that particular commitment. As a matter of fact, I was involved in a hearing where the outcome was that we asked for that. So we asked them to say that they will have a QA program but the staff is not, at this time, reviewing that program at all, so this question of how much has not come up yet. But I believe we have efforts underway to try to better define that.

MR. SIESS: What does the I&E inspector do on these things without guidance?

MR. ROSSI: I would imagine that if the I&E inspector finds that only safety grade equipment has QA and there is nothing at all in the way of any kind of quality assurance program for non-safety grade equipment, that there would then be considerable discussion as to whether that licensee met our requirements.

MR. SIESS: Suppose they had something for the non-safety grade but it doesn't meet Appendix B? What does he do?

MR. ROSSI: I believe we would accept that at this time in the absence of any further guidance on how

much he has to have when it is not Appendix B.

MR. SIESS: I think at some point in time -- and I'll leave it up to the staff to suggest when that time might be -- the ACRS would be interestd in getting a report on what kind of implementations have come out of Reg Guide 1.97 on a couple of plants. I think we should keep that in mind and someday get some feedback as to how this is working out.

This is an extremely complicated thing and the words are one thing and what is going to come out of it in terms of hardware and/or QA programs is not at all clear to us. And I have a strong suspicion it is not too clear to the staff either as to just what's going to come out.

MR. ROSSI: Certainly, when we go to implement the reg guides we find areas where there are problems and when we find those areas, we would work to resolve it and there would probably be a Revision 4 to the reg guide one day that reflects what we've learned in implementing this revision. As a matter of fact, I think Revision 3 really is not a category. Revision 3 I believe is the result of problems that we now find that we had with Revision 2, and we found these problems by discussions with utilities, discussions among the various groups of the staff, and we are trying to get

them corrected now.

But I don't think that means that we have found all the problems we are ever going to find. You are absolutely right, when we go to implement this on a large number of plants, we are going to find additional areas that will require clarification and resolution and relaxation perhaps, and we will probably have a revision 4.

MR. SIESS: What kind of a timetable do you think is likely to come out of the implementation of this? Each project manager works it out? Do you have any idea whether it's going to be two years, three years? I wouldn't even start with one year.

MR. WATT: I would speculate two years, but that's more or less picking a number.

MR. HINTZE: What was this?

MR. SIESS: What kind of an implementation schedule do you think is going to be worked out on some of the backfit plants?

MR. HINTZE: Initially, the guide said it should be implemented by June of 83.

MR. SIESS: But now it's flexible?

MR. HINTZE: Now it's more flexible. I don't suspect that they're going to let them drag it out too long. I think there are going to be some --

MR. SIESS: There are a lot of plants that have everybody committed to doing 16 other things, including SEPs and a Phase III SEP is being talked about. Then we come along with this and there's a lot of engineering that goes into that. Probably the engineering is going to be ten times as much as the hardware.

Most of the stuff is already there. Somebody's got to find out is it in the right place and is it the right qualification. There will be a couple of man years just understanding this.

MR. HINTZE: I wish I could be more specific.

MR. SIESS: We haven't gotten anybody who's proposed an implementation schedule yet, have we?

MR. HINTZE: The letter just went out in December. I don't think we have.

MR. JOYCE: Joe Joyce. We received four preliminary documents from utilities. The names I can't remember but we have them in our office. We have talked to other utilities in terms of how far along they are in implementing - even though 1.97 is not a requirement and, as Al said, it just went out in December, but unofficially we've been talking to plants. Some plants are 80 percent. They feel they are up to 80 percent in terms of implementing all the parameters within the reg

guide.

There are other plants that have done nothing. They've been doing surveys, looking at instrument loops and lines and channelizations and things within the control room. And what they're calling Phase I of their program is just collecting data, so there is a wide range, anywhere from zero to 90 percent that I'm aware of in which people have already taken action. They're aware that it's coming out and they've been dealing with the reg guide since December of 1980.

So within the next three months I believe -- Al, correct me if I'm wrong -- April of 83 is when the licensees or utilities must respond to the 50.54 letter in which they will have a detailed program plan for implementation of all the items within supplement 1 of NUREG-0737.

So within the next few months we should have a pretty good feel for, from talking with the project managers, of what the timetable is. We might be able to jump on a few cases that are already saying they they are 95 percent there and start a review within a month or so. Then again, there might not be some coming in until 84.

MR. SIESS: I think we need to follow this up,

and I would suggest to the members of the committee that are here, we will probably see some of these submittals as category B items, and if you spot something why don't you send it to Sam or call his attention to it and we'll follow it and sort of keep an eye on it. I think it would be worthwhile, because somebody that's 80 percent, that last 20 percent may be pretty tough.

MR. JOYCE: Yes. One other point that might help to clarify this -- the staff is not doing all of the reviews in total. We have contracted out INEL to do these reviews. They are going to be looking at the broad spectrum of all the parameters in all the plants so that they should be pretty well correlated in terms of what parameters and what is needed on certain plants -- Westinghouse, CE and so on and so forth.

The staff is going to get intimately involved with those parameters which they take exception to or our contractor has problems with. So just crunching out the numbers in terms of looking at every single variable for every single plant, our contractor will be handling the bulk of that work.

MR. SIESS: Let me ask you something else. When this issue first came up and the ACRS brought it up, we placed particular emphasis on what was called wide range instrumentation two or three times.

Containment pressure twice, the reactor coolant boundary, high level radiation monitor and I forget, there was another one.

That went out in the first guide, right? How many plants have complied with those particular provisions?

MR. HINTZE: To my knowledge none, because you remember they selected about four plants to implement that on a trial basis, and they balked in being selected because everybody else wasn't selected I don't think anything every became of that.

MR. SIESS: The high level radiation monitor was an 0737 item, as I recall, and I thought most of them complied with that.

MR. HINTZE: That was after TMI, not when the guide went out.

MR. SIESS: Do you mean that most of the plants that are operating still can't measure containment pressure much more than above 10 percent design pressure or something like that?

MR. HINTZE: I can't answer that.

MR. ROSSI: I suspect that the ones that are coming through today for operating licenses can do more than that because they would have anticipated that they would eventually have to do it. But I think the plants

that would have to go and buy new stuff that are already had a license and were already operating, in fact they probably have not bought new instruments yet because they're probably waiting to see what the final outcome is going to be.

MR. SIESS: Bill, did you have some more?

MR. KERR: Yes, sir. The same page, Category 3. That short statement seems to me to be more directed toward quality than quality assurance. I'm in favor of quality, but it does not seem to me that it has much to do with quality assurance.

On page T-4, under "Display" --

MR. SIESS: We will accept that as an editorial comment, Bill.

MR. KERR: Under "Display and Recording," on the second paragraph, I guess, does that mean that all channels of all instrumentation must be recorded?

MR. SIESS: Where are you looking at?

MR. KERR: Under "Display, Recording, Category 1" recording of all instrumentation channels. Does it mean every channel must be recorded?

MR. HINTZE: Yes.

MR. KERR: I guess I do not understand why. If you have three channels redundant, you record all three?

MR. HINTZE: That is right.

MR. KERR: Why in the world do you do that?

MR. SIESS: They probably do it now.

MR. HINTZE: It does not have to be displayed. It just has to be recorded.

MR. WENSINGER: It does not say analog strip chart recorders, either.

MR. KERR: "The recording of instrumentation readout information should be provided." That has been changed, so it may not be done now, Chet. Is it done now, do you think?

MR. SIESS: On the computer count?

MR. KERR: All channels?

MR. JOYCE: I would suspect not.

MR. KERR: What is the purpose of all three channels?

MR. JOYCE: I do not recall why this was changed to all. Always in the past, even with Revision 1 -- not Revision 1, the original Reg Guide 1.97, post-accident monitoring, we always recorded as a minimum one channel.

Al, why has this been changed to "all" now?

MR. HINTZE: What would you do if you lost that channel? You are allowed one failure.

MR. JOYCE: We never applied single failure to recording channels. All we said was you had to have two redundant channels, one of which was recorded but had to be operated before and not necessarily during the earthquake.

MR. KERR: This is going to add -- could add a

good bit of additional hardware and storage capacity and so on. If you are really convinced it is needed, okay, but it seems to me it could be a significant added burden.

MR. WENSINGER: There may not be any additional hardware.

MR. KERR: Well, you've got to connect to the other channels. You have got to put in isolators and whatever, I would guess. I don't know. Somebody ought to look and be sure that it is truly needed. If you make a case that it is needed, okay.

MR. ROSSI: We are going to look at that particular one to see if that might be an error in the revision or whether that was really intended to be read that way.

MR. KERR: Then, in Category 2 and 3, I do not know much about the English language, but I have an idea that it is not the "monitors" that you want recorded.

On the next page, T-5, under Category 1 equipment identification, what is meant -- is the intent that on the control panel there be something that says this is an A-type -- this is A-type information; this is B-type; this is C-type? What is the intent of that?

MR. JOYCE: In the past, we have always encouraged the utilities in the control room to identify

instrumentation and indicators which were designated post-accident monitoring, that they either color code them or have them all together in a group, et cetera, so that the operator knew where his post-accident monitoring instrumentation was located in the control room.

For the Category 1 --

MR. KERR: Excuse me. I did not make my question clear. Are they to be identified as these are the instruments used during an accident? Or are they to be identified by saying this is a type-A instrument, this is a B instrument? From that sentence I cannot tell.

MR. HINTZE: No. They are Category 1s. They do not have to be identified A, B, or C.

MR. KERR: Well, it says that they should specifically be identified on the control panel. It does not say identified as what.

MR. ROSSI: I think that means, as Category 1. The intent there was to make sure --

MR. KERR: I think I understand the intent. You are saying these are -- the paragraph, I think, could lead one to believe that you had to identify them as A, B, C, and D.

MR. WENSINGER: This is intended to mean that

for Category 1 and Category 2 instruments, those that are A, B, and C types, should be identified so that the operator can know that these instruments, that collection of instruments, are intended for use under accident conditions.

MR. KERR: You say you identify them by painting them all red and you tell the operator all red instruments are for accidents. You do not identify them by saying this is an A instrument, this is a B instrument?

MR. WENSINGER: That is correct.

MR. KERR: It seems to me that sentence is a bit unclear as it now reads because it does not say what identification they are asking for. And since you have just mentioned A, B, C, and D -- in fact, when I first read it, I thought that is what you meant, that you put all the A instruments in one spot, all the B and all the C, and all the D.

MR. WENSINGER: Perhaps you can suggest a better phrasing of that sentence. We did agonize over that a little bit, but the last phrase is, and I think that is the operative phrase, "so that the operator can easily discern that they" -- "they" meaning types A, B, and C in Categories 1 and 2 --

MR. KERR: One could say specifically the

instruments designated should be specifically identified for use in accidents, or something. I would be a little reluctant to try and compose it here, if you see my point.

MR. MORRISON: Yes, we see your point.

MR. KERR: On page T-6 --

MR. HINTZE: We can say specifically identified as Category 1 or 2.

MR. MORRISON: No, that's not what you want.

MR. WENSINGER: No.

MR. HINTZE: We will argue it out.

MR. KERR: Maybe you will decide it was not confusing. It was confusing to me, but it may not be to a licensee.

On page T-6, under Category 1 human factors, it seems to me the first two paragraphs are pure boilerplate and do not provide any guidance at all. The third paragraph, I think, does, to say they should be designed to facilitate the recognition, location, replacement, repair, or adjustment of malfunctioning components or modules. I just do not see what guidance that gives anybody, or to say that they should minimize the development of conditions and so on.

MR. ROSSI: I believe that those words are basically out of other IEEE documents.

MR. KERR: I'll bet they are.

MR. ROSSI: They apply to safety grade equipment.

MR. KERR: I bet they are, and I bet they mean exactly the same thing in those locations, which is nothing. If you want to add words to your guide, okay, but, really, what is a person going to do after having read that? Nothing.

MR. ROSSI: Well, I will assure you that the reviewers from time to time have done something with that second one on instruments that give anomalous readings and so forth. But we may have --

MR. KERR: It is obvious that you do not want instruments to give anomalous readings, whether they are safety grade or anything.

MR. ROSSI: Well, that is true, but at least it gives us a regulatory basis for arguing --

MR. KERR: This is not a regulation.

MR. WENSINGER: This is quoted from 2.79; that is a regulation.

MR. KERR: It just seems to me it is so obvious that you do not want instruments to give anomalous readings that you would not have to argue that with anybody.

MR. ROSSI: Well, I think from time to time we

argue about whether something is or is not anomalous, and I am not sure we can cover all --

MR. SIESS: But this does not help you there.

MR. ROSSI: -- but this does not give enough guidance to cover that.

MR. SIESS: This does not give you any guidance in deciding whether this is anomalous or is not. All it does is tell you how to spell it.

(Laughter.)

MR. KERR: If it makes you feel good to have it there, I do not think it does any harm. I am just trying to save the government money.

MR. SIESS: Listen, Bill, if it does not do any harm, that in itself is an issue.

MR. KERR: Under "direct measurement," I guess I am not quite certain why the instrumentation input should be from sensors that directly measure the desired variable. I am not sure what the significance of that is.

MR. WENSINGER: One good example of this was the point that Mr. Ward brought up with regard to the position of the containment isolation valves, for example, that the instruments that indicate the position of those valves should be a direct measure of the valve position, not, for example, an indication of some

control valve on that valve -- a pilot valve, if you will.

MR. ROSSI: I was going to give the example of the TMI relief valves.

MR. WENSINGER: That is another good example.

MR. SIESS: It says "to the extent practicable" because even when you are trying to measure directly a valve position, you usually measure the stem position, not the disc, and we have had a few instances where the disc and the stem were in different places.

MR. KERR: You certainly want an indicating instrument to measure what you are trying to measure, but it seems to me that -- well, and to say an indirect measurement should be made only if shown by analysis to provide unambiguous information is probably going to be impossible, so I do not think that is an escape clause.

MR. SIESS: Nothing is unambiguous. The stem disc is an example.

MR. KERR: I have no more.

MR. SIESS: And there was instance recently where a valve was locked closed instead of open because the valve stem was six inches longer than it was supposed to be. It was sticking out six inches and they assumed it was open.

That is all for you, Bill. Dave, do you have

any?

MR. WARD: No.

MR. SIESS: Jerry? Max? Gentlemen, what is your pleasure? The Staff is proposing --

MR. KERR: May I ask just one more general question? Has anybody had the time or inclination to take this guide and look at one or two serious or potentially serious accidents that have occurred in the past and said, had this been in existence it would have been quite helpful?

MR. ROSSI: I believe there was a Crystal River event and the Rancho Seco events where significant amounts of information to the operator were lost because of a rather simple power supply failure and problems. It is my opinion that had this guide been implemented on those plants that that might have alleviated a large number of those problems.

MR. KERR: I think you are going to find the answer is yes. My point was it seems to me if you did that as an exercise on several you might find some things that perhaps should have been covered that were not. It just seems to me that given that there have been some that were serious, like TMI, or potentially serious, maybe it is too time-consuming but it might be a useful check to say, okay, here is this thing on which

we put a lot of effort.

Has it really covered the information that an operator would have needed either in this accident or in a potential accident that might have occurred from this set of transients?

MR. ROSSI: I think that is getting done, but I do not know that it has been done in exactly the systematic way you just mentioned.

MR. SIESS: Did INEL actually look at actual transients, or did they look at hypothetical DBEs and so forth?

MR. HINTZE: The Idaho study was not intended to tell us whether we had the variables listed or not, all that we should have or should not have. His study is to tell whether it can be implemented or not, can be understood or not, are there measurement equipments available to do what we have asked them to do.

MR. SIESS: I am going back to an original report that came out back in the very beginning of this thing where somebody went through and came up with lists of variables.

MR. HINTZE: Maybe you are thinking about the AFI report -- AIF, excuse me.

MR. SIESS: No, I thought it was something that was done through the NRC.

MR. KERR: I have a vague recollection of that.

MR. SIESS: And it listed a whole list of variables. It was the basis for the first Reg Guide. It was done under contract from you guys, I am sure. I thought they went through the accident sequences.

MR. KERR: I thought they did too.

MR. HINTZE: It was not a standard sponsored study.

MR. KERR: I have a vague recollection of that.

MR. SIESS: Do we have a list of references in here?

MR. KERR: So it is possible that substantially the same thing has been done. It would be worthwhile if you had the manpower and time to do it, but it could be time-consuming.

MR. SIESS: The Staff is proposing to issue this thing as an effective guide without again putting it out for public comment. The changes they have made have been basically changes in response to the public comments and they do not see any real point in putting it out again for public comment.

What they are asking us is to approve issuing it as an effective guide and allowing them to delete the

sentence about ACRS concurs with the opinion. Does anybody have an objection to that?

MR. KERR: I think it is an improvement, considerably, over what we have seen earlier, and it seems to me it is something that needs to be done. I hope it is interpreted as a guide because it may have flaws in it. It seems to me anything this extensive is likely to have, so it ought to be used initially, it seems to me, with a good bit of discretion, and I assume it will be.

MR. ROSSI: I believe that to be correct. As a matter of fact, I believe we generally use all guides that way. Some utilities may not believe that, but we do look at regulatory guides with discretion. This one is going to have to be used with more because we have less experience with it.

MR. KERR: Yes.

MR. SIESS: Okay. Hearing no objections, we will recommend to the full ACRS that they approve this for issuance as an effective guide at long last.

Let's take a short break, and then we will come back and take up the next item of business, which is the instrument-sensing lines.

(A brief recess was taken.)

MR. SIESS: The meeting will reconvene. Where is Mr. Kerr? Well, we will start without him.

The next item of business is Draft 1 of Reg Guide Task Number IC 126-5, Instrument Sensing Lines. We looked at this a little over a year ago and I guess we did not look at it real hard. We said it looks reasonable to send it on out for public comments. It has been out for public comments. It has received a modest number of public comments. They have been responded to by the Staff. I thought the Staff was reasonably responsive to the public comments.

I guess I had a question or two and some of you may have some. It has been to CRGR. CRGR looked at it and said the implemention is strictly forward fit, no backfit, and we do not see many reactors coming down the line, so it does not look like it is a great big issue.

They made two formal recommendations to the EDO regarding this guide. The first was whether it should be only a forward fit, as to whether there possibly should be a backfit for certain of the revisions important to safety, or whether it might be voluntarily backfit by licensees, and went on to say, however, if you are going to backfit this, then your value impact statement needs modifying, because the sensing lines you are calling for are likely to be

fairly expensive, I think.

The other recommendation -- and I do not really understand it; maybe the Staff can explain it -- this is CRGR's recommendation. It says "Research and NRR should develop and forward to the EDO recommendations concerning how regulatory requirements, including regulatory guides -- regulatory guides are not requirements -- are to be applied to future CP applications."

Now that seems to be a sort of a strange question to be asking at this point in time, about how requirements are going to be applied to future CP applications. But they went on to say the Committee recommends that this reg guide be placed on hold pending the EDO's decision on this matter. It obviously has not been placed on hold since it is in here.

Has the EDO reached a decision on that matter, or did you not accept CRGR's recommendation?

MR. MORRISON: Mr. Chairman, we do not know what the EDO is going to do with this recommendation as yet. But I think when you say it obviously has not been placed on hold, that is not exactly correct. It has been placed on hold, I think, just because of the CRGR recommendation, pending decision on what the EDO will do with the recommendations.

As far as issuing it as an effective guide, however, since we had already sent this guide down for consideration by the ACRS, we have no objection that we go ahead and have the ACRS review it.

The specific paragraph here does not relate specifically to this guide. This guide just happened to get caught when the question arose involving the question of well, what do we do about revisions to regulatory guides, new regulatory guides with future CP applications, and primarily, based on what I could gather at the CRGR meeting, on the standardized plant applications.

There is work going on now to resolve this issue --

MR. SIESS: I do not see what the issue is.

MR. CARBON: I do not either. Would you explain it a little more?

MR. MORRISON: I am not sure I can explain the issue either. One of the issues is -- and maybe Ed wants to add to this -- but one of the issues is, well, if you have a standardized plant over five years, then there are requirements coming out, for example, the boiler and pressure vessel code, where you come out with a new addenda in the fourth year of the five-year term, by that time they cannot get the equipment in accordance

with the edition of the code that was approved for the standardized plant.

It is that type of thing.

MR. SIESS: Ed, do you want to add something?

MR. WENSINGER: Yes, and I think Bill explained the answer to your question. You did not ask all the right questions, though. Let me ask the question for you, or maybe I should just give the answer and the question will be obvious.

During the discussion with the CRGR, they noted our recommendation that it only would be forward fit and there were some gentlemen sitting in the audience who indicated that the guide, in part at least, was already being implemented at the present time on near-term operating licenses. And the question then was well, all right, you recommend that this only be forward fit --

MR. KERR: Does "implement" mean effectively being required by the NRC or voluntarily on the part of the licensee?

MR. WENSINGER: Well, that gets me into the other point, which was the word that I think you found strange, and that was the word "requirement" used in connection with "guide". I cannot speak for the CRGR, and do not claim to speak for them, but it is my view

that they consider regulatory guides to be pseudo-requirements and, for all practical purposes, to be requirements, and they refer to them as requirements.

MR. SIESS: Now "implemented" meant by Staff reviewers or licensees?

MR. WENSINGER: Well, either voluntarily complied with by licensees or the Staff asking enough questions until that volunteering comes about, or the Staff perhaps being persuasive. I do not know what other ways I can say it, but not all of the guide and not all of the reference standard either, only portions of it.

So that led to further confusion with regard to what was the intent with regard to implemention since the recommendation was for backfit, no backfit, forward fit only, and yet some of it was already being done. In fact, as far as we could tell, all of the provisions of the guide, to the best of our knowledge, are in fact now being implemented in one way or another.

There may be questions of matter of degree, but at least most, if not all, of the points that are in the guide and the standard are now being considered in Staff reviews of existing operating license applications.

MR. SIESS: But not backfits?

MR. WENSINGER: That depends on what you mean by "backfit".

MR. SIESS: Not operating plants.

MR. WENSINGER: That is correct.

MR. SIESS: Now this question on reference leg arrangement in BWR, was it level measurement? Is that related to this, where failure of a common reference leg you could lose instrumentation?

MR. WENSINGER: I will let Mr. Rossi answer that.

MR. ROSSI: I believe there are requirements in here that would address that particular problem. Basically what it says, I believe -- and Al can correct me if I am wrong -- but I think it says that if you have a failure of a sensing line that affects the control system in a way to cause a transient and it also defeats a portion of the protection system, that the remaining portion of the protection system has to be able to sustain an additional single failure and still perform its actions.

MR. SIESS: That has been a requirement on instruments for a long time, right?

MR. WENSINGER: This is simply a logical extension of what is in the IEEE standard.

MR. ROSSI: Let me answer your question. You asked if that has been a requirement for a long time.

MR. SIESS: On instruments.

MR. ROSSI: Indeed it has been on instruments.

MR. SIESS: There has been a question raised about the reference leg that would violate these requirements or these guides, right? Has the Staff been doing anything about that, with 50.54 or anything else?

MR. ROSSI: No, we have not done a 50.54. Well, we have done some looking at reference legs.

MR. SIESS: Was there an I&E bulletin on that?

MR. ROSSI: Yes, I believe there was. I'm not sure of exactly what was done on operating plants, but on near-term operating license reviews we are looking at the sensing lines and the reference legs and we are starting by assuming that if they meet this criteria they are all right. If they do not meet the criteria, then we are looking at why they do not meet it and whether there is a safety problem in not meeting it.

And the kind of thing that we are looking at is if you get a sensing line failure that causes some sort of a transient through the control system and defeats a portion of the protection system, how long

would an operator have in order to take manual action to prevent a safety problem from developing.

If that time is a long time, then we are accepting those kinds of designs, with the further assumption that he has appropriate information to tell him that he has to take manual action.

MR. SIESS: Let me set the stage of what we are supposed to be doing here.

The staff is asking us to concur in the regulatory position, which means concurring in the revisions they have made in response to the public comments. We can if we wish recommend to the EDO that this be published, or we can simply say we have no objection to it, or we concur in the positions. The question of what you are going to do with future CP's is another problem. We don't really need to address that here. As you point out, it is more generic.

So, all you are asking is, go through it the second time to see whether it is okay, whether we agree with it. Now, we can go, if you wish, a step farther than that. We can address the question of whether this guide or the positions in this guide should indeed be backfit, whether there are significant safety improvements to be obtained by applying these criteria to sensing lines just as they have been applied to instruments themselves in the past.

That is, if this is a good idea, why not backfit? I bring that up because there is at least one member of the committee who has been concerned about some of these things, and one of our consultants has addressed this. Walt Lipinski has addressed this question that we do not apply the same criteria to the lines that lead to the instruments as we do to the

instruments themselves. That is going beyond what the staff is asking us to do in addressing whether this should be backfit.

Personally, I would prefer not to do that, because I feel like -- I feel the same way that the CRGR does, that if you want to consider backfitting this, then somebody had better sit down and make a value impact analysis, a cost benefit analysis, a risk benefit analysis on backfitting. I don't think there is any question that it improves safety. But it may improve safety at a cost that is unreasonable by any basis you want to apply.

It is also not clear to me that you can go in an operating plant and backfit these criteria without lousing something up and maybe ending up with something worse than you had. So, I think the question of whether it should be backfit is a difficult one to address without a value impact, cost benefit, risk benefit analysis on the backfit problem.

MR. CARBON: I support what you are saying there, but I would welcome hearing from the staff why they left out backfitting or decided not to go that direction.

MR. SIESS: Keep in mind that if they want to backfit it, strictly speaking, they have got to invoke

50.109 and establish that it will be a significant contribution to safety which has never been done, and they would have to go back to the CRGR.

MR. CARBON: I am simply saying, what was their thinking?

MR. SIESS: Yes, I think we would like to hear that. Do you want to address that first? And then we will get into the details?

MR. HINTZE: Did you want to speak to that?

MR. MORRISON: No, you can speak to it.

MR. HINTZE: In regards to the code classifications of the sensing lines, the staff has been requiring that code classification through Regulatory Guide 1.23 all the time. That is not a new position. Therefore, we didn't feel that that was a backfit --

MR. KERR: 1.23 is a Reg. Guide, and it is to be treated as a requirement?

MR. HINTZE: I am sorry, 1.26. I said the wrong number. It should be 1.26.

MR. KERR: So it is being treated as a requirement?

MR. MORRISON: No, I don't think you really meant that.

MR. HINTZE: It is an acceptable means of meeting --

MR. MORRISON: It is a requirement when people have committed to follow Reg. Guide 1.26.

MR. SIESS: Let's get this clear. Position One is the one that has to do with -- where -- let me put it this way. Position One is the one that essentially extends the electrical requirement to the sensing lines.

MR. HINTZE: Yes. Failures causing an accident. You follow it by a single failure. Positions Two and Three have to do with what happens when you attach a line to a Class 1 component. What does it become? Is it a Class 1 or Class 2? And down to some isolation valve, et cetera. Two and Three are the ones that Al just said in effect are required by the staff. They are Reg. Guide 1.26 positions, and they are not really new ones.

MR. HINTZE: Yes, that is correct.

MR. SIESS: Backfitting those would be one ungodly mess. You couldn't backfit those without going in and taking out a hell of a lot of pipe, or doing something.

MR. HINTZE: Also, because of Reg. Guide 1.26, that recommendation has been in for quite a while.

MR. SIESS: Yes, but I mean if that were to be made a backfit for those that didn't have it, it would

be quite an operation.

MR. HINTZE: Yes.

MR. SIESS: And I think of questionable value when it gets down to QA levels. It is really a QA level type thing, isn't it?

MR. HINTZE: Yes.

MR. SIESS: The Class 1, 2, 3 determine, what, QA levels and not stress levels, does it?

MR. MORRISON: Well, it gives the type of systems that go into the various code classes.

MR. SIESS: Does it control stresses or simply QA?

MR. HINTZE: It controls stresses, I think, on the metal itself.

MR. SIESS: Four is a minor item. Four and Five have to do with freezing.

MR. HINTZE: That is correct. Six by virtue of the CRGR meeting has been deleted. We intended to tell you that this morning.

MR. SIESS: Six has been deleted, so really what I was addressing, and I think the question we wanted answered has to do really with Position One.

MR. HINTZE: Yes.

MR. SIESS: Now, Position One as a backfit would require --

MR. KERR: I am sorry. Six here has been deleted?

MR. SIESS: Yes. That is one thing to consider. What is the reason for not backfitting Position One? You said Two and Three it is really not necessary for most plants.

MR. HINTZE: Ernie, I guess we are going to have to defer to you on that one.

MR. ROSSI: Let me see if I can clarify a little bit what we all think we mean by backfitting a regulatory guide. As a start, let me tell you what I think backfitting a regulatory guide would mean. I think that that would mean that every licensee having an operating plant would have to go through item by item this regulatory guide and standard and identify all places in his plant where he did not literally meet the regulatory guide, and then either change his design to meet it or alternatively to justify not having to change his design to meet it.

As a justification for not having to change his design to literally meet the regulatory guide, he could provide a justification that said that it was more expensive to change the design than the safety benefit you would get from the change. Now, that is what I think backfitting means.

MR. KERR: Well, how can one backfit a regulatory guide? I just don't understand. Presumably a regulatory guide tells how one satisfies a regulation. The regulation has not changed.

MR. ROSSI: No, no, no. The regulatory guide does not tell how one satisfies the regulation. What a regulatory guide does is give one acceptable method of satisfying the regulation, and says, if you use this acceptable method, then the staff will agree with you that you have satisfied the regulation, but you can choose to do it some other way.

MR. KERR: No, but having the regulation not changed in an operating plant, this is prima facie evidence that the plant meets the regulation.

MR. ROSSI: If they meet the Reg. Guide.

MR. KERR: It doesn't have anything to do with the Reg. Guide. The plant has got to have met the regulation in order to be in operation.

MR. ROSSI: The plant has to meet the regulation as --

MR. KERR: Any lawyer worth his salt will tell you that if that plant is operating, it has got to be meeting NRC regulations, or somebody is guilty of malfeasance or something even worse. Now, with the regulation not having changed, how can you go in and say

to a plant operator, we know what you've got, but we have decided you don't meet the regulation?

MR. ROSSI: No, no. I don't think that's what I'm saying.

MR. KERR: That's the only way you can make them make a change.

MR. ROSSI: We are saying, we're not sure we know what you've got, we're not sure that you looked at this particular aspect of your plant to make sure that you meet the regulation. I think that is what we are saying, rather than, we think you don't meet the regulation.

MR. KERR: You have got to have him over the barrel on something else to have him accept that argument. Unless you've got him over the barrel on something else, you are not going to make him make a change on that basis, because a lawyer wouldn't let him. The Public Service Commission wouldn't let him spend that money.

MR. ROSSI: I guess I started this discussion by trying to define what I thought backfitting meant, and again, what I thought backfitting meant was that he tells us where he doesn't meet the Reg. Guide and why his plant is okay in those areas where he does not meet it. That is what I thought backfitting did, but that he

had to do that in a systematic way.

MR. WENSINGER: Having no CRGR member present, let me not attempt to speak for them, but give you my perception of their views. I believe they would feel that if this Reg. Guide were issued, it would be likely that an inspector at a near term operating license plant or even perhaps in an operating plant would take this regulatory guide and look at it, and look at provision whatever, go look at that item in the plant, and perhaps try to cite that licensee for non-compliance.

MR. KERR: Well, I must say I think this is capricious, and maybe even -- I just don't understand how the NRC can bring itself to operate this way.

MR. SIESS: You mean with the implementation you have in there now, you think an inspector might do that?

MR. WENSINGER: That has been the allegations that have been made in the discussions I have had with the CRGR.

MR. SIESS: That is ridiculous.

MR. WENSINGER: I am glad you said that.

MR. MORRISON: It wasn't the allegation of an inspector. It was more an allegation of what the NRR reviewer might do.

MR. SIESS: Can't he read?

MR. MORRISON: I hope so.

MR. SIESS: This is very specific. But my question has nothing to do with the legalities. The question was simply, if Position One represents a criterion that would not improve safety, why is it not a good idea to have it on all of the plants?

MR. ROSSI: It is a good idea to have it on all the plants. I believe the issue is whether we want to go back to every plant and ask them to verify in writing that they have checked all the sensing lines and the safety systems on their plant, and can confirm that they meet Item 1, as opposed to what we are doing now, which I believe is where we find a problem with a sensing line in an operating plant by either an LER or by finding something in a current review where we think they do not meet Item 1. Then I believe what we are doing now is, we are sending out bulletins and that kind of thing to tell people that they ought to look at their designs in those areas.

MR. SIESS: Okay. You are saying that a lot of the plants probably were well designed, and somebody probably thought of these things without having it as a Reg. Guide or a standard.

MR. ROSSI: Yes, I think that is correct. That is what we believe, or we wouldn't have licensed

the plants.

MR. SIESS: There were a couple of obvious cases where that wasn't true, and those are being worked on.

MR. ROSSI: I think that's correct, too.

MR. CARBON: I am not clear yet on the answer to that question. I guess the answer to the question of why this is not proposed for backfitting is that the staff has one way or another come to the conclusion that it is not needed or it is too costly. Is that so?

MR. ROSSI: I think that it is the latter. Yes.

MR. CARBON: The latter? It is too costly?

MR. ROSSI: It is too costly to go back and make the licensees systematically go through and review their design to come back under oath and affirmtion that says that they meet --

MR. CARBON: Too costly for the increased safety that would be achieved?

MR. ROSSI: Right.

MR. SIESS: I think that what he is saying was that in a lot of cases they think this would be satisfied as they are, and in a few cases where they aren't, like a reference leg thing, it could lead to a violation. It has been caught. People have been warned

about it and asked to do something about it, and the staff has made, just as Mac said, an informal or subjective cost benefit judgment that doing anything more than that is not likely to be worth it.

MR. ROSSI: That is correct. Now, the thing that you would get more than what we have done by going back and "backfitting" Item 1 is, you would make all the licensees go review their plant and make additionally certain that they have no problems in the area of Item Number 1. As we stand today, I do not think we know of any plant that has a safety problem related to Item 1. The question on Item 1 is that on some BWR's where you break a level sensing line, you require, if you have another single failure in the protection system, manual action in approximately ten to twelve minutes, something on that order, and people may argue about whether that is enough time to allow manual action for that situation, but in general the staff is taking the position that we have made a judgment and are going to permit that on the older plants.

Now, the newer plants are doing better in this area. I don't know whether they have been browbeaten into doing better, or if they have decided on their own to do better, or they just concluded that when they started the design, that it was cheap enough to do

better, that they might as well do it then, because some day they might be forced to change it if they didn't. I don't know which of those is the situation, but the newer BWR's are better with respect to the independence between control room protection in the sensing line area than are some of the older ones, but the older ones we believe from what I know to be acceptable on the basis that they have enough time, enough information available to use manual action.

MR. SIESS: What was the inspiration for the ISA action on the standard?

MR. WENSINGER: Me.

MR. SIESS: When did that start, Ed?

MR. WENSINGER: About three years ago.

MR. SIESS: And had there been some problems discovered, or was it just the idea of extending -- what is it, IEEE --

MR. WENSINGER: 279. By the way, since that time, IEEE has picked up on it, and IEEE 603, which covers the entire safety system, not just the protection system, now does include sensing lines as well as actuation devices, actuation equipment, et al, and you gentlemen, by the way, chose not to comment when we went out for comment on that guide. We do have a guide that endorses IEEE 603, which is now out for public comment.

MR. SIESS: Okay. Gentlemen, I would like to suggest that we look at the changes they have made in response to the public comments, et cetera, and see if we have any questions about those. A major change they made was to change the scope considerably by backing it off to safety related rather than important to safety.

MR. KERR: What is the difference? Is non-safety the antithesis of safety related? I notice you use safety related, but then when you talk about the instrument that is not safety related, it is apparently called non-safety rather than non-safety related.

MR. WENSINGER: Is there a particular place in the text?

MR. KERR: On Page 2 is the first place I noticed it, just above C, Regulatory Position. Instrumentation is referred to as non-safety instrumentation. I don't know whether that is --

MR. HINTZE: That is an oversight.

MR. KERR: I wasn't sure whether there was a further distinction or not.

MR. RAY: It is mentioned again, too, down below under Two, to revise the One. You talk about performing safety related function, and then non-safety function.

MR. SIESS: It looks like you have been

consistent.

MR. HINTZE: We have been consistently wrong, I guess.

MR. WENSINGER: That should be considered editorial, and we will fix that.

MR. WARD: Can I ask a question?

MR. SIESS: Certainly.

MR. WARD: Could we go back to your comment, Ed, on IEEE 603? You said there was a Reg. Guide which is out for comment?

MR. WENSINGER: It was published a few weeks ago.

MR. SIESS: We told them to send it out for comment, and we will see it when it comes back.

MR. WARD: What is the relationship of that Reg. Guide to this Reg. Guide?

MR. WENSINGER: That Reg. Guide encompasses a system that is much broader than this. This covers instrument sensing alone. The IEEE standard covers the sensing lines, the instruments, the by stables, the logic, the actuation devices, and the driven equipment.

MR. SIESS: Does it reference this one for sensing lines?

MR. WARD: Why isn't this one a part of that?

MR. WENSINGER: This simply has a lot more

detail. This is much more component oriented, much more detailed.

MR. ROSSI: You might correct me if I am wrong, but IEEE 603 again is going to be an IEEE standard, and I would think because it is an IEEE standard that whatever is in there that we are still likely to get into arguments about how far into the mechanical area the scope of IEEE 603 can go, and this document here, it would seem to me, would make it very clear that this covers sensing lines and you don't have that argument.

MR. WENSINGER: There is no dispute among ASME or IEEE or ANS or whatever that the Instrument Society of America does have cognizance over instrument sensing lines, and that is one reason why they were persuaded to work on this document.

MR. SIESS: Okay. The other change -- well, you deleted Six, right?

MR. HINTZE: Yes, sir.

MR. SIESS: Because that is covered in other guides?

MR. HINTZE: Partly. Also partly because it didn't address all valves in the sensing lines. It just addressed the one check valve, and to have an indication on one valve and not the other valves would give kind of

ambiguous status indication of the system.

MR. SIESS: You didn't think it was practical to have that on all of them.

MR. HINZTE: Right.

MR. WENSINGER: There is a multiplicity in these lines that are used for multiple purposes, and it would be an extensive deal to put indications on all of those valves.

MR. SIESS: Now, in connection with Positions Two and Three, there was some discussion in one of the comments about their relation to 50.55A and the code. You say it is not inconsistent with the proposed 50.55A. Does that mean that -- I am looking at Comment 4 of Mr. Saldorini. He said it should be modified to conform to and agree with the proposed revision of 50.55A, and you say that it was written to agree with Reg. Guide 1.26, and Reg. Guide 1.26 is the basis for the proposed revision of 50.55A, and there is no disagreement.

I guess I cannot tell from this -- Why was he wrong? He says there is a disagreement. You say there is not one. Is this just a matter of an opinion, or is there a factual basis for him thinking one way and you thinking another?

MR. HINTZE: I guess I didn't really call him

back to find out why he felt the way he did. We compared the two. And the people who are working on 50.55A --

MR. SIESS: That is the update?

MR. HINTZE: Yes, sir, which will make it a rule rather than a Regulatory Guide.

MR. SIESS: 50.55A simply references an updated code version, right?

Doesn't 50.55(a) just update it, or am I wrong?

MR. HINTZE: No. It spells it out specifically, if I can find it.

(Pause.)

MR. SIESS: Is that a new part of the regulation?

MR. HINTZE: It is part of the revision to the regulations, yes.

MR. SIESS: What does 50.55 cover? What is in 50.55? What is the heading?

MR. MORRISON: 50.55(a) is entitled "Codes and Standards".

MR. SIESS: That is what I thought, but I did not think 50.55 included actual requirements. I thought it simply referenced the appropriate code.

MR. MORRISON: Well, it in fact makes those codes and standards in 50.55(a) requirements, minimum requirements.

MR. SIESS: That suggests to me that the code or standard which is being made a part of the requirements actually includes these provisions. Doesn't it meet the ASME Code in this case?

MR. MORRISON: Right.

MR. SIESS: So we are talking about whether

this guide is different than the ASME Code, and you are saying it is not.

MR. HINTZE: That is correct.

MR. SIESS: And what Mr. Saldorini was apparently saying is the Code is different and if 50.55(a) recognizes the Code, then it is going to be different from the standard, and you said you compared the appropriate part of the ASME Code and it would agree with this standard.

MR. HINTZE: The 50.55(a) and not the Code.

MR. SIESS: All 50.55(a) does is reference the Code, doesn't it? Does it include requirements over and beyond the Code?

MR. HINTZE: It tells exactly the same thing that is in the proposed revision 1.26.

MR. SIESS: I'll buy that, but I am still trying to find out what is in 50.55(a). I thought 50.55(a) simply said ASME Section 3, Winter 1982, applies.

MR. MORRISON: That is right.

MR. SIESS: And if I look at the proposed revision?

MR. MORRISON: It also tells you what part of the plant should fall under the various classes of the Code.

MR. HINTZE: Right.

MR. MORRISON: That is not in the Code.

MR. SIESS: Okay, that is where the difference is. Well, since it is not being backfit, I do not see that it makes any difference.

(Pause.)

MR. SIESS: Dave, do you have any questions?

MR. WARD: No.

MR. SIESS: Bill?

MR. KERR: Was safety-related and its definition invented in connection with this guide?

MR. WENSINGER: No. It was a memo written by Mr. Denton some months ago.

MR. KERR: Safety-related means it will withstand a safe shutdown earthquake?

MR. WENSINGER: Among other things.

MR. SIESS: There were three categories: important to safety, safety-related -- what was the third one?

MR. WARD: Non-safety.

MR. WENSINGER: The term "safety grade" is often used.

MR. MORRISON: Safety grade Category 1 is synonymous with that.

MR. SIESS: You used the words important to

safety, right?

MR. MORRISON: And safety-related and Appendix B.

MR. SIESS: Safety-related is in the regulations?

MR. WENSINGER: That is correct.

MR. KERR: It seems to me important to safety ought to be more important than safety-related, but it is the other way around, isn't it?

MR. MORRISON: It is the other way around.

MR. WARD: That is because some non-safety systems are important to safety. Get it?

MR. KERR: Well, if it is something that is just related to safety, important to safety is important.

MR. WENSINGER: It is a broader category.

MR. KERR: And it is more important. It is not just related; it is important.

MR. WENSINGER: We have traditions to contend with.

MR. SIESS: But as we looked at the SEP plants, they were allowed under their mandate to look at non-safety systems that could be used to shut down the plant. Now in that context they become important to safety but not safety-related within the definitions of

the regulations.

MR. WENSINGER: That is right.

MR. SIESS: That again gets us to these two levels of importance that we were talking about before.

MR. KERR: Churchill said it very well a long time ago. This is the kind of nonsense up with which I will not put.

(Laughter.)

MR. WENSINGER: I am underwhelmed.

MR. SIESS: Anything else, Bill?

MR. KERR: On page two I point out non-safety-related. There is another one in Number 1 which we may have caught -- the single instrument line. You got that?

MR. SIESS: Yes.

MR. KERR: Then, on page 2-A, under 2, the second-from-the-last sentence -- penultimate I guess it has been called -- there is a statement about when degraded by a second random failure. This implies that the first failure has to be random, I think.

It seems to me we do not need to imply that. I think you do not want this random failure to foul you up, whether the first one is random or not.

MR. WENSINGER: The purpose of using this language was to be consistent with the language in IEEE

2.79 so as not to imply that we were suggesting some different requirements than 2.79 required.

MR. SIESS: I think it reads, Bill, with a comma between second and random -- a second failure and a random failure.

MR. KERR: Well, you could say "by random failure not associated with the initiating event", which it seems to me would be clearer, but if it is tradition, I cannot argue with that.

MR. WENSINGER: That is what it is.

MR. SIESS: It is not just tradition. It is being consistent with 2.79.

MR. ROSSI: Well, 2.79, you recognize, represents a compromise in wording that has been the subject of long hours discussing wording, so I think we have no choice but to accept it.

MR. SIESS: Can I read that as second, comma, random failure?

MR. WENSINGER: That is correct.

MR. KERR: I am interested that when the Staff likes wording they go along with the standards with no questions asked, but when they do not like them, they feel free to amend, add to --

MR. WENSINGER: Sir, in this case the wording is in the regulations. We do not have any choice.

MR. KERR: Protective action, even when degraded by a second random failure.

MR. HINTZE: We will put a comma after that.

MR. SIESS: I doubt it.

MR. WENSINGER: I do not think it is.

MR. KERR: On page three, under 4, why should freezing temperature be added to the environmental conditions? That assumes that all sensing lines are going to be subjected to freezing temperature, which strikes me as being odd.

MR. HINTZE: No, just that it has to be considered.

MR. WENSINGER: You have to look at the section in the standard that says the conditions that have to be considered. All this means is you better consider freezing also.

MR. KERR: I thought it might be something like that.

MR. SIESS: But only if you have got something in it that can freeze.

MR. KERR: That is all I have.

MR. SIESS: Max, do you have any questions?

MR. CARBON: I have two questions.

Bill George indicated in a statement we estimate that the 1.26 requirements in positions 2 and 3

will add about $200,000 to the cost in operation of a nuclear station. Do you know, is he talking there about backfitting, or does he mean that when you impose these on a new station it will add that cost?

I am also confused because they are already following 1.26. I do not see what he is getting at.

MR. HINTZE: I do not either, and I should have called him, but I did not.

MR. CARBON: My other question, the first CRGR recommendation, judgment should be made by Research and so on, whether or not ISA and so on, will be adopted. The wording they use there really does not make sense to me, and I guess I am asking, is it correct that they are saying there that you should decide whether to require backfitting or not?

MR. WENSINGER: They are saying more than that. They are saying you ought to decide consciously whether you are going to impose these requirements on even near-term operating licensees or just new CPs, or are you going to take care of existing operating plants and demand that they take a look at it -- or all three.

MR. CARBON: Then I guess that goes to Dr. Siess' statement. Has the Staff made this decision?

MR. SIESS: That is what we are being told.

MR. HINTZE: That we are not going to

systematically backfit.

MR. CARBON: And you are not going to impose the conditions and so on?

MR. KERR: Well, if you put it in that tone of voice --

MR. HINTZE: I think the guide is not going to be --

MR. CARBON: It was not intended to be a tone.

MR. HINTZE: The guide will not be ignored when we put it out. We will hope the people who could still use it would use it, but we will not insist that they use it.

MR. ROSSI: Let me make a comment on that. By putting the guide out, I think what you do is you give engineers who are designing nuclear power plants a kind of a checklist that they ought to think about when they are designing sensing lines. What this thing really represents is a collection in a formal writing-down of all of the experience that has been obtained over many years on nuclear power plants of things that people ought to think about when they design sensing lines.

Now one of these things which I am surprised he did not talk more about was the one on freezing lines. We have seen a lot of instances on operating

nuclear power plants where they have had freezing lines in the protection system that have defeated various portions of the protection system.

After we had seen these in LERs, we sent out either an I&E notice or bulletin. But people were told to go back and look at all their lines to be sure that they were adequately protected from freezing and that they took adequate precautions before winter was upon them to make sure that any equipment that was used was going to be working to keep these lines from freezing.

A lot of these things, when we do a review and we find some place where it is likely that a line is going to freeze, when we find that, no one ever argues with the fact that something has got to be done about it because it is obvious to everyone that it has to be fixed. So it is not a question of us imposing a new requirement, that you are not allowed to have your protection system lines freeze in the winter. It is really more a matter of having a nice checklist of things that you ought to worry about when you design sensing lines.

Item Number 1, I think, is in the same category. If somebody were to find a plant where the breaking of a sensing line would cause the shutoff of feedwater to the core and 30 seconds later the core was

going to be uncovered because no automatic systems were initiated, I do not think we would have to impose a requirement to get that fixed. I believe that there just would not be any question that they will fix it.

MR. WENSINGER: Strange as it may seem, this happens to be a standard, this ISA standard, in the real sense of the word. This is in fact a collection of actual practices that are going on in the industry as opposed to some of the earlier standards.

MR. SIESS: Position Number 1 seems to me to be very important.

MR. WENSINGER: I was referring to the ISA standard, not the reg guide.

MR. SIESS: Position Number 1 in the reg guide seems to be quite important. It echoes the position that we have had for a long time and the standard IEEE 2.79. Was it considered by the --

MR. WENSINGER: Yes, it was, and it was rejected.

MR. SIESS: Why? Because not one of the public comments complained about it. There was not a single comment against Position 1 in your comments.

MR. WENSINGER: That is correct.

MR. POSSI: That comes back to what I just said. If you found a place where they did not meet

Position 1 and they had a true safety problem at the end of ten seconds, they are going to fix it.

MR. SIESS: But why not include that in the standard?

MR. WENSINGER: I will tell you the argument I got. I will not defend it, but I will tell you the argument I got. They said that was covered by IEEE 2.79.

MR. SIESS: But it is not, obviously.

MR. WENSINGER: That was my response.

MR. SIESS: Some people may have interpreted it that way, and that is why the plants are built right.

MR. WENSINGER: And, in fact, that it was in another response.

MR. SIESS: It is interesting that here the Standards Committee would not put it in, but nobody objected to your putting it into the reg guide.

MR. WENSINGER: No, and I have run into that situation on several occasions when I have been told directly, well, we do not want to put it in our standard. You put it in the reg guide and we will not object.

MR. MORRISON: Chet, that situation you have described is not unique. I have run into the same

thing. Maybe it is a question of they can object to it in the Standards Committee meeting, but they do not want to go on record to write a letter that ends up in the public document room saying that this should be done.

MR. SIESS: Good point.

Anything else, Max? Does anybody else have anything else?

(No response.)

I looked at Moeller's stuff. You got a copy of Dr. Moeller's letter?

MR. HINTZE: Yes, sir.

MR. SIESS: He was worrying about sensing lines for air monitors and that is covered in 0737, and he wanted to know why you did it that way rather than putting it in here. Are air monitors safety-related?

MR. HINTZE: That is sampling lines, not sensing lines. It was a little out of the scope of what the ISA standard was written for. There is a lot more consideration going into a sampling line than sensing lines as far as plate-out and so forth. It was just a little bit out of the scope for us to consider.

MR. SIESS: I think that is a suitable answer.

The concern that Mr. Ebersole had had is one I have already mentioned, I think. That was the common

reference line.

MR. HINTZE: I think Ernie addressed that.

MR. SIESS: That has been taken care of by the I&E bulletins or something else, right?

MR. ROSSI: In the cases we know about, that is correct.

MR. SIESS: Are there any objections to recommending to the full Committee a concurrence with the positions in this guide?

MR. KERR: I have none.

MR. SIESS: We will so recommend them.

What do you have coming up in the near future?

MR. MORRISON: I cannot speak for the near future, but I can speak for next month, and we have nothing for next month.

MR. SIESS: We have sort of gotten away from our monthly meeting schedule. After seeing the proposed budget, I think we may be on an annual meeting basis.

MR. WENSINGER: I might mention there are a couple of guides in my branch that this Committee may be interested in. I mentioned one of them, endorsing IEEE 6.03, which is just now out for public comment.

There is one other that is taking considerable time to resolve public comments on, and we have had

considerable difficulty in getting the Instrument Society of America to complete its job -- not that they are being lax or anything of that nature. They simply got a lot of comments on their standard by our putting out a reg guide endorsing it.

In fact, about 80 percent of the comments we have received were on the standard and not the reg guide. This was on the subject of response time testing of instrument channels and protection systems, and we hope to have that to you before the summer gets here.

MR. SIESS: Okay. This implementation section on sensing guides --

MR. HINTZE: That says forward fit only, and that is still the intent. Now we may add a statement, but I do not know that we will.

MR. MORRISON: I think the intent, what we told the CRGR was our intent was to apply the guide to only forward fit, but also to announce the Staff position on the standard so that if people voluntarily wanted to follow it they would know the position. I think we may add some words to make that explicitly clear in the implementation section.

MR. SIESS: But if an operating plant or a near-term OL put in their FSAR that they were complying with the standard, that is still acceptable. If they

want to say they are complying with this reg guide, that is acceptable. They could say the standard without the reg guide.

MR. ROSSI: Yes, that is all correct. And keep in mind the fact that we still intend to review sensing lines to be sure that they meet the regulations, whether we make them do everything in the reg guide or not. We will ask questions about sensing lines to make sure that the plants are safe.

MR. SIESS: But you will mainly concentrate on those things that have come up in the past.

MR. ROSSI: On known problems, yes.

MR. SIESS: Anything else, gentlemen?

(No response.)

(Whereupon, at 12:30 o'clock p.m., the meeting was adjourned.)

NUCLEAR REGULATORY COMMISSION

This is to certify that the attached proceedings before the

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS SUBCOMMITTEE ON REGULATORY ACTIVITIES

in the matter of:

Date of Proceeding: January 4, 1983

Docket Number:

Place of Proceeding: Washington, D. C.

were held as herein appears, and that this is the original transcript thereof for the file of the Commission.

Jane N. Beach

Official Reporter (Typed)

Jane N. Beach

Official Reporter (Signature)

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M. E. Hansen

Official Reporter (Typed)

M. E. Hansen

Official Reporter (Signature)

SUBSTANTIVE CHANGES

1. Delete Radiation Exposure Meters (continuous indication in fixed locations).

2. Delete energy response accuracy of ±20% for the Primary Containment Area Radiation monitors.

3. Delete Radiation Exposure Rate monitors inside buildings adjacent to containment which were intended to detect containment breach.

4. Change the range of the meteorology measurements to agree with proposed Revision 1 to Regulatory Guide 1.23.

5. Change variable "Coolant Level in Reactor" to "Coolant Inventory" and modify the range consistent with SECY-82-407.

6. The variable BWR Core Temperature was changed to reflect the current staff position that the measurement be put on hold pending further develoopment.

7. The upper range of 1650°F for operating plants for the PWR variable Core Exit Temperature was deleted and all plants should provide for 2300°F to be consistent with NUREG-0737.

8. The IMPLEMENTATION section was modified to agree with Supplement 1 to NUREG-0737 (SECY-82-111B).

9. Numerous changes to improve clarity of the guide.

b. For type E

(1) The planned paths for effluent release;

(2) Plant areas and inside buildings where access is required to service equipment necessary to mitigate the consequences of an accident;

(3) Onsite locations where unplanned releases of radioactive materials should be detected; and

(4) The variables that should be monitored in each location identified in (1), (2), and (3) above.

2.4 The determination of performance requirements for system operation monitoring and effluent release monitoring information display channels should include, as a minimum, identification of:

a. The range of the process variable.
b. The required accuracy of measurement.
c. The required response characteristics.
d. The time interval during which the measurement is needed.
e. The local environment(s) in which the information display channel components must operate.
f. Any requirement for rate or trend information.
g. Any requirements to group displays of related information.
h. Any required spatial distribution of sensors.

2.5 The design and qualification criteria for system operation monitoring and effluent release monitoring instrumentation should be taken from the criteria provided in regulatory positions 1.3 and 1.4 of this guide. Tables 1 and 2 of this regulatory guide should be considered as the minimum number of instruments and their respective ranges for systems operation monitoring (Type D) and effluent release monitoring (Type E) instrumentation for each nuclear power plant.

D. IMPLEMENTATION

~~All plants going into operation after June 1983 should meet the provisions of this guide.~~

~~Plants currently operating should meet the provisions of this guide, except as modified by NUREG-0737 and the Commission Memorandum and Order (CLI-80-21), by June 1982.~~

~~Plants scheduled to be licensed to operate before June 1, 1982, should meet the requirements of NUREG-0737 and the Commission Memorandum and Order (CLI-80-21) and the schedules of these documents or prior to the issuance of a license to operate, whichever date is later. The balance of the provisions of this guide should be completed by June 1982.~~

~~The difficulties of procuring and installing additions or modifications to in-place instrumentation have been considered in establishing these schedules.~~

~~Exceptions to provisions and schedules will be considered for extraordinary circumstances.~~

This guide is applicable to all plants for which the construction permit is issued on or after June 1, 1983.

Holders of construction permits or operating licenses issued before June 1, 1983 should meet the provisions of this guide as specified in Supplement 1 to NUREG-0737. The permittee or licensee should develop a plan for implementing this guide and negotiate a schedule with the NRC Project Manager on a plant-specific basis.