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323RD GENERAL MEETING

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UNITED STATES NUCLEAR REGULATORY COMMISSIONERS'

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

FRIDAY, MARCH 6, 1987

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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

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323RD GENERAL MEETING

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

Friday, March 6, 1987

The 323rd General Meeting reconvened at 8:30 a.m., Dr. William Kerr, Chairman, presiding.

ACRS MEMBERS PRESENT:

DR. WILLIAM KERR, Chairman
DR. FORREST J. REMICK
DR. HAROLD W. LEWIS
DR. CARLYLE MICHELSON
DR. DADE W. MOELLER
DR. DAVID OKRENT
DR. PAUL G. SHEWMON
DR. CHESTER P. SIESS
MR. JESSE C. EBERSOLE
MR. CHARLES J. WYLIE

CERTIFICATE OF OFFICIAL REPORTER

This is to certify that the attached proceedings before the UNITED STATES NUCLEAR REGULATORY COMMISSION in the matter of:

NAME OF PROCEEDING: ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
323RD GENERAL MEETING

DOCKET NO.:

PLACE: WASHINGTON, D. C.

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were held as herein appears, and that this is the original transcript thereof for the file of the United States Nuclear Regulatory Commission.

(sigt) David L. Hoffman

(TYPED)
DAVID L. HOFFMAN

Official Reporter
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Reporter's Affiliation

DAVbw

PROCEEDINGS

DR. KERR: The meeting will come to order.

This is the second day of the 323rd meeting of the ACRS.

In today's meeting, the committee will discuss the following:

GE Advance Boiling Water Reactor; Quantitative Safety Goals, the Safety Features of Foreign Nuclear Power Plants, probably not, and Radioactive Waste Management and Disposal.

There has been a change in the agenda that was distributed at the beginning of the Thursday meeting. Item 11 on the original agenda is scheduled presently for 3:15 to 4:45, and that will be Radwaste Mangement and Disposal. It now becomes Item 11 on this agenda, for some reason. I am reading what is written here. And Item 3.5 will be scheduled from 4:45. From 5:00 to 6:00, Risks Associated with Radwaste, consideration of a possible report. Then between 4:45 and 5:00, there will be a discussion of what to do about the research report.

DR. SIESS: I am completely confused. At 3:15, we have what?

DR. KERR: At 3:15, we have a discussion, Radwaste Management Disposal.

DR. SIESS: The current item 11; is that right?

DAVbw

DR. KERR: I don't know what the current item is, but that is what we are going to discuss.

From 4:45 to 5:00, we will discuss what to do about the research report we need to make to Congress, and then 5:00 to 6:00, we will discuss a possible report on Relative Risks or Risks Association with Radwaste.

I have also been asked by one member of the committee to remind the committee that by federal law, effective January 1, 1986, this is a no smoking area. I hereby remind the committe of that fact.

One member of the committee asked me to report that. Whether it is a fact or not, I do not know. I do not nave legal counsel, but I am told that is the case.

DR. SIESS: You are not charged with enforcement.

DR. KERR: Not as far as I know.

DR. SIESS: I suggest that you find out for sure before the next meeting.

DR. KERR: I am willing to take any and all suggestions.

DR. SIESS: I would be delighted to take early retirement. I might even consider retiring before 4:45 ths afternoon.

DR. KERR: I am reporting something I was asked to report, and I will continue to do that.

DAVbw

We now come to a discussion of the GE Advanced Boiling Water Reactor.

Mr. Okrent is the subcommittee chairman.

DR. OKRENT: I would just like to make one remark concerning a thought that came to me while I restlessly lay on the bed in my hotel last night with regard to the topic that was the last one on the agenda yesterday. It seems to me that the committee has to decide on the decision that is independent, the person from whom the request arises. And if the committee feels that the decision was affected by the origin of the request, I think they should reconsider their approach.

DR. KERR: I agree with that wholeheartedly.

DR. OKRENT: I don't know whether it was affected, but from the sense of the conversation, I was rather passive. I was just hearing the discussion and sense of what I had heard, if you like. That was a factor. I am saying it should not be a factor. The decision may be a valid one, but that should not be a factor.

DR. KERR: You are certainly correct.

DR. OKRENT: Anyway, today -- do we have agenda in the Tab -- as you aware, we are going to have a discussion of aspects of the licensing basis agreement for the GE BWR, and interwoven at appropriate points, there will be some discussion of EPRI's plans for a future lightwater

DAVbw

reactor. I was advised that, in fact, this was on the agenda for this meeting, but I didn't recall just what was decided at the last meeting. I hurriedly went through my big sack of reports from EPRI and tried to pick out topics that I thought might lead to more than casual questions by one or another member of the committee and try to put them in some kind of rough order and asked our staff to check with Chuck Wylie to see if he thought this was okay, or if he wanted to add something, and so forth.

We then laid out this kind of tentative agenda. It was my thought that it would be most useful for the committee to have the Staff or GE or EPRI offer a brief comment, where appropriate, on the topic and have the committee discuss it as they wished, and by allocating time, that was a brief comment, plus whatever discussion the committee thought was relevant.

We have received a short document from the Staff, which was sent out, I guess -- is it in the folder, as well?

MR. WYLIE: I don't think it is in the folder.

DR. OKRENT: It was sent out, I think.

DR. SHEWMON: This thing from Bernero, it came in the mail to my home.

DR. OKRENT: -- in which there were rather brief responses to questions.

But anyway, that will give you the additional

DAVbw

information that, at least, I am aware that we have received since the last meeting.

As we heard yesterday, I think it is, Staff expects to send a document down to us in April for possible May review on the licensing basis agreement.

Of course, it could take us more than one week, or it may be very easy, and we could get right on schedule. I think what would be useful today is to look at these and other points that may occur to you and also try to understand what does this licensing basis agreement mean? What will it constrain on the part of the Staff? I think that is the most important -- in their review of this -- which ones they have accepted, and is that okay?

Another thing is, if there are things, and there are things that are not going to be fully specified by May or June, and so forth, how will they decide to fit it into the licensing basis agreement and in what form? If something remains to be done in the future that has not now been agreed to, and it is not clear to me that we know the basis on which that can be accomplished, I am sure Chuck Wylie and Carl Michelson, among others, will try to look at what constitutes sufficient design detail of the type being proposed. I think we will want to think about that.

There are one or two other things I could point out. There are some requirements stated which would need

DAVbw

to be passed, if some new item came up after the licensing basis agreement, that were agreed to, even though it is not a legally binding document. And there is a question, are these criteria right? Are they too lax? Are they too stringent? That sort of thing.

And of course, as you see, there are some topics that are not necessarily currently dealt with in the licensing basis agreement, like security and sabotage.

So as we go through the agenda, the members might bring out things that they think may be stumbling blocks. We don't have to get the answers today, but if we can bring out what may be worthwhile questions, next time we may be in better shape to take action.

That is my introduction. Chuck, did you want to add anything?

MR. WYLIE: No. I think that pretty well sums it up.

DR. OKRENT: In that case, I think the Staff was going to give us an update.

MR. HERNAN: Dr. Okrent, I would like to make a few points.

The LBA is a good faith effort on the part of General Electric and the Staff to try to establish some of the ground rules for this review. I would remind the Committee, this will be the first standard plant FDA

DAVbw

application to come in after the Commission's approval of the Severe Accident Policy Statement, and we will have to fully comply with that statement.

I would like to keep this separate from GESSAR, which, as we have told the committee before, had special provisions in that policy statement. This is not a warmed over GESSAR. This is a new application. We are trying to work very hard with GE to get some of these things established before they come in with the design. I would also remind the committee that the design has not been submitted.

Our answers to some of questions of the details of the design, we would simply be speculating. Mr. Caruso would like to update the committee. Mr. Caruso is the project manager who came in in December, I believe it was, January. We are expecting to have the licensing basis agreement finalized in late April or early May. We will be expecting some feedback before the letter.

MR. MICHELSON: Question. Is the agreement in our book the same one we saw in subcommittee or does it need to be read again?

MR. CARUSO: It is a different version. Since then, it has been worked on by GE and by the Staff.

MR. MICHELSON: It would be nice if you could put the revision date or something like that on the document.

DAVbw

MR. CARUSO: You should have it on the bottom right-hand corner of page one, a notation that says "2/25/87 version." The latest version.

MR. MICHELSON: I don't currently have page 1 of the document in here. Mine starts with Section 1. That's right.

MR. CARUSO: That is the old one.

MR. HERNAN: We have a copy of the latest one. We thought you had the list.

MR. CARUSO: No, we've got copies here.

MR. MICHELSON: We did discuss the other one to some extent, of course. It is a nice time to rediscuss the same one.

MR. HERNAN: It would be important that we all have the same version, because some of our responses go to different sections. I am not sure they are different.

(Slide.)

DR. KERR: Shall we throw out the version in the notebook?

MR. CARUSO: Yes.

Good morning. My name is Ralph Caruso, Project Manager from the NRC Staff. I am going to take just a few minutes this morning to talk to you about the ABWR and give you a status report on the status of the report, since the last briefing that we held for you in January of this year.

DAVbw

Briefly, I am going to talk about the licensing basis agreement. I am going to talk a little bit about the EPRI requirements document and a little bit more about the program plan and give you some more thoughts on how we view ACRS participation in the review of the ABWR.

(Slide.)

The Staff and GE have been discussing the licensing basis agreement now for about six months. We have gone through numerous versions, numerous additions. The date we have agreed on. Most of the document that you have in front of you, we have agreed on the administrative matters, the scheduling, the relationship between the ABWR and the EPRI program, definition of the participants, and generally, on the content and format of the application. As a matter of fact, I would say we've got essentially complete agreement on the content and format of the application. We have also reached agreement on how future technical issues will be handled. That is discussed in the memo from Mr. Bernero to Mr. Fraley.

There are several additional issues for which we don't have agreement, which we are still working on negotiations. Not surprisingly, those issues are the ones that have caused problems in past or planned reviews. They include the severe accident policy statement, issues of physical security, containment performance standards, PRAs,

DAVbw

human performance, how human performance will be handled, maintenance and surveillance issues. Several of those we expect to receive very quick resolution on. GE is making some proposal to us on physical security, maintenance and surveillance.

The others we feel confident that we will have a complete document for you on PRA and physical security in the Severe Accident Policy Statement.

MR. MICHELSON: Excuse me. Will these all be ready by the next full committee meeting?

MR. CARUSO: It is hard to tell. I hope so, but I can't be sure, because some of the things that are holding it up are Staff positions on the Severe Accident Policy Statement, which are in the works. It is possible that GE and the Staff may not be able to agree on those issues. Dr. Okrent brought up the question of, well, what are we going to do, if we don't reach agreement on them? Well, if we don't reach agreement on them, then they will be treated as we would have treated them, if we did not have a licensing basis agreement, which means they will be treated on an ad hoc basis by the Staff, as they are resolved.

I can say that that will be the case with all issues that are not specifically addressed in the licensing basis agreement. Most of the issues that are not addressed in the licensing basis agreement are normal licensing

DAVbw

review issues that the Staff has guidance in the standard review plan for, and the Staff will use that guidance in the standard review plan in doing its review. For those technical issues, we feel no reason to respecify them in a licensing basis agreement. It is redundant. We are trying, in the licensing basis agreement, to refine the issues where we have had problems agreeing in the past, and if we can define those issues in the course of resolution for them, then we want to do so. If we can't, well, we can't.

And we have to get on with the process of reviewing the ABWR. We have to realize that this is a first effort at something like this, a licensing basis agreement. It has not been done before, and we are not sure it will work.

DAVbur

Right now GE and the Staff are making best efforts to make it work, but we don't have any guarantees, and what we can put into it we will put into it. What we can't, we will just have to deal with it as we deal with those issues during normal review.

(Slide.)

The Staff prepared a program plan for the ABWR which I don't think you have seen. It is a SECY paper that went to the Commission in November 1986. That was requested by the Commission in September of '86.

We are setting up an initial briefing of the Commission in April. Right now we are looking at the first week in April, but there may be some scheduling problems that we have put off later into April.

We understand the Commission wants to talk about that program plan and the LBA. Part of the reason for trying to get the ACRS involved in the LBA was to see what its comments were before going to the Commission.

DR. OKRENT: Why would there be a SECY paper sent to the Commission on something like this that the ACRS would not have been sent an information copy of?

MR. CARUSO: The SECY paper -- I am sorry, I think Dr. Okrent's question is why did the Staff send the SECY paper to the Commission without involving the ACRS?

The SECY paper that went to the Commission

DAVbur

was an internal staff position on budgeting and manpower scheduling for doing the review, the fact that there would be a project manager and an allocation of thus and such millions of dollars for the review and contract costs.

There was a brief discussion of the fact that GE wanted to have an LBA, and it included a list of potential LBA topics that the Staff thought might be included. It also included a background history of the ABWR, but it did not get into any specific LBA issues. It was more of an internal Staff management document than an LBA.

In terms of EPRI participation, the EPRI ALWR program, I have got Dave Moran and Tom King here from that program.

Two requirements document chapters have been submitted to the Staff, the first chapter on overall general requirements and Chapter 2 on the steam and power conversion systems. They are under review by the Staff, and the Staff is preparing an SER.

The people who are going to be doing the ABWR review have seen those documents and have provided their comments to Mr. Moran and thence back to EPRI. We expect there will be close interaction between the people involved in the ABWR review and the EPRI program. We think that is essential.

MR. MICHELSON: Which one is going to lead now,

DAVbur

and which one will follow?

MR. CARUSO: As you look in the LBA, there is a schedule which shows the date of issuance of the different EPRI requirements chapters followed by the ABWR and the way in the scheduling section of the LBA -- I think it is Section 4 -- discusses the fact that the EPRI program will be ahead of the ABWR. So the EPRI program will be ahead.

MR. MICHELSON: Is there still a built-in six months, or is it less than that?

MR. CARUSO: Three months.

MR. MICHELSON: It would be three months behind the EPRI program?

MR. MORAN: Three months lag. It calls for extremely tight coordination and communication. It is going to be a great responsibility to carry this off.

MR. MICHELSON: Now, the ACRS review of the EPRI program, is it going to always be ahead of the ABWR review?

MR. WYLIE: That is what we intended.

MR. MICHELSON: It is not working out that way.

MR. WYLIE: Staff hasn't issued an SER.

MR. MICHELSON: I was thinking in terms of the licensing basis agreement. We said we really needed to review Chapter 1 before the LBA.

MR. WYLIE: Right now we have tentatively scheduled at the May meeting a day for review of Chapter 1

DAVbur

and the next day the LBA. Whether it works out that way or not depends on the schedule from the Staff.

MR. MICHELSON: I thought the LBA -- that our letter was going to go out in April. It is going to be May? Oh. Oh, good. That should be fine then.

DR. MOELLER: Could you comment to refresh me on the relation of the EPRI effort requirements document to the LBA?

MR. CARUSO: Really there is no relationship. They are entirely separate documents.

MR. WYLIE: Well, yes, but what about maybe another question in that regard. For example, just looking at one area here, the site specific envelope for parameters, GE will justify its deviation from the EPRI site design parameters.

Is that the commitment that GE is making on all aspects of the EPRI program?

MR. CARUSO: Yes, at least on the site. GE has agreed that it will meet the EPRI requirements document, and in those areas where for some reason or another it disagrees -- and we expect those to be very, very few -- it will specifically identify them to us and justify them.

MR. WYLIE: In all aspects?

MR. CARUSO: What do you mean by "all aspects"?

MR. WYLIE: Is that all inclusive?

DAVbur

MR. CARUSO: To the satisfaction of the Staff, I would assume. I mean it is hard to say because we don't know what those specific disagreements are going to be.

MR. WYLIE: Let's take another one. Let's take one we are going to get into a little bit later, completeness of design for certification.

Now, GE has spelled out in the LBA their concept of what completeness of design is. The EPRI document also spells out that, which is under review by the Staff.

Now, whatever resolution comes out of the EPRI review as far as completeness of design GE is committed to support that?

MR. CARUSO: I would say yes. GE has made a very strong commitment to us to provide whatever is required to issue an FDA and eventually a design certification with no open items. They are really eager to not have any conditions on the final design approval or the design certification that would be eventually issued.

They have made it very clear to us that if the Staff needs any additional information to resolve questions they will provide that information. They have implied that very strongly.

MR. EBERSOLE: I think I have read either in the EPRI proposals or in the nonwater reactor -- you know, modular designs -- a much finer description, a much more

DAVbur

detailed description of what constitutes design detail than I have in the ABWR itself.

MR. CARUSO: I don't know much about the nonwater reactors. I guess you are talking about in the LBA?

The LBA section came primarily from an AFI document -- AIF, I am sorry -- the AIF document on standardized plants as it was incorporated into a Staff NUREG that is before the Commission on standardization. That is where those thoughts came from.

The EPRI program discussion of completeness of design in -- what is it, Table 7.1, Dave?

MR. MORAN: It is in Section 7.

MR. CARUSO: Section 7 has the discussion of the EPRI requirements.

MR. MORAN: 7.3 and Table 7.1, correct.

MR. CARUSO: I don't know that they are necessarily incompatible.

Did you see anything in particular?

MR. EBERSOLE: I just recall one of these packages of information had a very well laid out description of design detail which I have yet to see in the ABWR.

MR. CARUSO: I would like to know what it was that you saw.

MR. EBERSOLE: I will look that up for you.

MR. MORAN: Let me interject for a minute.

This is Dave Moran, Staff Project Manager for the ALWR program.

Mr. Wylie has asked that I be prepared with viewgraphs to go into some detail of the completeness of design which is specified in the requirements document.

To put you at ease for the moment, GE has stated that they will follow the requirements document, which means that they will follow this list. It is rather copious.

MR. EBERSOLE: Good.

(Slide.)

MR. CARUSO: I think one of the questions that was asked is what do we expect from the ACRS?

I guess we would like your help and would like some constructive criticism on the licensing basis agreement.

We have provided you with several copies of the draft LBA, and I realize that it may be a little bit confusing to come down here with a different version every time, but the negotiation process is like that. The documents change.

We provided you a copy in December. We provided you a new copy today. We have had briefings in January, Staff briefings and briefings of some individual members in February.

I guess I would sum it up that we want some

DAVbur

constructive criticism on the LBA itself.

We don't have the design in front of us yet. We won't have aspects of the design until September. Until then we can't answer any questions about containment capability or the design basis accidents or systems interactions. We just don't have that kind of information right now.

We are trying to determine whether an LBA is feasible and, if so, how it should be written.

When we do finally reach or receive the design information in September, we will be trying to get you involved in it rather than coming to you at the end after a two and a half or three-year process. We want to come to you after we finish each section of the SER and ask you for your comments.

We intend to fold those in and consider them. That is what we expect of the ACRS.

MR. HERNAN: I would like to point out, in the document I mailed to your homes there is a schedule attached to that. I acknowledge and apologize for one error on that. I tried to annotate which points of review are optional for the ACRS and which ones are required. I used a single and double asterisk. If you would just switch those around.

The double asterisks on that schedule indicate

DAVbur

things that are optional with the ACRS. That is all but one essentially.

The only thing that is required by regulation is that the ACRS be involved, and it would be the FDA review itself, which is required by Appendix O.

MR. EBERSOLE: I notice that there is no operational data required here, either in the normal standard form or the emergency procedures. None of the operational information is requested.

MR. CARUSO: Such as?

MR. EBERSOLE: How do I operate the plant?

MR. HERNAN: We are talking about the design, Jesse.

MR. EBERSOLE: I know, but the design -- intrinsically, the design has some functional information leading directly to operating proceedings, and you can't escape it. The front end of the operating package has to be in the design arena, yet it is not here.

There's tech specs here. That is sort of the beginning of that process. But there is nothing in here about how do you run the plant in the normal as well as the most degraded state.

Frequently, this is a blank place in the package. It always causes trouble.

MR. CARUSO: We will take that into

DAVbur

consideration. I believe General Electric will provide us with outlines of operating procedures if they are necessary during the review.

Once again, that would depend on how the review proceeded. If the review required the Staff to look at those procedures, then they would be provided.

MR. HERNAN: Well, the standard review plan is very detailed in our review of operating procedures.

MR. EBERSOLE: They must have them to look at, but that is not here.

MR. CARUSO: I don't know that off the top of my head.

MR. MICHELSON: So far as the completeness of the design question, normally when you do an FSAR review you have draft operating procedures already in hand. In this case I guess you may not.

MR. EBERSOLE: I think we have to.

MR. MICHELSON: That is a good question. Part of the completeness of design question.

MR. EBERSOLE: That is where TVA falls down. A case in point.

MR. WYLIE: The next to the last item there about our input, what is the schedule?

MR. CARUSO: Right now we are trying to get a Commission briefing set for early April. That may slip till

DAVbur

late April now.

We would like to issue this licensing basis agreement in June of this year. That is our current target.

DR. OKRENT: I don't understand the significance of the timing of the Commission briefing and the anticipated timing of the ACRS letter.

They are supposed to be getting in their opinions before there has been an ACRS letter?

MR. CARUSO: You see, the Commission in September of last year was enthusiastic about this whole process and asked the Staff to come back to it and brief it early in 1987 about the progress of the ABWR review and the LBA.

The Commission is not going to approve the LBA. It can't. That would really involve a legal finding of adequacy of a lot of issues that are really not really ripe enough to be determined.

So we intend to ask the Commission for its comments. The Commission may look at the whole document, throw up its hands and say, no, it is not a good idea. It may just offer us a few comments. It may say, it is wonderful, just keep going.

But we do not expect to receive a formal approval document from the Commission. We are just going to ask the Commission for comments.

DAVbur

DR. MOELLER: Back on an earlier point, as I heard you, you were hoping to receive our comments before you briefed the Commission?

MR. CARUSO: Originally, yes, but hopefully in discussions that we are having we can get some useful comments -- Jesse's comment about procedures -- and when we go to the Commission we can say to the Commission we have discussed it with the ACRS, we got individual comments at a meeting, we expect to receive formal comments in a letter or however you wish to provide them. We will take them into consideration, also.

DAVbur

DR. OKRENT: I have a problem, by the way, with your going to the Commission and saying, we discussed it with the ACRS and received individual comments. The intent of this meeting is not to provide you comments.

The way you get comments from the ACRS is via a letter signed by the Chairman.

I think it is a misrepresentation saying that you have gotten these ACRS comments.

MR. HERNAN: We understand that, Dr. Okrent. As you know, this has come up in other issues that Mr. Caruso doesn't understand quite yet.

The comments from the ACRS are written comments. The comments in the meetings are dialogue.

MR. CARUSO: I apologize for mischaracterizing them.

DR. SIESS: That means you don't pay attention to individual members.

(Laughter.)

DR. KERR: Please continue, Mr. Caruso.

MR. CARUSO: I think that is about all I have to say this morning, and I will leave it open for discussion now.

DR. KERR: Are there any further questions of Mr. Caruso?

MR. MICHELSON: Will there be questions that come

DAVbur

up in the roundtable discussion that the Staff may wish to answer?

I would rather wait till then.

DR. MOELLER: Did you highlight what has been changed in this 225 version?

MR. CARUSO: Quite a bit has been changed. There has been quite a bit of reorganization. Several main sections have been completely collapsed into small paragraphs referencing the EPRI program.

There was originally a very large recapitulation of the EPRI criteria for incorporating future technical issues. That has all been collapsed.

With reference to NUREG-1197, it turns out, I think, that paragraph slightly mischaracterizes what is exactly in 1197, but I would state that for the ABWR we are going to use the EPRI criteria for future technical issues, the criteria for determining whether those issues should be considered during the review of the ABWR.

That is about the simplest way to state it. We are going to use their baseline. We are going to use their proposed solutions to the existing generic issues and future issues will be measured against the criteria in the EPRI document.

MR. MICHELSON: Why didn't you follow that through on completeness of design in this EPRI document?

DAVbur

Why did you reiterate certain points here, perhaps with the omission of others?

MR. CARUSO: We don't feel, you see -- I don't really feel that there is necessarily a disconnect because the EPRI requirements document GE is committed to meet, and if they don't meet a certain section of the requirements document, the fact that -- say the requirements document says that there will be a detailed drawing of some particular system. The fact that the LBA does not say that there will be a detailed drawing of that particular system does not mean that GE will not provide it.

MR. MICHELSON: Is that explicitly stated somewhere in the requirements document or licensing document?

MR. CARUSO: The licensing basis agreement?

MR. MICHELSON: If that is stated that way, then I don't have a problem. I don't care too much what this says.

MR. WYLIE: Well, you really wonder why.

MR. MICHELSON: Why you even bother.

MR. WYLIE: If you are going to adhere to another document.

MR. MICHELSON: I would say that a paragraph letter would cover the whole thing. Just say, well, the EPRI documents we will take care of it.

DAVbur

MR. WYLIE: It would certainly simplify this. It would simplify this if you would basically make a nice statement somewhere upfront saying in all aspects that GE is committed to the LBW.

If you say that, then why reiterate it?

MR. CARUSO: Well, I believe it is in here that GE will comply with the EPRI requirements document.

MR. MICHELSON: I would like to read that, and then I will withdraw my questions, most of my questions today.

MR. HERNAN: Keep in mind the final Staff SER on the EPRI requirements document I believe is not scheduled until around 1989 or 1990. We are going to issue a Chapter 1 of the EPRI document as a draft SER when we have gone through the entire three-year cycle meeting the EPRI proposal and the EPRI requirements document. There will be one overall SER.

I am not sure which of the requirements we are talking about, including completeness of design, are going to be covered in Chapter 1 versus the other chapters and how this is going to evolve.

MR. WYLIE: It was covered in Chapter 1.

DR. SHEWMON: Carl, on page 3 of this document, the last sentence of the first paragraph says, GE will identify to the Staff any exceptions it takes to the

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requirements document.

MR. CARUSO: That is correct.

DR. SHEWMON: Which is a little bit different than saying --

MR. MICHELSON: But not too bad. But then if you say that, why are you even getting into the question of completeness of design? Are you just waiting to look at the EPRI document?

DR. KERR: I think you should keep in mind that the Staff has long been committed to duplication, diversity, and extended documentation.

MR. MICHELSON: I think there is a real problem with duplication.

DR. KERR: That is diversity.

MR. CARUSO: I really think that in several ways the two documents complement one another.

MR. MICHELSON: I would hope they would track right down the line. That was, I thought, the intention.

DR. SIESS: If they do, why do you need two?

MR. MICHELSON: That is right.

MR. CARUSO: Not really.

MR. WYLIE: They don't.

MR. CARUSO: I will be perfectly frank. There is one area where there may be a disconnect. If you read Enclosure 1 to this document, it is an agreement between

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General Electric, EPRI, and the Department of Energy which states that if one program gets ahead of the other then that program will discontinue. If one program bogs down, then it will just be left behind.

DR. KERR: So the GE program could get ahead of the advanced light water reactor?

MR. CARUSO: That is possible.

DR. KERR: It seems to me that that commitment is really not very meaningful. The commitment to conform to the advanced light water reactor requirement is not a very meaningful commitment if there is also the recognition that the GE program may get ahead of it.

MR. CARUSO: We don't know that it is going to get ahead of it, and we hope that it won't.

MR. WYLIE: Isn't that where we are now?

You are saying you want to finalize the LBA in June, and Chapter 1 is still under review by the Staff and an SER may not come out till June, which means if it comes out in May we can't give you a comment until after May or June probably.

So in essence, then, GE would be ahead of the EPRI program already.

MR. MICHELSON: And Chapter 1 is the foundation of the rest of the program, and the LBA is kind of the foundation for the ABWR.

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MR. MORAN: I would like to make a statement.

First of all, each chapter is going to have a draft SER associated with it. We can't do anything else but call it a draft because we have to wait until the whole document is written before we know whether we like Chapter 1 in its entirety, anyway.

However, the contents of the total document won't be known until we get the whole thing, and likewise, as each one of the chapters come out, GE is not really going to know whether their design conforms to the document until they see it.

So we just can't say that one is behind the other yet.

Now, I look upon this statement in the LBA that if one program gets behind the other one is going to go ahead as a very healthy forcing function. The fact is we cannot afford to get these two programs out of sync. The coordination has to be there or we don't have the thing coming together.

So I just look upon it as a challenge, and I intend to carry out my part to see the program stays on track.

DR. KERR: Mr. Moran, I may not understand the English language very well, but it seems to me that if you can't operate in a situation in which GE gets ahead of

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the advanced light water reactor, then to make a provision for that possibility doesn't make any sense.

MR. MORAN: Well, GE has had a design that they put together with their Japanese counterparts, and they are looking through that design to make sure that it conforms to the requirements document.

So if they decide to totally disconnect from this program nobody is going to stop GE from going ahead with the licensing request.

MR. CARUSO: There is one forcing function on GE here, which is that the EPRI requirements document is supposed to represent the wishes of the utility industry with regard to future reactor designs, and if GE decides to go it alone and not demonstrate a compliance with the requirements document, then they risk losing their market, and they have to make that. That is really a strong forcing function for them.

DR. OKRENT: There is nothing that keeps the committee from choosing to wait until we have both SERs before we write a letter on either if the committee decides that that is relevant.

In other words, the Staff has set up a calendar that they would like to follow, but I think it is important that for the first phase we have them both before us. I think that is just the way we function.

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So that is a position we can take.

MR. WYLIE: Where we are right now is we have got Chapter 1. There has been a lot of work between the Staff and EPRI on Chapter 1 which we don't know the content of. So we could not undertake a review without knowing what the Staff has done with the program.

Although looking over some of this information, I think there is a lot of work that should have been done and I hope that has been done with EPRI.

DR. MOELLER: I have a question. Perhaps it has been answered. But I notice in reviewing the latest edition of the LBA that you talk, for example, about instrumentation and controls and you talk about computer hardware, and we have read recently the AEOD report on how rising temperatures in certain electronic equipment can make it fail to perform properly.

Is there a systematic way, then, that all of the operating experience is being factored into this review to assure that this plant then doesn't have those types of problems?

MR. HERNAN: Yes, there is, Dr. Moeller. The AEOD report is being processed at this point in time by NRR for generation of new generic safety issues. The generic safety issue will go through our prioritization process, which will dictate the timing and the resources applied to

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that particular safety issue. At this point we think it will come out high, but we are not going to second-guess the number crunchers.

At such time as it then becomes prioritized, the resolution process for that issue will begin. Once the resolution is arrived at we are talking a generic resolution type thing, and that will be screened by the screening process set up by the EPRI program, which GE is committed to, and it will be factored into the design.

MR. MICHELSON: I have a question what that implies.

DR. KERR: Excuse me just a minute.

Does that take care of you?

DR. MOELLER: I will yield to Carl. I want to come back on some other things, but go ahead.

MR. MICHELSON: I didn't read your new document, but the previous document I thought said that you were cutting off the generic and unresolved safety issue question as of last July.

Is that still the case for the licensing basis agreement?

In the licensing basis agreement what generic issues will be included?

MR. CARUSO: Why don't I let Dave handle this because we are using the EPRI criteria here?

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MR. MORAN: There are approximately 735 issues of record as of July 1. It was agreed between the Staff and EPRI that we would set a baseline. At the time we had isolated those issues which did not apply to future plants, those issues which do apply to future plants and are resolved and therefore will be cranked into the requirements document, those issues which were under resolution effort, of which there was 63 at that time, which would have to be considered for applications of the requirements document.

MR. MICHELSON: Is the question of solid state equipment temperature effects yet identified on that list?

I thought you said it was just being possibly generated.

MR. HERNAN: It is a new item. It is not yet on our list.

MR. MICHELSON: What happens to new items after July?

MR. MORAN: New issues that appear -- and they appear at the rate of about 30 a year -- have to be screened by screening criteria -- Tom King is going to present this to you a little bit later -- screening criteria and then implementation criteria after the resolution has been obtained.

MR. MICHELSON: It is my understanding that that is a backfit consideration at that point.

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MR. MORAN: It gets into the backfit rule.

VOICES: No.

MR. MORAN: Wait a minute. The implementation criteria is a set of filters which had to be set up in order to determine whether an issue should really be implemented on future plants. So you are getting into the realm of backfit, and we have to pay attention to 10 CFR in this regard. But only after an FDA do we apply the backfit rule.

DR. OKRENT: There is something a little anomalous when you talk about backfitting future plants.

MR. MORAN: That is true.

DR. OKRENT: The words don't quite sing. Do they sing to you?

MR. MORAN: I don't like the term "backfit" whatsoever. That is why I quoted 10 CFR -- what is it, 5029 or 5109 -- which states that after a design approval FDA, in this case --

DR. KERR: May I interpret this discussion so far, the response to Mr. Michelson's question is, I think, we don't know? Is that the case?

DR. OKRENT: No. We will see under Agenda Item 3 screening criteria to establish if a new issue is applicable to the ABWR.

MR. WYLIE: That is the question I was going to

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raise, but we are getting ahead.

MR. MICHELSON: Perhaps we are. I just wanted to make sure, though, that the answer that was given didn't go a little bit unchallenged?

DR. KERR: Mr. Ebersole, were you going to ask about this issue or a different one?

MR. EBERSOLE: This issue.

This issue goes back many years to the origin of the effects of temperature on solid state equipment. At that time it was suggested that they put in local temperature monitoring systems to properly cause whatever system affected to go into an appropriate shutdown state.

Is the resolution of this problem now coming into the same kind of shape that all electrical apparatus generally is except this; namely, high temperature causes the system to shut down; if it isn't, it has got to be fixed?

I am talking about motors, switchboards, all sorts of apparatus and stuff that knows what to do when they get warm. This stuff doesn't know.

MR. MICHELSON: Perhaps we could sign an agreement ahead of time that would exclude it from full consideration.

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DR. KERR: That was a statement, I think.

MR. EBERSOLE: That was the statement, but I think we have ultimately got to look at that.

DR. KERR: Mr. Moeller.

DR. MOELLER: Let me raise one other question, which, if it can be addressed later, fine, but, looking in the report at page 21, item 10.7, it talks about water chemistry guidelines, and there is a glorious sentence there, "The maintenance of proper water chemistry in BWR cooling systems is essential to the prevention of intergranular stress corrosion cracking."

I noticed, then, having made that statement, you do refer to the EPRI documents, which you will use as guidelines, and one of them is hydrogen water chemistry. I need to read the material, I believe, Gil Brown has provided to us recently on this, but it seemed to me, he raised, the ACRS fellow raised some questions about that. That would seem to me to be a very difficult item to implement.

DR. KERR: What was your question, Mr. Moeller?

DR. MOELLER: When they discuss it, I would like to know how you handle a moving target, one that is moving, I gather, as rapidly as this.

DR. KERR: Is that going to be treated in the course of the discussion?

MR. HERNAN: This document establishes that that

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area of concern is going to be part of the review, the specifics on what hydrogen chemistry control will be incorporated, is part of the technical review. Personally, I wouldn't expect that to come up for probably two or three years, but then I think the overall industry position on hydrogen chemistry will be a little more firmly established.

DR. MOELLER: Okay.

DR. KERR: Further questions? Are we now almost to item 2?

MR. MICHELSON: I still have a further question.

DR. KERR: Okay. We are still in the first five minutes.

MR. MICHELSON: Could you clarify for me what the legal status -- or what is the real status of this licensing agreement, because in the case of EPRI, you point at, well, we will just issue draft SERs, and three years later, we will finally approve the draft. In this case, are you issuing a draft licensing agreement and approving it three years hence?

MR. HERNAN: As we tried to point out in our response, the OBA has absolutely no regulatory or legal standing. It is not required by regulation. We don't need it to do the review. GE doesn't need it to submit the application. It is a gentleman's agreement, if you will, on

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how we are going to proceed. It has no constraints on the Staff. The question of backfit keeps coming up. I want to be very clear that the backfit rule, as a regulation, does not even come into account until after the final design approval has been given by the Staff. That is in 1990, 1991.

MR. MICHELSON: So if you change your mind later on any of these items, you are free to do so.

MR. HERNAN: That is correct. Just as in any standard plant application.

MR. MICHELSON: Does it say so somewhere?

MR. HERNAN: I think it is implied.

MR. MICHELSON: I am just trying to figure out.

MR. HERNAN: The purpose of our review is to determine conformance with the NRC regulations.

MR. CARUSO: This is not a legal binding contract.

DR. KERR: Mr. Wylie was next.

MR. WYLIE: Let me ask another question.

What is the legal standing of the Staff's review of whatever will be issued regarding the EPRI program?

MR. HERNAN: The EPRI program is not yet recognized in the regulation. The EPRI program has been going on for about three or four years. It is a commitment that Mr. Denton has made to work with industry. It is

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obviously highly influence by the Commission. I am not sure what the final product will be, in terms of legal standing, but it is a design envelope that we expect will ease future applications for standard plants, in terms of defining what is acceptable and what is not.

MR. WYLIE: Staff is going to write SERs on that program, and that does not bind or constrain the Staff?

MR. HERNAN: That SER is merely a documentation of the Staff's review of the legal adequacy of something that is proposed.

MR. WYLIE: So it has the same standing as the FDA?

MR. HERNAN: Yes. Legally, neither of them have any standing. The EPRI program, obviously, is a much broader and more energetic program.

MR. KERR: I must say the discussion on legal standing puzzles me, because beginning with, I would say, TMI 2, when NUREGS became de facto regulations, it seems to me that what is a regulation and what is not has been blurred, and it puzzles me that the Staff can let the resources that are being committed to this operation, and I am not critical of the operation, it seems like a reasonable thing to do, and then to take the attitude that nothing occurs in this is binding on anybody. It is not a very good commitment of resources to something that is going to be

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meaningless or could be.

MR. HERNAN: One of the Commission's very highest priorities is standardization.

DR. KERR: I am not being critical of the operation, but to pretend that what is going on is not going to have any impact later on, it seems to me doesn't make much sense. Clearly, if you guys are going through all this operation and come up with something, you are going to think of something that is operational. How you will put it into operation, I don't know. You may write a new reg, you may write a reg guide, you may write a standard review plan. But it will have a significant impact on what occurs after that. You know it well, and I know it well. Essentially, to pretend otherwise is, either you are kidding yourself or us, I think.

MR. HERNAN: Are you talking about the ABWR program or the EPRI program?

DR. KERR: I am talking about anything to which you commit a major amount of resources and go through writing an SER and arriving at agreements that you now refer to as gentleman's agreements, with an applicant for a license.

Let me emphasize, I am not being critical of an effort to get together on these things beforehand. I think it is a good idea, but I think having reached that

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understanding, it does not quite make sense to pretend that all these activities won't have any significance on what happens later on, because they will.

MR. EBERSOLE: I agree with you, Bill. When I heard the Commissioners weren't going to take any action, I was dismayed. All this is on a handshake basis. It sounds ridiculous to me.

MR. HERNAN: I don't think we said that nothing is going to get better as a result of all this effort. The question was posed to us, is it legally binding? The answer is no. Is it going to make life easier, both for us and for applicants? I think the answer is yes.

DR. KERR: That is not only what is meant by legally binding. The Staff means by not legally binding, it is not a regulation, but for all practical purposes, it determines whether people get licenses or not. If that is not a legally binding situation, it is a de facto legally binding situation. It is certainly true that a licensee will sue and say you can't use the standard review plan. In the meantime, he has lost ten years of resources. You know, our discussion, it seems to me, is in some sort of an unreal situation.

MR. EBERSOLE: It undermines the whole process.

MR. CARUSO: I guess I would say, my belief is that there is a reason why things like the NUREG documents

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and the standard review plan are not legally binding. What is legally binding are the regulations, the reg guides and the NUREG documents.

I will agree with you, they have become de facto regulations of a sort. But they are not legally binding, as you say, in the sense that an applicant does not have to comply with them. And I may kick myself for this, but I would say, there are some people on the Staff who think that the use of the standard review plan in the NUREGs as de facto regulations is not proper, that that way of ratcheting utilities is not the right way to go, and that perhaps we should have more of these agreements.

MR. WYLIE: Well, it seems there are some pretty binding words in this NUREG 1197, as far as the advanced lightwater reactor program description in Section 423 regarding approval. Let me read this. It says, item one on overall approval, "The Staff has reviewed the requirements doctrine and found that it contains the necessary requirements, that it properly translated into design in accordance with the current practice and guidance documents into a nuclear power plant design, which will have a nuclear power plant design, which will have all the attributes required by the NRC regulations to make sure there is no undue risk to public health and safety from the requirements of the regulation."

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That sounds like that is pretty binding.

MR. FRALEY: Mr. Chairman, I could help.

In my discussions with the General Counsel about what constitutes a backfit, as you recall, we have had that for sometime, their opinion was that anything beyond what was approved at licensing time basically must be considered a backfit, unless the applicant had committed to do it. If he had committed to do it, he was obliged to do it, and it was not a backfit.

So in effect, if somewhere during the licensing process, he had agreed to do something, he was legally obliged to do it, and it could not come under the backfitting rule.

So I would guess that same situation applies here. If GE commits to do something beyond what the regulations require, I would expect they are legally bound to that.

MR. MICHELSON: It is the converse, I think, that worries me.

DR. KERR: Thank you for the clarification.

We have now got almost to the end of the first five minutes of our discussion.

Are we still within the five minutes or can we go on to the next one?

DR. OKRENT: I think it would be helpful to go to

the sixth topics.

DR. KERR: Who is responsible for the definition of and in the constraints imposed by the licensing agreement? Or is that what we have just been discussing? Have we covered item 2? Who is responsible for screening criteria to establish --

DR. OKRENT: Now, don't run too fast.

DR. KERR: We have not covered item 2?

DR. OKRENT: Let's ask the Staff whether they have anything that they wish to add, that they think would be useful concerning the definition of and constraints imposed by the licensing basis agreement.

MR. CARUSO: We don't have anything else to add, Dr. Okrent.

DR. OKRENT: All right. Let's get into the screening criteria, and then come back to item 2, okay, because there is an relation there.

Could you define for the committee what the screening criteria are, and how you expect they would be applied, and so forth, briefly?

(Slide.)

MR. KING: My name is Tom King. I am with the NRR Staff involved with the EPRI requirements document review, NUREG 1197. Documents the Staff process in interaction with EPRI involving a development of a requirements document.

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If you recall in NUREG 1197, a lot of the development of the EPRI requirements document was looking at generic issues that were on the books, looking at, are they applicable to future lightwater reactors, and if so, factoring them into the EPRI requirements document, in terms of what they reflect, in terms of design requirements.

It was recognized that, as time goes on, new issues are going to be developed, so a process was established to treat those new issues and trying to make a decision as to whether they would apply to the requirements document, and if so, come up with some threshold as to when you make a change or not make a change. The process that we laid out to do that, we called the screening criteria. Those are listed in NUREG 1197. Basically, what they are is a two-step process. One, when a new issue is identified, these new issues are ones that are now on the books after July 1, 1986. There is nine of them as of today.

The way the process will work, in fact, maybe I will just right to the last slide, since you already have --

DR. OKRENT: Let's not leave this slide yet. Finish talking about this slide. Then see if there are any questions.

MR. KING: The way the process would work is, a new issue is identified. It is prioritized by the Staff as that point in time. If it turns out to be a medium or a

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high issue, it will be bounced off by EPRI of seven criteria, to determine whether it is applicable to the ALWR design.

And those criteria -- I will run through them quickly.

1. Does the issue duplicate an issue previously identified or prioritized?

In theory, if it got to the point where it's been prioritized by the Staff, that question is already answered.

2. Is it an issue that is a nonsafety issue?

If it is, it wouldn't show up in the requirements document, because that addresses design requirements.

3. Is the issue applicable only to existing plants or features not included in the ALWR?

If it is, it wouldn't apply to the ALWR requirements document.

4. Is it beyond the scope of the requirements document?

Is it an operational type, procedural type issue? Is it research-related? Is additional research required to understand or resolve the issue?

And again, if the Staff has gone throught it prioritization process, if it falls within number 5, you wouldn't be able to prioritize it.

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DR. OKRENT: Let's not leave that one yet, because this one intrigues me a little.

So if there is some issue raised which might or might not be one of great potential significance, if there is research needed to clarify it, which it seems to me is the situation on most of the issues that I have seen raised around the table, it would be ruled out here, because one, yes, it drops it out.

MR. KING: I wouldn't say it would be ruled out. It would be deferred until you can actually come in and have enough information to understand and prioritize the issue. It is not just thrown away.

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DR. OKRENT: We don't even know whether the necessary research will be undertaken because it is not automatically applicable. There will be no incentive on EPRI's part to do the research. I don't know what the incentives of the Staff are any more, so I won't try to guess.

So we don't know whether the research will be done, but it is also quite possible that after a certain period of time, at which point you are ready to make a decision, some information but not enough has been made to what you call resolve the issue. But it remains a potentially very important issue. It is still not applicable by your definition.

MR. KING: I think that the issue is a significant issue. The Staff would take steps to get whatever data is necessary to prioritize that issue, you know. These issues are tracked in a formal tracking process.

DR. OKRENT: Would you like me to give you some examples of issues that the Staff has not done this for?

MR. KING: I know there are issues that have been on the books for years not prioritized yet.

DR. OKRENT: Not a lot of things, quite right.

So I would say I really don't understand in fact how number 5 -- how one is to be assured that number 5 is

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dealt with adequately for the ABWR.

Now, what does number 6 mean?

MR. KING: The regulatory impact issue as defined in 1197 is an issue that is really trying to improve the regulation. Appendix K might be a good example. The regulation in there may be very conservative, and there is some work underway to relax that conservatism based upon work that has been done.

DR. OKRENT: But anything that improves the regulations has regulatory impact?

MR. KING: If you are improving the regulation because you are fixing a problem, that is not regulatory impact. If you are improving the regulation by reducing conservatism, that would fall under the regulatory impact category.

DR. OKRENT: I see. That is the strict definition of the term "regulatory impact"?

MR. KING: It is defined in NUREG-1197.

MR. EBERSOLE: Why don't you just say reducing the conservatism of regulatory goals?

MR. KING: I don't have 1197 in front of me, but it is in there. I think that is basically what it says.

MR. MICHELSON: What happens if you get a "yes" under 6?

MR. KING: It doesn't apply to the ALWR. It

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doesn't have to apply. Let me put it that way.

MR. MICHELSON: That is a little different answer.

What does Appendix K change, for instance?

Let's assume that we don't get it out in time. You have gone through and you have done your SER on this EPRI work.

What happens to Appendix K? Does that mean that it has to be addressed specifically in Appendix K when it is issued; in other words, addressed as to how it applies to the EPRI document?

MR. KING: I am not sure I understand your question.

MR. MICHELSON: You understand Appendix K and the fact that we are going to remove some of the strict requirements in it, and that is a regulatory impact issue then by your definition.

So the answer to 6 is "yes." How is that issue factored into the EPRI document?

You say it is isn't because it is a regulatory impact issue. So you know, that clearly applies to the design of the plant.

DR. KERR: Do you understand the question, Mr. King?

MR. KING: I understand the question.

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Let's assume Appendix K is a new issue that came on the books after July 1st and EPRI had written their section requirements document that said use the old Appendix K. The new Appendix K comes along.

According to this set of screening criteria, they are not required -- they wouldn't be required to go in and change Appendix K or change the requirements document to reference the new version of Appendix K. They could do it if they wanted to.

But this is trying to set up a threshold where they would have to do it.

MR. MICHELSON: You are using July 1st, '86 in the EPRI work as well as a cutoff?

MR. KING: Up to July 1st, '86 EPRI had already looked at every issue on the books. So what is beyond July 1st, '86 is what we call the new ones that will go through this process.

MR. MICHELSON: I have a slightly more academic issue which pertains to EPRI as well as ABWR. There are certain generic issues that have come up before the committee that in the process of resolution it was decided to drop the issue and the dropping was based on some kind of calculation or whatever.

But it was never made very clear whether you would have dropped this for future plants. It was only

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dropped, I think, in the minds of most people for plants already in existence.

A specific case that is going to come up on Saturday is Generic Issue 61 relating to the bleeding of double piping, the relief valve into the suppression pool.

The way the issue was analyzed it was for present plants. It was decided that on a probability basis it was a nonproblem and to drop it and made no mention of future plants.

Now, that means, I guess, that GE doesn't have to double pipe that pipe, although presently they are doing so.

So after this is issued, I guess if GE decided, they could take that second pipe off.

MR. MORAN: Mr. Michelson, I have an answer for that.

NUREG-1197 lists all issues which were determined not applicable to future plants. One of them is Issue 61, and the current evaluation is it is not a current standardized design.

MR. MICHELSON: But unfortunately, 61 never addressed the desirability or probability question on future plants. They addressed the cost/benefit on present plants, and clearly it is not cost beneficial on present plants. The answer would be different for future plants, where the

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cost is much, much lower, when you put it in at the beginning of the design. They never addressed that in the work.

MR. MORAN: That might be true, but we just have to take them as we see them, and, god knows, we spent three and a half years trying to corral all of them.

MR. MICHELSON: I wonder how many others have slipped through. GE picked up on it and at least presently is doing it. They may decide after they see the resolution of 61 not to do it anymore, and I guess they can under this whole arrangement.

MR. MORAN: All I can say is if it gets resurrected as a bona fide issue --

MR. MICHELSON: It won't be because it meets number 1. It has already been considered and dropped. So you can't resurrect it again except on -- I don't know what kind. It would have to be a new issue, and clearly it would be after July of last year.

It is just plain lost in a crack. That worries me.

That is the most significant one, but I am wondering about how many other issues that we have looked at and decided it wasn't cost beneficial for present plants even though it might have been clearly cost beneficial for future designs.

But I don't recall looking at it from this viewpoint. I would like to go back and look at these generic issues. I think there may be others.

MR. MORAN: Mr. Michelson, I guess that is your job to go back and look at those as a member of the ACRS. It is not lost in the crack. We have it listed in a NUREG for all to see.

MR. MICHELSON: After they are dropped, I think you lose them.

MR. MORAN: They are on the record. We sure aren't spending any time on them if they are dropped. That was the big problem. They were sitting on the books and they were actually dropped.

MR. MICHELSON: Maybe I misunderstand item 1. If they are dropped, can you go back and look at them again for EPRI?

MR. MORAN: We don't intend to, and unless there is good and just reason that somebody brings up we won't be treating it again.

MR. MICHELSON: So essentially it is dropped for future plants, even though it wasn't analyzed for future plants. In the case of Generic Issue 1 -- or 61 it was not.

MR. EBERSOLE: I have got a question. Are we done with this topic?

MR. MICHELSON: Yes.

DR. KERR: Mr. Ebersole.

MR. EBERSOLE: There is an illusion in number 2 up there. Is the issue considered a nonsafety issue; e.g., environmental, economic, and so forth?

The illusion is that you cannot have a black/white relationship between safety and nonsafety. There is a shading or a linking.

I will give you an example. We wouldn't want to deal with a plant that tripped its safety systems once a week.

So you have to consider nonsafety issues, as we talk about them now, in the context of challenges to the critical systems, which are just standing by to pick up the disaster.

The characterization of nonsafety equipment, of course, defines the challenge frequency of the safety equipment. That is a vital part of its required reliability.

How many times do you ask it to stand up and do its thing?

So you can't just brush off the nonsafety equipment or nonsafety issues.

DR. KERR: Mr. Ebersole, as I see that, it doesn't say nonsafety equipment. It is the issue of

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nonsafety issues.

MR. EBERSOLE: It always interpreted, though, Bill. For instance, the turbine is not a matter of concern, how it trips?

DR. KERR: I think what you are saying is that there is equipment that is not safety equipment but it can be a safety issue.

MR. EBERSOLE: Use the word "equipment" instead of "issue." Therefore, the turbine reliability becomes an issue.

DR. KERR: So there would still be a safety issue.

MR. EBERSOLE: Well, I don't know about that.

DR. KERR: In your view, it is, and I think rightly so, a safety issue, but the point may be that the current definition of safety issue may leave out some things that really ought to be safety issues.

MR. EBERSOLE: Which is challenge frequency, yes.

DR. KERR: I am not sure Mr. King would disagree with you.

MR. EBERSOLE: What that tends to do, though, it packages up and shoves off to one side offsite power considerations, turbine reliability, main feedwater pump capability to maintain coolant flow, et cetera, et cetera.

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MR. KING: These criteria aren't intended to eliminate the kinds of considerations of judgments you are talking about. EPRI is going to make a recommendation, and the Staff is going to have to review and accept or reject that recommendation.

MR. EBERSOLE: Typically, the Staff, though, never does ask for, for instance, coincidence or redundancy in turbine trip devices even though they don't cost very much. They save a million dollars per trip, and the industry doesn't put them on.

And I think in a new modern design they ought to be there.

MR. MICHELSON: There is another kind of trap that this has got us into. I will use the systems interaction issue as an example.

After thinking about systems interaction carefully, the Staff has come to the conclusion that they have solved part of the problem, and there is a fairly large unsolved part.

What you are doing now is you are declaring the issue to be resolved on the basis of the solved portion of the problem, and you are declaring it that you are thinking of generating and prioritizing a new issue which will take care of the rest of the problem.

As far as new plant design is concerned, this

issue was considered resolved as of last July. It was on your list. It is now listed as a resolved item, yet a large portion of that item was never really resolved. It has been declared a new issue.

Now, those kind of fall out of the new plant design considerations below; whereas, if we really insist that you solve the issue now and keep it on the books, we can get it into the new plant design, even if it takes us two more years to reach resolution.

So what you are doing, you are dropping a lot of these considerations off the new plants simply because you are anxious to declare issues resolved even though you don't mind creating new issues to take care of parts you couldn't resolve right away.

So I have a real problem with writing off on resolutions anymore if you are going to use July of last year as a criterion. I would suggest keep the issues open until they are resolved.

The problem with closing the books on them and creating a new one is this July 1st of last year deadline. If the issue was not on the books last July, it is not in this program. So the new issue won't be in the books.

I am proposing to keep the old issue open until it is resolved. This should be true of any further generic issues we consider if we think they are applicable to new

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plants and have not been resolved correctly in new plants, and we haven't really been focusing on new plants. We have been passing the stuff though as agreeing and disagreeing, and I really think we have got to come to a screeching halt if this is the way you are going to handle new plants.

DR. KERR: Have we gotten to where we can get Mr. King to put on another one of these beautiful big transparencies?

MR. HERNAN: Mr. Michelson, we disagree with your characterization. We don't agree that it is going to drop into the cracks.

Staff made a decision where we are not going to make existing plants do specific walk-throughs. You know, the bottomline of that. The new issues are in fact in the process and will have to be considered in any new applications.

MR. MICHELSON: Will they be considered as part of the EPRI program?

MR. HERNAN: Yes, sir, any new USIs have to be come to terms with by the time we issue a final ruling.

MR. MICHELSON: Then it gets into this question of how you are going to introduce them later. You haven't explained to us yet how you handle the new ones.

DR. KERR: Continue, Mr. King, please.

(Slide.)

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MR. KING: The seventh item is there is insufficient information available to evaluate the issue, and it is put off until such time as the information is available.

DR. OKRENT: Can I ask about that?

It doesn't say that review of the ABWR will also be put off until sufficient information is available, only review of this issue. So if GE doesn't get the information and the Staff doesn't get the information, it just drops by the wayside and the review grinds on.

There is nothing that says such an issue has to be given priority and the information must be developed in time. There is nothing there that asks is this an important issue that we need to get the information on.

It seems to me to be an easy way to get a "yes" and have inaction without an evaluation to judge whether that particular avenue is what should have been done.

MR. KING: I understand your concern, and you are right, there is no time limit or other prioritization. So if it falls in category 7 --

DR. OKRENT: It is not even research here. It is just information.

MR. KING: Sometimes issues come in and they are pretty nebulously defined.

DR. KERR: Should I interpret "evaluate" as being

resolved?

If not, what does "evaluate" mean?

MR. KING: "Evaluate" means being able to prioritize, not resolve the issue but at least prioritize it in terms of its significance.

DR. KERR: Presumably one might have an issue that could be well-defined but could not be prioritized?

MR. KING: I would think if an issue is well-defined -- I am not sure what it would take -- why you couldn't prioritize it unless there was some piece of research you needed to do, to really get a basic piece of data in terms or risk or consequences.

DR. KERR: I am not sure either.

MR. KING: It is possible.

MR. MICHELSON: Will the design certification retain that as an open item then, that particular issue as an open item?

MR. KING: If the issue had not been prioritized?

MR. MICHELSON: It it had been prioritized. If it hasn't been resolved, is that an open item in the certificate?

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MR. HERNAN: The answer is no.

MR. MICHELSON: So, you don't keep unresolved issues as open items; is that it? Unresolved safety issues.

MR. HERNAN: That is correct.

MR. KING: When it gets resolved, the backfit rule applies.

MR. MICHELSON: So if a certificate is issued before the resolution that becomes backfit item.

MR. KING: Correct.

MR. MICHELSON: Okay.

DR. MOELLER: Again, to be sure I understand, if it falls in Category 2 or 4, it can be considered at a later date. If it falls in any of the others, it is out.

MR. KING: It is out until the additional research information or whatever comes in to be able to prioritize it. 2 and 4 are things that deal with operational type considerations. We want to keep a hunch list of those. We don't want to give anybody the impression that those aren't important. We want to keep a hunch list of those, so that when we get into the final designing, we can address operational items, and those are picked up. But since the EPRI requirements document is strictly design and construction, it wouldn't necessarily show up here.

MR. MICHELSON: Even if prioritized and given a

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high priority, it still would not be an open issue, if the certificate was issued before the resolution, as I understand it. Is that correct?

MR. KING: For just items 2 and 4 now?

MR. MICHELSON: Yes. For instance, that's the ones you would prioritze. I don't have the previous slide, but I thought those were the ones you might prioritize.

MR. KING: If it is an operational issue, it is prioritzed high. It would not show up in the EPRI requirements document.

MR. MICHELSON: But if it is prioritized high at the time the certificate is issued, it still hadn't been resolved yet, then it is not covered by the certificate. It is a backfit.

MR. KING: It is a backfit issue.

MR. MICHELSON: I was trying to figure out the magic.

MR. HERNAN: Prioritization only establishes the level of effort that the Staff is willing to devote to resolving the issue. It does not make it any part of the licensing requirement.

MR. MICHELSON: I would have thought, though, that high priority issues could be kept as open items.

DR. KERR: Mr. Okrent, you had a question or comment?

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DR. OKRENT: Mr. Chairman, we are only finishing item 2, but it is about 10:00. It is time for a break. We are getting along until 12:00.

DR. KERR: How much longer do you have, Mr. King?

MR. KING: I have this Vugraph and one more behind it.

DR. KERR: I would suggest we finish Mr. King.

DR. OKRENT: That is fine.

DR. KERR: Please proceed.

(Slide.)

MR. KING: The second part of this screening process, we call screening for significance. If an issue passes those first seven criteria, then it is deemed applicable to the ALWR requirements document. The next question becomes, if it is a significant enough issue to cause a change in the requirements document, the three criteria were developed to answer that question. Basically, if it meets any one of these three criteria, then EPRI would be required to go back in and change the requirements document to address that issue. The criteria are, with the core melt frequency goal established in the ALWR requirements be exceeded, as a result of this issue, would the offset radiological consequence dose requirements established in the requirements document be exceeded as a result of the issue, or would the Commission safety goals

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be exceeded as a result of this issue?

Again, EPRI will recommend to the Staff what should be done with the issue, based upon their evaluation against these three criteria. The Staff will review that recommendation and decide, yes or no, in making changes to the requirements document.

DR. OKRENT: All right.

I would like the committee to look very hard at these. This is asking that any single issue of itself violate one of those three high level criteria, and, in fact, at a relatively early stage of knowledge about the issue, that a judgment would have to be made, will it violate one of these stringent criteria, or it would be dropped, as I understand it.

So that in fact, it would permit dropping five individually whose total did violate the criteria. It also would impose, in my opinion, much too stringent a test of whether some particular safety issue as well worthy of a further look for one reason or another.

DR. KERR: I am not sure I understood your point. Maybe it is an important one. What is it?

DR. OKRENT: Look at the criteria for any issue to be added, either by itself, it would lead to violation of the core melt frequency goal, and this is some bottom line calculation. It would, by itself, added on to whatever was

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estimated, I assume, to be the behavior of the reactor, violate the radiological consequences of the whole or the safety goal.

DR. KERR: You are saying, if it does not violate one of those, it is discarded?

DR. OKRENT: It is discarded; yes.

DR. KERR: When it says it is not that, it says, if it is added.

DR. OKRENT: I am sorry. The inverse of that is discarded.

DR. KERR: But it doesn't mention the inverse here. I am not disagreeing with what may happen. I am just trying to read the English, and the English doesn't say that.

DR. OKRENT: Ask the Staff whether the inverse of that would start it.

DR. MOELLER: It seems to me, too, that it gives a lot of room for juggling, and perhaps misunderstanding. What is an issue? Could I take an issue and subdivide it into two components, so that neither one has to be added, so that I have subdivided it, and I am now calling it two issues? And again, what sequence do I have to take the issues in? It is the one that breaks the camel's back, that I have to add.

Could I rearrange the sequence, so that I add

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the one that is easier to resolve? Maybe that is what I should do. I don't know.

DR. SHEWMON: Do you feel this is an implementable set of rules? It sounds like a lot of things in safety are usually interconnected. You are acting as if you can treat each one separately and make a meaningful decision on it. There won't be any of the interactions that he is talking about. Jess could sit here and talk all day about examples.

MR. EBERSOLE: Well, I can see in this thing here just a reconstitution of the GESSAR-2 case. You don't need to do anything. Well, GESSAR-2, just as a for instance, I was pieasantly shocked to hear General Electric admit that there are common mode failure potentials in their scram systems. In all this 25-odd years, that is the first time it has ever been openly admitted that there was such a potential, but it has always been right in everybody's eyes.

DR. SHEWMON: I'd ask him a question.

MR. KING: I think it is an implementable set of rules. We haven't taken an issue to this point, and we haven't taken any new issues to the point of the first seven screening criteria.

MR. EBERSOLE: With that, though, they could to back to the old vent volume, which would be a catastrophe.

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DR. OKRENT: I think these are unacceptable, frankly, flatly.

MR. MICHELSON: And there is another problem that I have with them, and that is, depending on what our final agreement is with them, on completeness of design, we are really dealing with a rather incomplete design. I don't know how we know some of these numbers that well at that point in the design, how well do you know the core melt frequency treatment? The PRA is a preliminary PRA, based on the scope of the design. I don't know what that scoping is, but it certainly is not what I would call a detailed design, which is really what you need for a PRA. Oftentimes, even you don't walk through to do a good job. You won't be able to do any walk throughs. You may not even have a model.

DR. KERR: It is difficult for me to see how those could be implemented, besides the inverse question.

MR. KING: The points you are raising are valid points, that in the process of implementing these criteria, they will have to be addressed.

DR. OKRENT: What would you do about the uncertainties? Would you use the mean as a judge as to whether it succeeded? Is this the plan?

MR. KING: We haven't defined exactly how we are going to use the mean or how we are going to factor in uncertainties.

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DR. OKRENT: I don't know what the goal means in the first place. If you said you were going to use the mean, I would ask you if you know to find the mean. aBut if you don't even know what measure you are going to use, then again, it is an even less tractable and a still more undesirable set of screening criteria.

MR. KING: The data we are going to use would be the data that are developed as a part of the prioritization and resolution issue, in terms of its contribution to risk and its contribution to core melt frequency. That will be the data that is used. The baseline it will be compared against will be the baseline that EPRI is going to develop as part of developing this requirements document.

DR. KERR: I would say that at this point, we can't say anything unless we write a letter. So I am speaking now as an individual. I sense a considerable amount of skepticism concerning those three, but that is not an ACRS comment.

MR. EBERSOLE: I would like to note that the while ABWR, which I think is the best boiler plant we have had today, the whole thing, you could just park it to one side, look at it and say, it is involved through nonconsideration of any of those issues. It has been improved beyond what has been stated to be perfectly adequate. The whole thing has come about by, in essence,

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ignoring the matters you've got on this slide and making the plant better, because you knew you ought to make it better, and you could.

MR. KING: I agree with that. What we are talking about here is new issues now.

MR. EBERSOLE: I know, but to abandon the whole process that invented the ABWR, on the grounds of picking up logical, ordinary, easy to discern improvement and changes, I think, is wrong. I would like to use the ABWR mechanism by which it was conceived, to continue to evolve it in detail.

DR. KERR: Mr. King, I think you ought to commit to Mr. Ebersole that you want to improve the ABWR.

MR. KING: Mr. Caruso will have to come in to that.

(Laughter.)

DR. KERR: Why don't you go on to the next transparency?

(Slide.)

MR. KING: Let me just mention on implementation, we have not worked out the detailed implementation proceedings. All the questions you were raising are in the implementation area. They are valid questions. We are going to have to answer them.

What we are trying to do in NUREG 1197 is set

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up the ground rules for our screening process, in terms of the criteria.

DR. KERR: So all this slide does is sort of recapitulate what you were saying.

MR. KING: This recapitulates what I have been saying, the steps that we go through.

DR. KERR: Are there any further questions of Mr. King?

(No response.)

DR. KERR: A ten-minute break.

(Recess.)

DR. KERR: We can begin. Who is next up?

DR. OKRENT: The next topic is how will matters that can currently be identified as requiring research be handled? I think, in the draft Staff document, they identified a range of these. I think they are going to give us some discussion and we will have some questions.

DR. KERR: Who volunteers?

MR. CARUSO: I guess I don't have anything more to add beyond what is stated in the response.

DR. OKRENT: Well, let me ask a question. Let's first keep it general. There is some topic that needs research. Let's say research is done. To evaluate the research, it seems there is an issue there. Is it a new issue? It was identified at the time of the LBA as

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something that needs research. Is it a new issue that has to pass all the screening criteria?

MR. CARUSO: Something that was identified specifically at the time of the LBA, something that requires research. I am trying to paraphrase the sentence. Something identified at the time of the LBA, and it is requiring research. The research is done, and you are wondering whether it would be considered a new issue. I guess I would say, if it was something that was identified at the time of the LBA as specifically applicable to the ABWR, I don't see why we would not follow through with it, if we decided at the beginning that some aspect of the ABWR was unclear to us, that would be part of the technical review that would start in September, and we would follow that through to resolution.

DR. OKRENT: Are you going to start that in September? You will agree to the licensing basis agreement in June on your schedule.

So do you have a list of topics?

MR. EBERSOLE: I can offer one.

DR. OKRENT: No, I want to see what they have. Do you have a list of topics that, in the Staff's mind, are applicable to the ABWR, but require research at this time?

MR. CARUSO: None that I know of right now.

DR. OKRENT: There are none? Remarkable!

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MR. CARUSO: No specific items. There may be some generic or USIs that are being worked on, but we are waiting for resolution from the EPRI program, proposals from the EPRI program, and the Staff will use those proposals as they are accepted, as the basis for the ABWR, and they wil have to be resolved by the ABWR before the FDA is issued.

DR. REMICK: Mr. Ebersole is anxious to suggest one.

MR. EBERSOLE: This has been one of longstanding. One of the anchors of understanding, and as far as I am concerned, one of the most advantageous features of the boiler is its prospect of very simplified cooling, using the method proposed in GESSAR-2 called UPPS. I would consider this plant deficient, if it cannot operate in that mode, as the final item of defense against failure of its admittedly conservative design systems for cooling, but along with that comes to me a substantial research program in understanding the utilization of containment failing in the pre-damage state, as well as in the post-damage state. Out of it must evolve some instructions to the operators as to what the hell to do. He has nothing today, as far as I know, except very crude understandings of what to do, none of which have been analytically or experimentally supported.

DR. REMICK: I am not sure I understand what

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the research aspect of that would be, Jesse.

MR. EBERSOLE: I want to know where we find -- for instance, it is now time to invoke the cooling process of the admitted price we pay of a modest emission of radioactive nuclides. Just the idea of deliberately discharging radioactive nuclides to atmosphere is a convulsively repugnant process today, far more so thatn 20 years ago, but it is a necessary consideration to be made, if we are going to invoke this mode of conservative simple cooling. You pay a price, a small price for elimination of a very large potential. We have never done this. It is an old topic. We have never come to grips with what I let go to prevent a catastrophic release beyond my control.

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DR. REMICK: You see that as research rather than analysis?

MR. EBERSOLE: I see that as research in largely an analytical context.

DR. MOELLER: It is policy, too.

MR. EBERSOLE: Yes, it is. Anyway, it costs money.

DR. OKRENT: Let me ask the Staff a more general question.

There are some goals in EPRI Volume 1 for core melt, for the frequency of release outside containment.

Does it strike you that you may need to do any research in order to be able to assure yourself that the design meets this, or do you think this is something that could just be done right off the design board with things they can grab from the shelves right now?

(Pause.)

MR. CARUSO: I guess it is difficult for us to say. We don't know right now, and we don't have a technical description of the plant in front of us, and it is hard for us to say that.

DR. OKRENT: I guess that is a fair answer, but it doesn't help me in the prior answer that you see no research needs.

MR. CARUSO: Right now we don't because we don't

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have any plans in front of us.

MR. CARUSO: But you are going to issue an LBA saying we say there are no research needs.

MR. CARUSO: I don't recall seeing anything in the LBA that says we don't see any research needs.

DR. OKRENT: That is exactly what I asked you.

MR. CARUSO: I don't see that there are going to be any specifically identified research needs in the LBA. That doesn't mean that at some point along the line we would not identify something that requires research.

DR. OKRENT: Then it would be a backfit or have to pass the series of tests?

MR. CARUSO: Not necessarily at all.

Suppose during the review we identified some phenomenon in containment performance as a result of the review and there is some uncertainty about the response of containment that requires research.

Well, then that research will have to be done. The issues will have to be resolved before the FDA.

DR. OKRENT: Again, these issues then have to go through the screening criteria?

MR. CARUSO: I would say that an issue like the one I have just described would not because it would flow directly from the review of the specifics of the ABWR. It would not be a generic unresolved safety issue. It would

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be something specific to the ABWR.

DR. OKRENT: So if I waited until you were in the beginning of the ABWR and then I asked, for example, how adequate is the inspection of the penetrations on the lower vessel head, that would be then an issue that was raised during the ABWR? You could go into it; you would research it, and so forth?

MR. CARUSO: I guess I would ask in what context would you bring it up.

DR. OKRENT: What do you mean in what context?

MR. CARUSO: I guess I am not clear entirely what the issue would be.

Are you asking how would I address the adequacy?

DR. OKRENT: Vessel integrity is the issue.

MR. CARUSO: During fabrication, or are you talking about the design, or are you talking about the fabrication or the installation or the operation?

DR. OKRENT: I said how adequate is the inspection?

MR. CARUSO: Inspection of how the penetrations are installed?

DR. OKRENT: Over the life of the plant.

MR. HERNAN: That would normally be part of the in-service inspection program, according to our standard review plan.

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MR. EBERSOLE: This will be the largest vessel we have ever built, is that right?

MR. CARUSO: I don't know. I really don't know.

MR. EBERSOLE: I think it will have to be.

DR. OKRENT: I am trying to understand your answer, that if something arises during the review then it is not a new issue. This is sort of what you said.

MR. CARUSO: To give you a specific example, containment dynamics. If you have a pool chucking flow or some question about the dynamics of the pool, the suppression pool, as a result of excitation by relief valves or whatever, as has been the problem with Mark II's, for example -- and the Staff will be familiar with Mark II's and there was a big research program to evaluate the loads and determine the loads on the different structures, on the different piping, on the different pieces of piping, on the different equipment -- and if something like that were to arise in the ABWR I would expect that would have to be done and resolved before issuance of the FDA.

If we had some question regarding interaction of electrical systems because the reviewer was going through the specific design and he identified a question about the interaction of certain electronic components or even sensitivity of those components to temperature which required some research, I would say that that would have to

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be done before the FDA, before the ABWR would be issued.

To my mind, that is not a new issue. It is a question about the design.

MR. EBERSOLE: If it turns out that we must consider a molten core and penetration through the vessel, irrespective of the small probability of this thing, wouldn't there be R&D problems associated with showing that the containment will survive with some degree of assurance?

If we are forced into that corner. I take it we are. Are we, Dave?

DR. OKRENT: There is a requirement for a certain containment performance.

MR. EBERSOLE: Irrespective of the unlikelihood of core melt?

DR. OKRENT: There is a requirement for certain containment performance.

MR. EBERSOLE: Is that a variable requirement with due regard for the improbability of that event, or is it a more or less constant requirement for containment performance?

DR. OKRENT: Let me say that the requirements document is ambiguous a little bit, in the sense that it says that the core melt frequency will be greater or less than 10 to the minus 5 per year. It might claim it is less than 10 to the minus 7 per year, and thereby they meet their

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goal of not exceeding 25 R a quarter of a mile from the site boundary.

MR. EBERSOLE: Without a containment?

DR. OKRENT: Without a containment.

However, there is a discussion of containment, which is qualitative and, I would say, not definitive in what the Staff has written.

MR. EBERSOLE: Can they approach the thing on the basis that a qualitative discussion is adequate without research if they have a low enough core melt probability?

DR. OKRENT: I think your question is valid. I was going to ask myself whether there was a need for some kind of research on the behavior of this containment, given various kinds of possible core melts.

MR. EBERSOLE: At some point I think you would start waving your arms a little if you had a low enough core melt problem.

DR. OKRENT: You don't perceive the need for this?

MR. HERNAN: Dr. Okrent, as stated in our response, we have identified no specific things connected with the ABWR for research at this point. We think to make any statement beyond that would be presumptuous on my part. We have not seen the design.

DR. OKRENT: Have you tried, though? You say you

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have not?

MR. HERNAN: Have we tried to see the design?

DR. OKRENT: Have you tried to identify needs for research?

MR. HERNAN: I guess we have not.

MR. CARUSO: When you don't have anything in front of you, it is difficult to speculate out of thin air.

MR. HERNAN: We would not normally be looking for research projects in advance of an application.

DR. KERR: Let me give an example. Suppose one concluded that the risk associated with an ATWS event is too large if one simply translated existing plant designs into the new design. You wouldn't have to see a design to know what was going to happen when you find out whether the GE plant uses the existing design or not.

Under those circumstances, would you think it might be worthwhile to encourage somebody to do something, research or technical work or whatever, to look at the possibility that one could introduce new approaches into the new design which would maybe even make an ATWS event meaningless?

MR. CARUSO: I guess I would say I don't understand how you could come up with an ATWS probability for a design if you didn't have the design in front of you.

DR. KERR: I didn't use the term "probability"

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anywhere.

I said suppose that you considered it had too much of a contribution. You could interpret it as probability, I suppose.

MR. CARUSO: But without a design, it is difficult to make that observation.

DR. KERR: I am not suggesting that you have any design. I am saying suppose you decide that the existing designs need improvement, assuming you were going to build new plants, not backfit.

Then it seems to me you might ask GE, are you guys going to use about the same thing you have been using before, or is it going to be a rather new design?

That is sort of an obvious one, it seems to me, if you conclude that the ATWS problem is still not completely solved for new plants. It is resolved for old plants, I reckon.

GE will say "yes" or "no," and if they say "yes," we are going to use the same design, then you don't have to see the design, it seems to me. You have got to make a judgment. Am I willing to accept the old design or not?

So it is not clear to me that on some issues one might not be able to -- I am not sure "research" is the right word -- but at least to suggest areas in which further investigation might not be appropriate.

MR. HERNAN: I think the types of issues you are talking about are worthwhile. NRR, as an office of the NRC, generally doesn't get into that.

The Office of Research I am sure has many programs in support of future licensing and the resolution of past problems.

We don't see any for ABWR at this point.

DR. KERR: In effect, then, that says that either you are going to wait until you see a new design, and that means, I guess, what -- take GESSAR II, for example -- if there is anything about it that would suggest to you that you would like to see something slightly different.

I raise this issue because we are, after all, operating in a different mode. You have taken the LBA approach, which seems to me to make sense, but it also says that you are doing a little bit of looking ahead. You aren't waiting for them to throw a big document in your lap.

If you are doing that sort of looking ahead, it seems to me it might make some sense to at least try to identify if there are any areas which, if you were starting over, you would like to see some things -- maybe some little change, whatever, and you could raise that issue informally maybe in the same way that you are dealing with the LBA informally.

MR. HERNAN: Tom, do you have any comments on this as a Branch Chief looking at the design?

MR. KING: Research is not doing anything specific to support the ABWR review.

I think what you said makes sense to do that. We have got some issues where we feel change is appropriate, to get those on the table. That is what we are trying to do with the advanced reactors, the non-LWR advanced reactors.

I have no objection to what you said. Research is not doing anything specific in that area -- the Office of Research.

DR. KERR: Put it that way, I am not even sure I am talking about research. I may be talking about a conclusion reached by somebody who is knowledgeable about existing reactors, and if I was starting over, there are some things I would like to see done perhaps slightly differently, and we want to encourage these guys to do this because, A, I think it would make the plant easier to license and, B, maybe it would be safer.

And unless somebody looks for these things, this might not be a bad idea.

MR. CARUSO: I think you are right. To a certain extent, we have tried to do that, and in a couple of areas, like severe accidents, we find a difficulty in reaching agreements on where we are going to go, which may show a

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weakness in the LBA concept.

We thought we were going to try to nail down some issues that proved to be hard spots in the past, and we find that they are still hard spots and we still don't reach a lot of agreement on them, and they are just the sort of areas that you are talking about where we would like to have improvements maybe but we don't agree on how to make those improvements.

MR. EBERSOLE: Bill, may I offer an example?

This plant I hope may be with us for 50 or 60 years or so as our workhorse. In that point of view, surely the sabotage question will rise up and get worse, it seems, the way the social structure is degrading at large and there may come a time when we wish we had done something which I think would be not all that messy, which is to tamper-proof this design, such that if you locked it in a desired mode and then if you tampered with it in any way it would lock itself up in a safe shutdown mode and you couldn't penetrate any further.

This would require some design effort, some testing, and some research, and it would result in a plant that in a sense if you touched it in the wrong place in the wrong way it would lock itself out from you in the future.

MR. KING: Well, let me mention that the EPRI program is doing precisely what your point is. They are

looking at problems that have happened in the past and are trying to come up with requirements to fix those problems. Whether they are safety problems or whether they are economic problems, the purpose of the requirements document is to define what it is we want to see in new generation plant that will fix the problems we have had in the past and make it more licensable and economic so utilities will be interested in it.

So I think that is being done.

DR. KERR: I point to the EPRI activity as one which is being done properly and will identify any new research that might be needed, or at least some significant fraction of the new research that might be needed.

MR. KING: The ground rule that EPRI has set upon itself is that they don't want to come up with design requirements that are going to cause the industry to have to go out and embark on a large research program. They want to make changes that can be justified based upon state of the art and not have to fly off on a large research program to implement those changes.

So that is one of their ground rules. It doesn't mean you are sticking with the same designs that are out there today. You can make a lot of changes without having a research program.

I think that is being done. EPRI is taking the

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lead in that, and the ABWR is certainly piggybacking on that.

DR. OKRENT: Well, if we could follow that along just a little.

I assume the future plant will use more and more solid state circuitry. It is my impression that there isn't all that much understood about the failure modes that are possible or multiple failure modes that are possible under differing conditions.

In fact, as I inquire, it is hard to see whether there are not only books or even papers written on the subject for experts available.

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Correct me if I'm wrong, but if we don't understand too much about these, at least in the unclassified area, how do we ascertain that we don't get into what I'll call something like the Rancho Seco light bulb incident via the solid state circuits?

Now that was a terribly complex event that could have been worse than it was. It was already quite severe. How do we get a handle on this problem if you don't do some research?

MR. KING: I think you're touching on an area that's going to be one of the challenges in the review. There may be some suggested improvements, design changes. Maybe there is some question as to whether research is required.

EPRI is trying to come up with improvements that don't require research. Maybe in the area of solid state, maybe we wouldn't agree with them. I think there will probably be other issues like that. I can't give you an answer today whether they will require research or not.

But, I think, as part of doing the review of both the EPRI program and the ABWR, we're going to have to look at those changes and see do we agree research is not needed.

Or, if EPRI is proposing some kind of research, that, yes, that's adequate. I can't answer the question

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today, but I'm saying that's part of the review is to look at that.

MR. EBERSOLE: There has come out of the aging program a fascinating finding that I remember 20 odd years ago, to use the motors -- for instance, the valves -- as transducers to derive signals that tell what the shaft conditions are and what the seal tightness is, a whole host of performance aspects to make valves work like they ought to and to know they're working just by displaying the curve to the operator. He can tell you almost whether you've got a catch or not as it comes in on the seals.

After all, the reactor plant, in a safety context, is mostly a bunch of pipes and valves and pumps. Once you shut the reactor down, those will have to work. I think that would be a substantial R&D effort to recognize these devices as transducers.

It's a perfect comment on the condition of the plant in a progressive state of deterioration.

MR. KING: At this point, I don't think we can say, yes, there's R&D required, or no, there isn't. We're going to have to address that when we get into the specifics.

MR. EBERSOLE: This turned out to be a very fascinating and intensely valuable finding.

DR. KERR: We've had a request for a comment from

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a member of the audience.

MR. MURPHY: Jack Murphy, from EPRI. I'd like to reinforce what Mr. King said, modified just slightly.

The EPRI program is not based on not doing research at all. The EPRI program is based upon reaching a better product based on our past history of the product we've been using, but not jumping the state of the art so drastically that we have to demonstrate through a demonstration project the product we have.

We want to make an evolutionary product. If research and new technology advances are involved, we'd like to incorporate those in the new product. So we're not avoiding research per se, we're simply avoiding innovative jumps that are so far that a demonstration of those jumps are needed before the utilities would be satisfied with their reliability.

DR. KERR: Thank you.

DR. OKRENT: Mr. Chairman, I'm going to suggest that we get to items 7 and 8, so that there is some exploration of them today. We're obviously not going to be cover all of the items that are listed.

Why don't I let Mr. Wylie run that part however he would like?

DR. KERR: Mr. Wylie, are you willing to do this?

MR. WYLIE: The question is, how complete must

the design be? The staff has given a response to that. And if they would elaborate on that?

MR. CARUSO: I don't think there's much more that we have. We haven't said the criteria in Section 10.3 of the LBA came from the AIF policy paper on standardized plants and from the proposed NUREG before the Commission on standardization.

There's another discussion of completeness of design in Section 7.3, the EPRI Requirements Document, and 7-1 of Chapter 1 of that requirements document.

DR. KERR: So one has to go to three documents to find out how complete the design would be?

MR. WYLIE: I believe that Mr. Moran might be able to give us some details of that.

DR. KERR: But reference to all three documents is necessary in order to find out how complete the design must be?

MR. CARUSO: There are a lot of people saying a lot of things about standardization. There's no overall document that I know of.

MR. EBERSOLE: At this level of detail, will there be a specified reliability requirement for components, not merely physical identification of what it is, but a requirement that it meet certain reliability standards?

I'll take a relay as a case in point.

MR. MORAN: Sir, I was looking down here. I thought you were talking to Caruso. I beg your pardon.

MR. WYLIE: I think maybe the best thing would be to let him go through and let him talk.

DR. OKRENT: Let me understand. We'll be hearing what the EPRI requirements are, or the ABWR requirements?

MR. WYLIE: I look at them synonymously.

DR. OKRENT: Are they sunonymous?

MR. CARUSO: ABWR will meet the EPRI requirements document, so that is a requirement for the ABWR.

MR. MICHELSON: Is the LBA going to supersede EPRI or supplement it?

MR. CARUSO: Compliment it.

MR. MICHELSON: Which means that it expands on it but doesn't detract from it?

MR. CARUSO: That's correct.

DR. KERR: I want to listen to Mr. Moran for a few minutes.

(Slide.)

MR. MORAN: I've taken the liberty to blow up a few pagesof chapter one of the requirements document, delivered to us for review by EPRI, which deal with this subject.

I'm looking at Section 7, Overall Requirements Constructability, where EPRI touches on design completion

and design detail.

They speak here of the fact that the plant construction schedule shall be based on a standard plant design which is essentially complete except for required site-unique engineering.

Now that's the plant construction schedule, which is one of the things that is part of the specifications. So they have to go ahead and explain what design detail they had in mind in order to come up with a plant construction schedule.

Now, the rest of Section 7 deals in the subject matter, but I want to go on to a Table 7-1, which is in the Requirements Document.

(Slide.)

Which begins to list the kinds of detail that you're interested in. They talk of engineering for design certification and safety determination.

The next step down, you can't see on that blowup.

MR. EBERSOLE: Can I come in on the blowup just a minute, please? That's the site layout design basis criteria, and then you jump into plant general arrangements of stretchers and components.

But, before that has to come what I wrote down here, if I can read it, has to come an expression in

narrative or other form of the basic separation and compartmentalization logic of the design.

And then you show how you did it. So there's a guiding document that's missing from that.

MR. MORAN: I dare say, there are 11 chapters of the book missing which have that kind of detail in it. Your point's well-taken. As you know, this is under review and you asked the question:

What does the ALWR program advocate for design detail necessary for this effort?

And I'm saying: This is what they've given us. We're looking at it just as you are. And with a little luck, we'll be as smart as you are and come up with these questions.

DR. KERR: So one asked for an answer to that question at this point, the answer would be:

We aren't sure yet. Is that right?

MR. MORAN: The answer is we haven't completely completed our review of chapter one yet.

DR. KERR: Wait a minute. Are you going to decide how complete you are willing to have the design be, based on what they're submitting to you? Or do you have some criteria of your own?

MR. MORAN: We do not have criteria for completeness of design detail as submitted on a standard

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plan. We have not worked that out, but we are looking at what they have. And we're using people whose business it is to know what they're looking for.

MR. EBERSOLE: Wait a minute. Don't put that away yet. You know that fundamental consideration that you start with? What are the external dependencies?

I'll give you some examples. The cooling source. The ultimate heat sink. AC power. Are you going to design and make this plant self-containing in this context?

For instance, air is the heat rejection system. You've got to start with some controlling decisions.

DR. KERR: Jessie, he just said I think that he hadn't decided what he was going to require. At least, that's was what I interpreted him saying.

MR. MORAN: Look, gentlemen, first of all, this is a specification for a designer to use in generating a design. The next step we're witnessing right now with the ABWR, people are planning to take the specification and generate a design from it or check their existing design against it and make it conform.

MR. MICHELSON: What we're trying to understand though is the amount of detail that we will expect to see at that point in time on the basis of your agreement that you're trying to reach now.

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MR. HERNAN: The agreement, the licensing basis agreement, is a little bit more complete in the area you're talking about right now.

MR. MICHELSON: I didn't find it any more complete. For example, the same words, "plant general arrangements" are used.

MR. HERNAN: To answer Jessie's question, I think his question is covered in the draft LBA, design and physical arrangement.

MR. EBERSOLE: No.

DR. KERR: Jessie, Mr. Wylie.

MR. WYLIE: I'd like to make a comment. You know, we've reviewed the Commission's draft of standardization and policy statement some months back and we wrote a letter on that. And one of the recommendations we made in that letter was that the cognizant NRC staff and industry get together to work together to define what is required as far as scope of, essentially, substantially complete design is, and to work out the details of that.

Now I view that the EPRI program is doing that and doing what we told them to do. And that's what he's trying to say what they're doing. They have received from EPRI chapter one, which outlines what EPRI's version was of what an essentially complete design plant is.

This has been under review for three months -- at

least three months. So they're doing just what we told them to do.

MR. MICHELSON: At that subcommittee meeting that we haven't had yet, where we're going to thrash all this out.

MR. WYLIE: That's right. When we get the staff's SER, then we'll have a subcommittee meeting to discuss this.

DR. KERR: From your viewpoint, they're on track and they just need to keep on in the same direction?

MR. WYLIE: That's correct. Now, there is an amazing similarity between the AIF version, the EPRI version and the LBA version.

MR. MORAN: That means industry's talking to one another.

MR. WYLIE: They're just what we told them to do.

MR. MICHELSON: We don't know yet what it means.

MR. WYLIE: Well, he's about to tell us a little bit.

MR. MICHELSON: I don't think he'll tell us the results because he said himself they're going to show up later.

DR. KERR: Why don't we find out what Mr. Moran is going to tell us?

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MR. MORAN: I wanted to give you an idea of the flavor of this table.

(Slide.)

The second section of the table finishes up the EPRI presentation on engineering detail for design certification, then gets into detailed design engineering. And the list is quite long beyond that.

You may see things in this portion of the list which are extremely important in your mind.

(Slide.)

The table goes on to this kind of item. Now, I invite you gentlemen to look at chapter one and table 7-1 to see this kind of detail; I'm not going to bore you with the rest of it.

I was talking to Mr. Wylie before these sessions started up after the break. And he pointed out to me that, in his opinion, a great deal of that portion of the table which lists design detail really is necessary for the certification effort -- at least the designers presenting the design for certification must know that detail, and probably the staff should have the benefit of a lot of it.

And I certainly agree with that. I may want to change that break in their table so there's no differentiation between these two lists for certification and design detail.

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MR. MICHELSON: I was just going to ask a question on this slide. The question is, as a specific example, and when I did look through EPRI and I did look through these others, and I could not determine the level of detail in the piping drawings.

At what size piping will they cut off detailed piping for this kind of an application? You know, is there main steam feedwater detailed down to six inches, or something? Or how about the rest of the piping?

I need to know this in determining or doing PRAs on external event considerations within the plant. And I was trying to determine just what kind of piping drawings should I expect to see.

You'd also have to ask about cable trays and other things.

DR. KERR: Why don't you give him a chance to answer the piping?

MR. MICHELSON: Piping is good enough. Give me an idea how you determine what level of piping detail you expect to see.

DR. KERR: Do you understand Mr. Michelson's question?

MR. MORAN: I haven't seen anything in chapter one that goes down to the pipe diameter as a limit as to what will be shown for the certification effort.

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Certainly, for a design, they'd have to have all piping shown.

MR. MICHELSON: I don't find that in chapter one. You and I kind of agree that's right.

MR. MORAN: It's not here, but they list things--embedded piping, layout drawings, pipe design specifications. They list them without going into that kind of detail.

MR. MICHELSON: On the embedded, but not the open piping.

MR. WYLIE: I think that's a comment that's appropriate when we do a detailed review. I might ask though, I might point out that maybe you're going to cover this about the modeling.

MR. MORAN: I hadn't planned to cover it.

MR. WYLIE: Let me just finish what I'm saying. The modeling is covered on Section 2.2(F) of the document, of the EPRI document, that requires a model be designed--either a physical model or a computer model.

Now, again, we got comments on that because we didn't think it went into enough detail.

But, if you recall our last meeting we had with G.E. on the LBA, they said yes, they have a model.

Now, the details of that, we don't know about. That's something we can get into later also.

MR. MICHELSON: I think there ought to be in the LBA.

MR. VILLA: Rudy Villa, General Electric.

We need to get that.

MR. EBERSOLE: There has long been a policy or practice in the NRC to pay less and less regard to piping as it goes down in size.

This has therefore resulted in bygone years and even now in looking at one-inch lines which provide vital information to transducers as having no particular control in the design process. They are field run, they may be of a low QA, et cetera, yet they are the front end or the nervous systems that control the safety aspects of the plant.

Therefore, we can't use piping size, as you suggest, Carl, as a criterion for showing what we do with it.

MR. MICHELSON: That is why we are finding out whether they know the details.

MR. EBERSOLE: We have to know what the pipe does, what it does when it fails and what it does to its neighboring equipment.

That requires consideration of pipe sizes far below the size which is nominally shown in any kind of a general drawing.

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MR. MICHELSON: That is what I was trying to find out on pipe size. You cut it off at four inches and below, you miss the point.

MR. EBERSOLE: That is the aux feedwater size.

MR. MORAN: I don't think there will be any such cutoff. I think, rather, it will be what is needed to demonstrate -- I am getting into Ralph's area -- what is needed to demonstrate enough to the Staff to give them an FDA.

MR. CARUSO: It is clear that to do a PRA review you have to know those kind of details. GE has already agreed to provide us with the information we need to do that review.

So I would expect that although we haven't formally agreed in the LBA on the pipe size, we have read that piping system layouts will be produced and that major conduit and cable tray layouts will be provided as part of the PRA. Much more detail will have to be provided.

DR. OKRENT: I am sorry, can you tell me a PRA which gives detailed information on the instrument lines and how it affects the safety? Remind me of one.

You just implied that this is needed in PRAs.

MR. CARUSO: I was involved with the Shoreham PRA, and I know that the people who did that PRA reviewed the system drawings and they used the piping layouts and

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provided all of that detail. It was all available to us. So they had all that information available to them.

DR. OKRENT: Even in the Shoreham PRA, can you tell me where I will find something about the lines?

MR. CARUSO: Off the top of my head, no, I can't.

DR. KERR: Are we willing to permit him to go to the next transparency?

(Slide.)

MR. MORAN: EPRI has given us a list for our review. They have also given us the numbers for our consideration, and I think these are important. This is out of Section 7 of the requirements document, Chapter 1.

They are saying the first document package should constitute 70 percent of all engineering documents required to complete the project, and they further explain that their 70 percent should be drawings and documents which are 100 percent complete.

That may sound trite, but it is important.

Now, at the time of construction start they are saying that 90 percent of the engineering documents should be complete, and of those, they should be 100 percent complete.

Now, this is a specification. So they are telling a designer, this is what you should have in order to

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do this. So these are instructions to General Electric to present to Caruso's operation for review and approval.

MR. MICHELSON: Which part of that now is available at the time of certification? Is that that 70 percent?

MR. MORAN: Yes, because the second portion is at the time of construction start.

MR. MICHELSON: But 70 percent of the engineering documents will be 100 percent complete at the time of certification?

MR. MORAN: Or the time of review. Now, whether that is satisfactory enough or not, it is what 70 percent we are talking about. So we have to look at the list and ask our questions in detail.

Gentlemen, this is what EPRI has provided us thus far on the subject, and I hope this begins to respond to your questions.

MR. EBERSOLE: May I ask -- I want to run back to one of the earlier slides where you were talking about buried piping. There is a finding made in the aging program which is now going forward, in particular a case I remember in the laboratory at Oak Ridge, that you are not very smart if you have any safety grade piping which is buried.

You would be better off, in the sense of being able to inspect it, to see what condition it is in over the

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years, to put it in concrete.

MR. MORAN: I would have to agree with you prima facie. I am sure there is a lot of safety grade piping that has concrete dumped on it eventually.

MR. EBERSOLE: I am talking about in open concrete structures so that you can look at it. So just the very notion of having the safety grade piping buried in earth is repulsive.

MR. WYLIE: Of course, this covers not only safety stuff. This covers everything.

MR. EBERSOLE: But implicit in it is you are going to bury a lot of service water pipes, which is wrong.

MR. MORAN: We will make a note of that and be sure that we will look that over. We have got the audience here.

MR. EBERSOLE: That is the artery of shutdown unless you want to air cool this thing, which I don't believe you do.

MR. MORAN: This is a good point. This is the spec, not the design.

Mr. Wylie, anything else that you wanted from me at this point?

MR. WYLIE: No.

DR. OKRENT: Do you want anything on interface at this time?

MR. WYLIE: Yes, I think so.

The next item has to do with interface requirements, what level of detail is to be specified.

Staff's response is spelled out in Section 10.4 of the LBA. I don't know if there are any questions about that or not.

MR. MICHELSON: Are you going to have the discussion first or questions first?

MR. WYLIE: Staff has written their discussion.

MR. MICHELSON: As I understand it, the way the last licensing basis agreement was written, it appears that we may end up in the case of the ABWR -- there has been such a question in the case of the EPRI document, but there is a question of how much of the turbine building sites will be detailed and how much will be run by interface.

Is it safe to assume at the moment that you would review for ABWR the complete turbine building arrangement, or is that an interface?

MR. CARUSO: I believe that is going to be an interface requirement.

MR. MICHELSON: What bothers me a little bit, since all they will do is write some good words -- I guess like you write words -- like "There shall be no system interaction between what happens in the turbine building."

MR. CARUSO: No, I do not think that we will use

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general statements like that.

MR. MICHELSON: What will you use?

MR. CARUSO: As we state in the LBA, we are going to ask GE. GE will provide a list of the assumptions relied upon to make the safety determinations for the nuclear island, meaning placing performance specifications on the turbine plant. They will say it has to have thus and such a reliability, thus and such a performance standard.

MR. MICHELSON: I was thinking more of what was situated in the turbine building that might have an adverse safety impact on the nuclear island.

MR. CARUSO: That is what we think can be specified in the interface requirements with regard to, for example, the structures to make sure that the turbine building structures do not collapse in a seismic event and damage --

MR. MICHELSON: So you will write an interface document that says there won't be any adverse system interactions between what you put in the turbine building and what is situated in the nuclear island?

MR. CARUSO: It won't make a general statement like that. It will have very specific criteria.

MR. MICHELSON: I hope it will make a general statement because I can't 3et specific because I don't know what is out there to get specific about yet.

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MR. CARUSO: It will make the general statement, but it will have specific criteria, performance criteria for those nonnuclear systems that are out there.

MR. MICHELSON: I was just trying to get to one that happened very recently in the case of Surry, for instance.

The fire protection inadvertently actuated in the turbine building, the water ran across the floor into the auxiliary building, safety related, ran into the spreading room and finally tripped into the control room.

Now, how do we write interface documents that will make sure that won't happen in a future plant?

MR. CARUSO: It seems to me you could write a flooding criterion that says water from wherever would not be able to flow.

MR. MICHELSON: Those are the kind of general criteria which I think are far safer than trying to write specific definitions of certain things that might be in the turbine building.

DR. KERR: Your suggestion is we are getting into too much detail?

MR. MICHELSON: In that case we would be, yes.

DR. KERR: We should be writing more general stuff?

MR. MICHELSON: You have to understand everything

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that is out there and write details to cover it, or you have to write general things.

There is no way that events in the turbine building propagate into the nuclear island. If you find later that there are ways and they have to fix them and they don't come under backfit or anything else....

MR. CARUSO: I think you have to do both. I think there are some areas where you can specify general criteria. There are other areas where you absolutely have to have specific criteria.

MR. MICHELSON: So we will expect to review the general criteria. There will be general criteria controlling that?

MR. CARUSO: Yes.

DR. KERR: How much more do we need on interface? Are we interfaced?

MR. WYLIE: I believe so.

DR. KERR: What is next, Mr. Okrent?

DR. OKRENT: All right, let's go back to Item 5.

DR. KERR: Who is going to elaborate?

DR. OKRENT: Maybe the Staff could review their position, even though they sent us something in writing.

MR. CARUSO: The severe accident policy statement is one of those areas that we are trying to reach agreement with GE on and some criteria, and we haven't reached

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agreement yet.

We do have a lot of detail in the document that you have in front of you, but that is a proposal from General Electric that the Staff has not accepted yet. All I can say is that you should not take that section of the LBA as the agreement between GE and the Staff right now because we do not agree on that, and we are working on additional proposals.

Right now we agree that the severe accident policy statement in its entirety applies to the ABWR, and GE has agreed to comply with it. However, there is a lot of detail in that compliance which has not been worked out yet.

I guess, harkening back to a previous question about research, this may be one area where there is future research to be done. Certainly, there is ongoing staff work defining the criteria, but I don't know how to define it right now.

DR. OKRENT: Is it anticipated that by -- I think you said April -- we would get an evaluation report from the Staff that this topic will have been resolved in the Staff's mind, or what?

MR. CARUSO: I think by April we will know whether it is resolved or not resolvable at this time.

DR. OKRENT: Suppose it is not resolvable at this

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time. What category is it in? How do you feel about the LBA?

MR. CARUSO: I imagine it will either drop out or that this will be addressed at a future time when additional guidance is available.

DR. OKRENT: What do you mean "drop out"?

MR. CARUSO: It just wouldn't be mentioned in the LBA. That doesn't mean that it would not be treated.

DR. OKRENT: Not mentioned?

I would assume you agree silence is sort of consent?

MR. CARUSO: Not at all.

MR. HERNAN: Dr. Okrent, do you have any specifics in mind?

DR. OKRENT: No, but I am interested in your statement that silence is not consent. That means if something is not in the LBA you can raise it and say this is not a new issue; it doesn't have to be tested against the screening criteria; there was no agreement on it?

Is that the point?

MR. HERNAN: The LBA documents are things that GE and the Staff agree on at this point in time. If there is no agreement stated in the LBA, that means there is no agreement. It will be dealt with as part of the review.

MR. CARUSO: There may be agreement on some

issues that aren't mentioned, but there also may be issues where there is no agreement.

To give an example, we agree that we are going to use the standard review plan for guidance for the review. Well, I guess that specifies. But the details of the standard review plan are not exclusively specified.

DR. OKRENT: Again, I want to be clear. If something is not specifically mentioned as having been agreed upon the LBA and then it is raised by either the Staff or ACRS or anyone, it is treated as an issue in what category? It has got to go through the whole screening test, or it is there from the beginning and has to be given the full treatment with no screening or what?

MR. CARUSO: It depends on the issue. If you ask specifically about a severe accident policy statement, then we all agree that the severe accident policy statement will have to be dealt with in its entirety before the FDA is issued and resolved to the Staff's satisfaction. In order to get a design certification, it has to be resolved to the Commission's satisfaction.

DR. OKRENT: I find it unsatisfactory to not have any way of knowing whether an issue is handled one way or another except that I would have to go to you to ask.

MR. CARUSO: It is very much the same situation as if the LBA did not exist at this point. It was proposed

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six or eight months ago, in which case we wouldn't even be sitting here right now. We would be waiting for an application in September, and at that point we would deal with these issues as they came up.

The LBA is an attempt to define some of those issues in advance, and we may not succeed, in which case we will deal with them as they come up in the same way we would if we didn't have an LBA.

DR. KERR: Mr. Caruso, it seems to me that it is not unreasonable that an LBA would deal with those issues considered to be important.

MR. CARUSO: We are trying to, but sometimes we are not successful.

DR. KERR: If you have in effect negotiated about the issues and have not yet reached agreement, it wouldn't seem to me to be a bad idea to at least -- I mean, you are in a sense showing us Staff's dedication to safety by saying you are working on this. If you leave it out, somebody will think you forgot something as important as the severe accident policy.

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MR. CARUSO: I really do not believe --

DR. KERR: I would not like the Staff to be in that position.

MR. CARUSO: I really believe if we do not reach agreement, we will say something that said we did not reach agreement, we will work something out.

DR. OKRENT: How about the PRA? Is there anything that will remain to be settled after your SER in April or May or whatever?

MR. CARUSO: I am sorry. I don't understand.

DR. OKRENT: On the LBA or whatever document you are putting out.

MR. CARUSO: There are some technical aspects of the PRA and how our technical issues are modeled. For example, our acceptance criteria that we are waiting for some proposal from GE on, Staff has, not a research program, but an implementation program that works on the PRA to develop those sorts of criteria. That has been going on for quite sometime now. We don't know what GE is going to propose yet. We don't know how that is going to fit into the Staff work on that subject. So I don't know what is going to happen there. I can tell you that we are awaiting some proposals from GE on certain technical issues that they feel should be spelled out.

MR. MICHELSON: I think you said you were going

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to use the standard review plan as a basis for reviewing this application for certification. My recollection is that there are many parts to the standard review plan that call for the reviewer to look at certain details of the plan in the process of doing his review.

Perhaps in many cases, that level of detail which normally is described in the standard review plan isn't available to the reviewer. So now do you handle that situation? I would have to go back and refresh my memory, but my vague recollection is that there is a lot of times that it is going to call for rather specific examination of certain features of the plant, like, for instance, often the service water, which might even be an interface under your agreement here, how can they do a service water review under the standard review plan.

MR. CARUSO: Once again, I should emphasize that GE has made a very strong commitment to us to provide us with whatever level of detail is necessary to avoid open issues. We may specify items, service water systems, for example, as interface requirements. We may do that, saying the service water system has to provide so many gallons of water in such-and-such a particular kind of pipe with such-and-such a complete configuration at such-and-such a temperature.

MR. MICHELSON: Would that meet the requirements

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stated in the standard review plan for reviewing that particular system?

MR. CARUSO: That is the best we could do.

MR. MICHELSON: Precisely. It is the best you can do, but, I think it is a little misleading to say that we are going to meet the standard review plan. You really aren't going to meet the standard review plan, except where enough detail has been provided to determine if we have met it.

In many cases, that level of detail will not appear at the time you certify this design.

MR. CARUSO: That is correct, and once again, that decision will be up to the Staff at the FDA stage and eventually up to the Commission at the certification stage.

MR. MICHELSON: It is an important exercise, but we really will not necessarily be meeting our standard review plan.

MR. HERNAN: The standard review plan is guidance for the Staff. We will use that as guidance.

MR. MICHELSON: And that is all you should say. You are going to use it as guidance.

DR. OKRENT: Okay. Let's look at, I guess --

DR. KERR: I don't understand Mr. Hernan's last statement. I thought, in a number of our correspondences, I had some objections to what happened with this proposal,

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because it didn't meet the standard review plan. So I will have to revise my thinking, I guess. It is not something which the applicant has to meet, it is just guidance for the reviewer.

MR. HERNAN: The standard review plans lists the acceptance criteria which the applicant must meet, becaues it is a criterion as stated in the review plan. That is the criteria they have to meet, but the standard review plan, as a document, is guidance to the Staff, so we know what the criteria are. So we formally apply criteria to all applicants. It may be jargon.

MR. MICHELSON: As an example, fire protection, I suspect, is an interface document, which just says you've got to have fire protection. At the time of certification, it is not clear to me that you would have anything in terms of drawing or whatever, on which to review the fire protection design.

MR. CARUSO: It is interesting that you bring that up, because we had some pretty heated discussions about fire protection, and we expect to have quite a bit of information on fire protection with regard to separation, cable runs, fire protection capabilities.

MR. MICHELSON: And the equipment to be used?

MR. CARUSO: The equipment to be used, certainly not down to the manufacturer, but perhaps the fact that

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there will be sprinklers or dry chemicals, CO2 or halon.

MR. MICHELSON: I think you are probably going along the right track. I am just saying, it isn't clear to me from what I've read, what you need to require for fire protection. You will require good things.

MR. EBERSOLE: Fire protection is only one aspect of system interaction. I certainly want you to go back to the Indian Point letter that we wrote some years ago about looking at designs in the context of preventing undesired system interactions to see if you are following the general guidelines that we set forth in that letter, which was, in essence, a compartmentalization logic with careful identification of the boundaries of the compartments, their characteristics, their penetrating vulnerabilities, duct work, whatever.

DR. OKRENT: Am I correct that many, if not most, fire protection systems are not required to meet seismic requirements?

MR. EBERSOLE: I think GE is departing from that.

MR. MICHELSON: No, I don't know which way they are going, for sure.

DR. KERR: In this GE letter that we received today describing behavior in a seismic event of the fire protection, that doesn't answer your question.

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DR. OKRENT: I am asking for the Staff position.

MR. CARUSO: I don't know, off the top of my head.

MR. MICHELSON: One of the keys is inadvertent actuation. They have qualified against inadvertent actuation during an earthquake.

MR. EBERSOLE: One of the more interesting aspects of the Surry event, which was pretty much discounted, was the energization of the circuits by wetting down the fire protective apparatus with a spurious response. The CO2 system discharged the CO2 into regions of limited capacity and nearly asphyxiated the operators. To me that was much more interesting than the metallurgical consideration.

DR. KERR: Why did we talk about the metallurgy so much anyway?

DR. SHEWMON: You can talk about the metallurgy, but that CO2 is dangerous.

DR. KERR: Mr. Wylie, Mr. Okrent, we have another 17 minutes, according to my schedule.

Should we concentrate on some specific item?

DR. OKRENT: I am trying to go down -- we are not going to finish today.

DR. KERR: That is the reason I asked. Is there something we should try to get in in the last few minutes?

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DR. OKRENT: I would invited committee members to single out one or two that they thing they want to address today on the list.

MR. MICHELSON: I am sorry. I didn't track your statement.

DR. OKRENT: We have about 15 minutes left. If we look at the list of topics on the agenda, we are not going to cover them all. It goes on to the next page. So is there something you would like particularly to pick up today? We have gone through 1 through 5, 7 and 8.

DR. KERR: Have we covered physical security and sabotage? Some comments were made.

DR. OKRENT: Not today.

DR. KERR: How about systems interactions? It has been mentioned. Have we covered that? That is not very important anyway, though.

(Laughter.)

MR. MICHELSON: We did discuss a little bit the fact that the resolution of A-17 will be on the agreement, but not necessarily the new generic issue that will be generated a result of not having solved A-17. That would not be under this agreement, except as it might be considered at the time of its final resolution, which may come before or after the certification.

DR. KERR: Do we have time enough to discuss

containment criteria? Since nobody else has a suggestion, I would be interested in that.

DR. OKRENT: Let's first ask the Staff. Do they expect to have any containment criteria for the GE AWR?

MR. CARUSO: I would say we haven't made up our minds yet. We don't know yet.

DR. OKRENT: Let's ask GE, if they are willing, do they have any containment criteria that they have formulated already, or do they expect to have such, as part of the LDA?

MR. VILLA: Well, we haven't formulated it clearly at this point, otherwise, we would have proposed it. We have agreed with the Staff to make a proposal. What we are doing, generally, is following the CPML rule, namely, 10 CFR 5034 F in its dealings with severe accidents.

DR. OKRENT: That doesn't include containment criteria.

MR. VILLA: The provisions for venting, the provisions for 100 percent. Those things.

DR. OKRENT: I think we are thinking in terms of performance.

MR. VILLA: In terms of performance, we have not developed criteria any further than that.

DR. KERR: That one was easy to take care of. The answer is, we haven't decided. That is not strange.

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It is a tough issue, but it is one with which we are going to have to deal.

Further comments or questions?

DR. OKRENT: You remind me, though. I have a question in the EPRI document. It gives as a limit for accident release, a sort of definition of severe accident, that a quarter of a mile from the site, the dose should not exceed 25-rem whole body more frequently than one in a million per year.

Is that to an imaginary person standing there over the next 30 days?

MR. VILLA: I believe so, yes.

MR. MURPHY: I don't know the answer to that.

MR. VILLA: I believe the answer is, that is true, yes.

DR. OKRENT: It doesn't allow for evacuation, or it is a two-hour dose or anything like this?

MR. VILLA: No.

DR. OKRENT: I don't recall --

MR. VILLA: Generally, to comply with 10 CFR 20, you have to assume someone is there, naked, so to speak, 24 hours a day, for the duration of the accident.

DR. KERR: That is true, at the boundary of the LPZ.

MR. VILLA: And beyond.

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DR. REMICK: You said Part 20, did you mean Part 20?

MR. VILLA: I believe so.

DR. KERR: I am sorry. I was talking about Part 100.

MR. VILLA: I think it is both. 20 and 100.

DR. OKRENT: Anyway, would you check?

DR. REMICK: I can't imagine Part 20 applying to that.

DR. OKRENT: I used the term Part 20. I think that would be relevant information to get, just to understand what is meant by that statement.

DR. REMICK: In fact, Dave, I think it would be good to understand how EPRI arrived at that.

DR. OKRENT: That would be helpful. Also, what I think would be relevant is to understand that if the Staff is going to measure the GE ABWR against that criterion, it is an EPRI criteron that GE is committing to. Is there some proportion of this that must be achieved by containment, or can it all be achieved at a predicted low core melt frequency.

I think we would be interested in both GE's position and EPRI's position

DR. KERR: I don't understand the value of the answer to that question, because the Staff is going to

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permit GE to build reactors without containment.

DR. OKRENT: If they don't have a containment performance criteria.

DR. KERR: It seems to me to make sense to ask how much.

DR. OKRENT: I will accept rewording of the question. It is just that right now I don't know. There are some small LMRs that are calculating terribly small frequency.

MR. EBERSOLE: You might get the containment reliability down to the point where it is manageable, maybe even avoid a PRA.

DR. KERR: Anything else on containmenmt?

MR. VILLA: Mr. Chairman, can I say just one thing. I guess from this discussion I don't really understand what you mean by containment performance criteria. That is a general comment. I think it would be valuable for the committee to make some statement.

DR. KERR: The committee has not reached a consensus on what it would like to have as containment performance criteria, but if you have containment, then the containment performance criteria are the specifications necessary for containment to be built. Today's containment have performance criteria determined primarily by Part 100, and that was formulated without dealing with the severe

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accident issue.

So I think the performance criteria, as they might apply to the one in a million 25 rem, for example, would have to do with how much of that one attributes to containment as contrasted with how much one attributes to prevention of core melt, to be begin with.

MR. VILLA: In that case, we have containment performance criteria, and we can state it quite clearly.

DR. KERR: Right now?

MR. VILLA: Yes. I don't mean here at this meeting, but we have the design.

MR. EBERSOLE: I would like to ask GE a question. When they were developing this design, this arbitrary assumption that you are going to have a core melt, no matter how good you are, is a pretty nasty thing to deal with. No matter what you do, you are going to melt the core.

Was there a conscious decision to consider core melt and loss of vessel bottom, that you address the design at that level of consequence with due regard for how you would accomplish subsequent cooling, and you chose a bare concrete floor as a way to do it rather than a rubble bed or emersion in a rubble bed or whatever to cope with that accident in the most practical way you could think of?

MR. VILLA: No.

DR. KERR: You understand the question?

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MR. VILLA: I think so. And I believe the answer is, kind of in the last year or so, I have decided to assume that we have a core melt, regardless of any of the cooling systems or safety systems that exist.

MR. EBERSOLE: And you chose to drop it on a concrete floor?

MR. VILLA: That is correct. What I am saying is, the assumption came after the design.

MR. EBERSOLE: Without any in situ features to control the cooling process at that particular degradation, you are now requiring active responses rather than having something in situ to perform the cooling function?

MR. VILLA: I would have to say yes.

MR. EBERSOLE: Is that smart? I don't know. You tell me.

MR. VILLA: I don't know either.

MR. EBERSOLE: I kind of think it isn't.

DR. MOELLER: I've got three general questions at some point.

DR. OKRENT: This is a good time, because we've got six minutes.

DR. KERR: Do you have any six-minute general questions?

MR. MICHELSON: They are less than that.

The first question on the PRA. On the PRA that

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is required for certification, is it understood that that PRA will include external events?

MR. VILLA: It is by us.

MR. CARUSO: Yes.

MR. MICHELSON: The next question. At some point, we certify this design. Is there some thought about how one modifies the certification after that point? Clearly, there is still design changes that might come up from somewhere. How is that handled? Or is that too far ahead yet?

MR. CARUSO: That is a bit far ahead, and the Commission, I think, is groping with that.

MR. MICHELSON: But right now, you don't have any thought or position on it?

MR. BURKOW: Herb Burkow, from the Staff.

It is a rule, and it would require a rulemaking to change it.

MR. MICHELSON: So you will have to write a rule. It is complicated to change anything after it is certified.

MR. BURKOW: There's been some suggestion made that it would come under something comparable to 5059 for making changes that are not that small. And that is probably something that would be covered during the public comment period.

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MR. MICHELSON: But somehow you are eventually going to write in how I can correct these small things as opposed to make major changes.

MR. BURKOW: We are going to give consideration to that.

MR. MICHELSON: You can really bind yourself if you don't provide an out for the mistakes you are going to make after certification.

MR. BURKOW: That point has been made, and we definitely are taking it under consideration.

MR. MICHELSON: The third question I had is, toward the end of the resolution of generic issues having to do with GDC-4, the leak before break outside of containment broad scope rule, is the broad scope rule going to apply to the standard design?

MR. VILLA: I would hope so.

MR. MICHELSON: The problem I have with the broad scope rule is that it doesn't take account of flow breaks.

DR. KERR: Excuse me. I didn't hear the answer.

MR. HERNAN: It will be a rule, but we don't know that the rule change will exclude any particular class of plants.

MR. MICHELSON: Let me tell you the problem I foresee that there will be for GE, as well as others, if they don't accommodate it. Right now the design basis for

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environmental qualification of equipment outside containment has to take the full break into account, but the building design, the subcompartment wall designs, the pressure effects on the building, do not have to be accounted for. So if you ever get a break bigger than you design for in the leak before break philosophy, you have a severe accident on your hands. You have an accident beyond your design basis. And how are you going handle that kind of a severe accident analysis, if we don't design our buildings to withstand the pressure of larger breaks than the leaks that we are thinking about?

And these are rather small leaks that we are thinking about.

DR. OKRENT: The PRA will show that these are 10 to the minus 9.

MR. MICHELSON: Yes. The PRA will have to include that.

DR. OKRENT: 10 to the minus 15 or 10 to the minus 21.

MR. MICHELSON: The Surry break is a good example of a break in a system that you want to make sure now we don't blow the building apart. We don't mind losing a turbine building equipment, but we don't want to interact with safety.

DR. KERR: You have one more minute to ask

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questions.

Is there a burning question in the last minute?

(No response.)

DR. KERR: I see none.

I thank the Staff for the information they have provided to the committee.

We will recess until 1:00 p.m.

(Whereupon, at 12 noon, the meeting was recessed, to reconvene at 1:00 p.m. in an unrecorded session.)

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AFTERNOON SESSION

(2:45 p.m.)

DR. KERR: Mr. Siess, the floor is yours.

DR. SIESS: Gentleman, the subject is report to the Commission on the research program. We are now about the middle of fiscal year 1987. We have just finished some sort of report to the Congress on the research program for fiscal year 1988. It begins on October 1st of this year and ends next year. And the subject we will be dealing with in June will be the proposed research program and budget, I guess, for fiscal year 1989, which will begin on October 1, 1988.

I have been trying to convince the committee that we can do good in the research program by writing letters on individual research problems or projects or areas than by going through this process, which we have been following of writing a report to the Comission and sending it to Congress in February. I have not been at all pleased with what is in those reports, neither the depth of understanding of the program we have when we write it nor the kind of advice we have been giving nor the response to that advice.

But the Commission asked us to report to them, and the context of the time they first asked us was, well, we are writing a report to Congress, we would appreciate it if you would write one to us. Since then we have had a more

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formal indication of their desire to get such a report. The September '86 letter from Zech on Guidance to the Advisory Committee on Reactor Safeguards, the type of activities they believed the ACRS should involve itself in during the next year.

One item was to advise the Commission on the effectiveness and correctness of the direction of the NRC's research program, to insure that research is relevant to the agency's safety mission.

Those words to me call for something that we have been giving them. They suggest a somewhat broader type of report. I think that to comment on the effectiveness and the correctness of the direction of the program, it would be desirable if we could, and I have a feeling it might not be very uniform in our interpretation of what that means, but in the situation we have traditionally done it, if six or eight years makes a tradition, we have a specific request to do this.

The question then is, do you want to do it? We will have a subcommittee meeting in May and another one in June. We will write a letter in June. If you don't want to do it, then what procedure should we follow to get out of the requirement. We simply ask the Commission to relieve us of this duty, or we ask the Commission, do you want a report? I am sure the answer will be yes. If we ask them

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in plenty of time, and they have time to think about it, I suspect the answer might still be yes, although it might be a four to one vote or a three to two vote.

If we ask them to be relieved of the responsibility, then we should, of course, give them some reasons why we should be relieved and what we might do in place of it.

DR. KERR: Chet, are you suggesting that you think Mr. Zech is asking us to continue what we have been doing in the past or that you are not sure.

DR. SIESS: I think that he thought he was asking us to continue what we were doing in the past. I wouldn't want to read any more into it than that. I am not sure where the words came from. They might have come from something we wrote. I don't know. Mr. Zech seems to take this guidance quite seriously.

As some of you may have seen, there was a message from Zech to the other Commissioners saying that he was notified that we intend to review the NRC regulatory process to provide constructive criticims and suggestions. He says, as you recall, the Commission had a management meeting in September '86 to discuss the issues on which we believe ACRS could best provide us advice, and he sent a memo to us listing the items we considered most appropriate for the ACRS to address. The item referred to in paragraph 1 is not

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on that list. I might note that neither was waste management on that list. I have no objection to ACRS's addressing the subject of item one.

Any comments?

MR. LIBARKIN: We got one form Commissioner Asselstine. He said he was reserving judgment until he could find out where within the committee's charter this particular exercise fell.

DR. SIESS: So I would interpret this as saying, I would like to have a report similar to previous ones. I don't think they would care as long we gave them something useful. They might even pay attention to it.

What is your feeling? Do you want to continue writing such a report or not?

DR. MOELLER: What is the impact of the second paper?

DR. SIESS: I should have mentioned that. I don't think there is any impact. As you know, last month or the month before, Eric Bechten had talked to me as to whether we might be willing to undertake the job of reviewing their programs and forwarding the recommendations of the committee from the National Research Council.

We debated at some length and said, yes, we would consider it under certain conditions. He has prepared a SECY to the Commission in response to that recommendation,

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which he felt he had to respond to. He was asked to, and he proposed three alternatives. One was, use ACRS, one was, use independent advisory committees, and the other was to create a standing board at tne NAS and use that organization to perform the review. He goes through the pros and cons. He misinterpreted something I said about ACRS activity. I said it would be a different committee from the one we now use to write the research report.

He interpreted that to mean, in addition to the one we now use. My intention is simply that we wouldn't need a committee consisting of everybody in every area, and that does affect his estimate of resources. He comes down as a bottom line in recommending a standing board like the Academy of Sciences, for reasons that I don't think are too good, but then, that is beside the point. I suspect that the Commission will probably go along with that recommendation, which, as far as I am concerned, is quite acceptable, but if such a commitment existed, we would be relieved of our duties to comment on the effectiveness and correction. I don't know what would be charged under that. And the NRC National Research Council would be somewhat different.

DR. KERR: Wouldn't it make sense under the circumstances to ask Mr. Zech either formally in a letter or informally in some fashion, what they would like us to do,

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in light of the proposed setting up of a standing committee?

DR. SIESS: I am not even sure that it is clear that the Commissioners -- I don't know how close they get to these things, what the difference is between what we have been doing and what this proposed standing board would do.

MR. DURAISWAMY: I think this one is specifically to give guidance to the Director, to Bechten.

DR. KERR: They were advised to set up a panel that would report to the Director and to answer questions such as, are the best people doing the work at the best place? Is there a need for cooperative programs to do higher quality work? Is the program free of obvious bias? Have research products been given adequate, unbiased peer review?

DR. KERR: Chet, in the light of what strikes me as being a rather significant change, since our letter to Mr. Zech, it seems ot me that it would make some sense for us, considering this. If you want us to do something different than what you said in the letter or continue to do that or not do research at all?

DR. SIESS: I agree with you, except there hasn't been a change yet.

DR. KERR: But if we are going to start the process fairly soon, it seems to me that it isn't a bad idea for us to ask at this point, and he may say, go ahead with

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what you have been doing or whatever, or we don't know.

DR. SIESS: That is why I said I am not sure how much they understand the difference between what we are doing and what this committee would be doing, because they might say, well, let the ACRS do it. They are doing it now.

DR. KERR: That would be one way of getting them to look at it, to ask them. Another alternative, it seems to me, if we want to do something different from what we have been doing is to take this occasion to say, see some changes and what we think would be most useful to you would be the following. Do you agree.

DR. SIESS: First, we have to agree on what we want to say. I am really not sure. I think what I call reactor research fellows would be more useful to the Commission, because they can give more useful advice.

DR. MARK: I am a little unclear on one point, maybe several. As I read what Zech wrote to us, I don't think he is asking us to go on doing what we were doing. I think he is asking us to do something quite different. If I take these words effectiveness and correctness of direction, that has nothing to do with the budget at all.

DR. KERR: That is a reasonable interpretation, and if you would like to do that, I think you could say we intrepret your letter to mean this, this is what we propose

to do.

DR. MARK. The early reports merely haggled about the budget, move 200,000 from here to there.

MR. WYLIE: I agree with you. I would interpret that to say that we wouldn't look at the budget.

DR. SIESS: I was just asking Sam, I don't think we said much about the budget in the last letter, although originally that request was in relation to the budget, that timing is in relation to the budget.

MR. WYLIE: Well, most of our comments relate to either you put something in or you took it out.

DR. SIESS: In effect, that is correctness of direction. They should do this, they should do that, but the original request was clearly in the framework of the budget. We know that we have been getting it too late. They asked us to move it up a month. I was tied to the budget process. We could always reference the budget.

DR. KERR: We are talking now about the request from Congress?

DR. SIESS: No, the request from the Commission. Congress was the other way around. They want it by December in the original law, and then they said, no, wait till you get the budget and then comment.

DR. KERR: Didn't Congress make the first request and then NRC said we like it also and get it earlier?

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DR. SIESS: Congress, we've got the first one in by December 31, and then Congress said, no, wait until you have seen a budget to put it in. Then the Commission asked us to do one. We were doing it for July.

DR. KERR: The budget request, the request for the budget, to do the budget, came first, I thought, from Congress and then we said, if you are not going to do it for them, why don't you do it for us.

DR. SIESS: We did it at first, and it was a little late in the process, and then they moved it up a month before we got the budget, while we were working on it, so the Commission's thinking was clearly budgetary. We didn't do as much on the budget. We have been trying to back off from the budget, because they weren't paying much attention.

DR. KERR: The time we have devoted to this discussion is up, and I don't think we have settled the issue.

DR. SIESS: All right, I would be happy to draft a letter which would review the situation to the Congress and the Commission to indicate we have requested relief from this duty and how reactor safety research letters might be a better basis for indicating. I will review their history of the request. I will mention what they have here, and I will mention something about Bechten, if that is clear and try to

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give them facts, and then say, now, what do you want us to do?

DR. KERR: I interpret this as a motion from you, if you do this? Is there a second?

VOICES: Second.

DR. KERR: Any discussion?

(No response.)

DR. KERR: All in favor?

(A chorus of ayes.)

DR. KERR: Opposed?

(No response.)

DR. KERR: So ordered.

DR. SIESS: I am doing it only because I am the best-qualified person to do it.

(Laughter.)

DR. SIESS: When do you want this? By tomorrow morning? No way. Next month. I will put a copy on the bulletin board for somebody to type here and send out, and anybody can read it who wants to.

DR. KERR: I have forgotten the title of this next one. It has to do with radwaste. This is Dade Moeller's bailiwick, so I will turn things over to Mr. Moeller.

DR. MOELLER: This is going be a reading of the draft. Do we want it recorded?

DAVbw

DR. KERR: No recording.

(Whereupon, at 3:00 p.m., the committee entered into an unrecorded session, at the conclusion of which the recorded session was to continue.)

DAVbur

DR. KERR: Mr. Moeller is the cognizant subcommittee chairman, I do believe. I shall call on him to introduce this topic.

DR. MOELLER: The Waste Management Subcommittee met on February 19th and 20th, and we reviewed a range of topics on high level wastes and a range of topics on low level waste.

On the low level waste we reviewed the standard review plan and the standard format and content document and also discussed the long-range plan of the NRC for work in that area.

The first item, the standard review plan and the standard format and content document, is what we will be discussing initially this afternoon, and then we will either later today or at an appropriate time bring up the proposed letter for the committee to write on that subject.

Let me go ahead and mention the high level waste topics that we covered in that same subcommittee meeting because we will be reviewing one of those this afternoon, and we need to write a letter on it.

The high level waste topics were:

First, the rulemaking on the definition of high level waste. That is what we will hear about and write a letter on.

Secondly, high level waste, assessing compliance

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with the EPA standards.

Dr. Kastenberg gave us further comments on that in writing. We shared those with the Staff. We reviewed the licensing support system and the five-year plan on high level waste.

This subcommittee meeting -- present at the subcommittee meeting was a team of consultants plus other members of our full committee.

Let me ask if any of them want to make comments.

Paul or Carson?

(No response.)

DR. MOELLER: There being none, then why don't we move ahead with the Staff presentation on the standard review plan and the standard format and content document? We have with us Larry Pittiglio and Ted Johnson.

(Slide.)

MR. PITTIGLIO: Good afternoon. My name is Larry Pittiglio. I am with the Low Level Licensing Branch of the Division of Waste Management. Ted Johnson and I are down here to talk a little bit about two specific documents, the standard review plan and the standard format and content guide.

Let me say a couple of things before we go on.

One, I apologize to you individuals who were here a couple of weeks ago because it is basically the same

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presentation that we gave, I think, two weeks ago this Friday.

Also, Malcolm Knapp, who is the Branch Chief and will be the Division Director for the Low Level Waste Division, was not available due to schedule changes. So he is sorry he could not be here.

Basically, the standard review plan and the standard format content guide were developed by the NRC Staff of approximately 20 to 22 people of probably ten different technical disciplines. So I am afraid -- and I will be honest with you -- that probably Ted and I will not be able to address a lot of technical questions if you have them specifically. But we will certainly be willing to get back to you on any questions that we cannot answer at this time.

So let me start off with our presentation on the standard review plan.

(Slide.)

Basically, the first viewgraph is simply a listing of the Low Level Waste Policy Amendments Act of 1985, which was the driving force for us to develop both the standard review plan and the standard format and content guide. Basically, 1199, the standard format and content guide, was the mechanism by which we were able to address the requirements in 5(e) of the Act and NUREG-1200, which is

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standard review plan, was the mechanism by which we were able to address the requirements under 9-1 and 9-2, all of which were due in January of this year and which we met.

(Slide.)

First of all -- excuse me if I have trouble with getting these things on the viewgraph correctly -- we are going to talk a little bit about the standard format and content guide.

(Slide.)

Basically, the standard format and content guide specifies the information to be provided in the safety analysis report, and it does establish a uniform format for presenting the information.

(Slide.)

The purpose of the standard format and content guide was really four:

To make sure that the required information was present, the completeness of the information, to be able to easily locate the information, and hopefully to contribute to shortening the review time.

Let me say another thing. I don't know whether you have enough copies of these documents or not. However, I just received 50 more of them, and if anybody does need an additional copy, I would be glad to run them down to you.

(Slide.)

DAVbur

Next of all, we are going to talk a little bit about the standard review plans.

One other thing before I start on the standard review plans -- and I will go back. The slides are a little bit out of order. It affects both of them.

(Slide.)

Basically, both of the documents have eleven chapters. They are very similar in heading and subheading. So they are very easy to cross-reference between documents.

This is basically the eleven chapters of the standard format and content guide headings. Again, the standard review plan.

(Slide.)

Basically, the purpose of the SRPs were again to assure quality and uniformity of the Staff's review to present a well-designed basis on which to evaluate proposed changes, provide guidance to our Staff reviewers, make information widely available about regulatory matters, and improve the Staff's understanding of the licensing process.

In all honesty, these documents are pretty much very similar in style and format to what the reactors developed.

(Slide.)

However, they are considerably less detailed in nature. At least, that was their intent.

DAVbur

I have a couple of comments we received the last time we were down that were well-taken, that some of the information in the two documents was either not specific enough or the wording was broad and general in nature and hard to define what we really wanted, as well as some comments about the possibility of putting in an index which we thought was a worthwhile comment, also.

We will be addressing all these comments. We are not due to revise either one of the two documents until the November or December timeframe. So we have plenty of time to work on them.

Basically, the standard review plan identifies the individual responsibility for an area review, provides a basis for the review and has examples of the type of conclusions that we seek.

(Slide.)

The standard review plans in themselves are basically the same eleven chapters with several more subsections than the 1199 document. However, the headings are the same. The subheadings, the large number of individual sections in the standard review plans are developed to provide -- to get it down to a reviewer basis so that each reviewer can really be associated with a certain area that he or she is responsible for.

(Slide.)

DAVbur

Each chapter in the standard review plans are basically divided into these seven sections that you see up here. They are very similar again to the way the NRR review plans were set up except we reversed a few of the orders.

Briefly again, in each of the standard review plans we do define who is responsible for the review. We clearly get down to the area that is being reviewed. We have established review procedures. We have developed the acceptance criteria for each of those particular review plans.

We have the evaluations finding. We have a standard boilerplate on implementation, and then we provide specific references related to that technical area that is developed in the review plan, so that there are references there that the applicant or individuals can go back to to provide additional guidance on.

DR. MOELLER: Excuse me. I am sure you have answered this before, but does the agreement state use your standard review plan or do they have their own?

MR. PITTIGLIO: The agreement states?

We are not responsible for licensing the agreement states; however, we will, for one thing, act as an assistant to the agreement state in licensing, and they will probably use, from the ones that I have talked to and been out with so far, will use our review plans. Even though

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they are an agreement state, they have the requirement of compatibility with our regulation requirement, which means that the review plans would be very similar in nature to what they anticipate, and therefore, rather than go through the kind of effort -- the funny thing is most of the states don't even have the resources to develop that type of document.

So they will use that document, and they may modify it somewhat, but one of the few things that we have seen that may affect them, they seem to be much more stringent or try to be more stringent than what we require. So I am sure they will take the review plans and then modify sections as they go through and tune their regulation.

DR. MOELLER: To pursue this a little further, what are there, 27 or so agreement states today?

MR. PITTIGLIO: Yes.

DR. MOELLER: And the majority of them were probably made agreement states five or ten years ago, and at that time they weren't doing, I presume -- few of them were doing reviews like this.

How do you assure yourself that they are tooled up to do it and that they have the money and the manpower?

MR. PITTIGLIO: That is a problem that has caused some concern for us. We have been working with state

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programs, or the Office of State Programs in -- I don't know, it may be the Division of State Programs now -- who has the ultimate responsibility.

But we just came back from Texas to try to provide them some additional direction, and even though they do have the requirement for compatibility with the regulation, there is major concern about them being able to provide the technical expertise, and I think what will happen is that -- in all honesty, what will happen is NRC is going to probably be a free consultant to them on the licensing process.

The states, you know, because of the fact that they are responsible for the waste that is going to be in their state, it gives them a real high motivation to go in and do the job right, more zealously than I would have even thought necessary.

So I don't think it is a question of really having to try to force them into it. They seem to be voluntarily going into it.

DR. SHEWMON: I am interested. You said you just got back from Texas.

MR. PITTIGLIO: About a week and a half ago.

DR. SHEWMON: I guess I don't -- it seems to me six months ago the Governor of Texas was threatening to do dire things to you if you showed up in the state. They are

DAVbur

now, at least at the working level, working on it?

MR. PITTIGLIO: Yes. It was a session that was really set up through DOE and EG&G Idaho to provide them specific technical direction and to develop a program to determine the number and types of expertise that they would need on board to process the license application.

Texas and EG&G both invited us, and I went down and participated with the Texas Low Level Waste Disposal Authority and worked with them on what they would need and took the standard review plans with me. So I didn't have any problem.

DR. SHEWMON: Sorry, I am getting high level and low level mixed up.

DR. REMICK: My understanding is there are agreement states and then agreement states with exceptions.

Are there any agreement states that say we will be an agreement state except we don't want to license low level waste burial sites?

MR. PITTIGLIO: As a matter of fact, I talked to someone about that. I don't want to misguide you, but I did talk to someone about that this morning, and I think there is a central compact. There is an agreement state, and I believe they gave me the name. I don't know if it was Idaho or not, but, yes, there is an example of an agreement state that wants to maintain status but they do not want

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responsibility for their low level.

DR. REMICK: This doesn't surprise me, and I think there are agreement states that say there are certain things we don't want to handle; it is not necessarily low level waste.

MR. PITTIGLIO: Any other questions?

(No response.)

MR. PITTIGLIO: Let me say one more thing, and then I would like to bring Ted Johnson up to go through the examples.

(Slide.)

Related to these two documents, what we intend to do and will be required under part of the act is to go back in and revise them.

Again, these documents are really a base case, and in all honesty, they are developed for the shallow land burial option. We are working on developing the additional sections and modifications that we will need to do to address engineered alternatives, and specifically we are very limited in resources. The Low Level Division is much smaller than the High Level.

We are going to work on the below-ground vaults and an earth-mounted bunker, which is basically very similar to the below-ground vault and then may be covered over. So we are looking at what chapters and what sections need to be

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modified in the review plans and then, in the December version, incorporate information related to the engineered alternatives, as well as to incorporate comments that we receive related to language and problems in the current version.

DR. MOELLER: This is off the subject, but let me bring it up because it has concerned me, and I just wanted to bounce it off of you.

When you look at NUREG-1199 or -1200, the first thing you look at is at the cover and you look at the title page, and there are no authors. Here is a thoroughly prepared document, but if you look on ix, you can find acknowledgements of the people who participated in the writing of this document.

Now, if I were working for Brookhaven National Lab or PNL or someplace, Los Alamos and had worked on something like this, my name would be on the cover.

Don't you people feel a little --

MR. PITTIGLIO: Actually, you picked a very bad subject.

DR. MOELLER: Why isn't your name on here?

MR. PITTIGLIO: The NRC has developed a new style guide, so they told me, and said that on a document such as this where there are several authors and the participation of each author varied they would not allow you to put them

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on the cover.

DR. MOELLER: I think somebody should discuss sometime -- not here -- but the pros and cons of that because to me pride of authorship is an important --

MR. PITTIGLIO: It wasn't the case that we weren't proud of the document. It was the direction of the NRC. You know, it was something that has come up, and, you know, I went back and I, in all honesty -- and I don't want to waste a lot of time -- argued about that, and I did go back and pull all three volumes of the standard review plans that were put out by NRR, and it turned out that that particular document has no authors in it, has no recognition.

They gave us a lot of problems about putting the acknowledgements in the inside cover, and it took something at Browning's level to say that we are going to do it to be able to get that much.

DR. SHEWMON: If you want to talk to somebody about it, does that cover it?

MR. JOHNSON: To some extent it does, but the individual persons -- well, the responsible branch is, but not necessarily the person.

DR. SHEWMON: If you want to talk about how something was arrived at or why, then it is nice to have an individual.

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DR. MOELLER: I don't know whether it is something the committee even wants to get into, but if I were working on these reports and they wouldn't give me any credit, I would feel pretty bad about it.

MR. PITTIGLIO: Another thing we are trying to do, because we are back to getting not recognition to the individuals, but to be able to give more specific directions to the states and interested parties on the individual's background and expertise, we have gone and flipped the other way. We are trying to develop -- and it is very brief -- what we would call a licensing methodology document, and in there we are going to try to define this process in three or four pages and then find out the expertise at different levels and find out we need three hydrologists, two senior level, so at least somebody that has the document can get a better indication of what is involved.

It may have been better to go beyond. When you look at each SRP, it says names of branch rather than expertise, and that is going to give them a problem because we have been reorganized. So when it says WMEB, six months from now nobody will know what the Waste Management Engineering Branch is because it won't exist.

So we are going to go back in and say Civil Engineer - Soils Type under one area, Civil Engineer - Structural Type and get away from the designations in this

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document, but no names will be associated with it.

DR. MOELLER: Again, this is not an edict from the Commissioners; it is somewhere within the organization?

MR. PITTIGLIO: I don't know how that is developed. In other words, to put out anything now as a NUREG requires that it goes through the Editorial Section in the Philips Building. So they have a branch, an Editorial Branch, okay, and they have what they call a Style Guide, and I will have to give them credit. As far as going through the document, as far as correcting it for spelling and review like that and consistency and format, they did an excellent job. But also, as a result of it, there's no names on the covers, and that is just the overall agency policy, I think.

DR. MOELLER: While we are complimenting them on the standard format and content, turn to page 7-1 -- if I can find it -- and go down to the paragraph 7.1 on occupational radiation exposures. Go to the last two lines under "Policy Considerations."

It says, "Policy with respect to designing and constructing the facility, the ALARA policy."

Obviously, when they edited that, they didn't do too good a job.

MR. PITTIGLIO: I noticed that. I can't blame them entirely. If you could have seen the condition of some of the information the staff presented to them, they've come a long way.

The last page also has somewhere along the line two paragraphs as an example that are not even correlated, would up in the printing process.

DR. MOELLER: I will say only one more thing about this authorship. I worked for the federal government for 18 years, or 20 years, and left about 25 years ago, and I still have publications pending clearance within the agency that I worked for.

(Laughter.)

DR. MOELLER: Go ahead.

MR. PITTIGLIO: That's another reason why the standard format and guide -- well, the fact that we knew we were going to revise the document before it ever hit the street.

Ted, do you want to come on up? Are there any other questions on the overall process?

(No response.)

MR. PITTIGLIO: If not, I'll let Ted Johnson give his example.

DR. MOELLER: I had one on occupational protection, but if Ted's going to answer it -- in here, you

discuss whole body counting and bioassay.

Is that a standard requirement for the workers? Let me see. I can tell you where it is. On page 7-4, I was just curious, it's the last paragraph under 7.4, just above the word "Organization".

You know, it says:

"The frequency of the whole body count bioassay," which means then, if you're asking for the frequency, it must mean that they're required.

MR. PITTIGLIO: In all honesty, I'll tell you, it's not a requirement. What happened on this, we did not have a strong background for support in health physicists at the time. I don't know how recently you've read the radiation program chapter in the format and context guide for the reactors, but a lot of it was simply an effort at this time pulled from there.

And that particular chapter is one now that we have another health physicist on board that has to be gone back and looked at closely because I think some of it is over-kill, related to the type of exposures and so forth at the facility.

DR. MOELLER: Thank you.

MR. JOHNSON: My name is Ted Johnson. I'm a hydraulic engineer with the NRC staff. We thought it would be a good idea to give you a specific example of one of the

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areas, one of the standard review plans...

(Slide.)

The first item we'd like to address is the standard format and content guide. As Larry mentioned, this guide is the document which states to the applicants and licensees the kind of information that the NRC staff needs to do a review.

In the specific area that we've chosen to evaluate, our illustrative example of long-term stability for surface drainage and erosion protection, in the standard format and content, we lay out basically the information that we need to do the review.

The purpose of the information and analyses that we'll be providing are essentially to satisfy the regulations.

There are two specific regulations, Part 61, that deal with the long-term stability problem. Those are 61.23E and 61.44, which require reasonable assurance of long-term stability without the need for active ongoing maintenance.

Also in the standard format and content guide, we lay out the information and analysis that are needed in the safety analysis report to be submitted by an applicant or a licensee, once again for the specific area of long-term stability of surface drainage and erosion protection.

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We need these three types of information. The hydrologic description, which lays out essentially what the site design is and what drainage features are provided, to tell us how well the site is protected against flooding.

We need the flooding analyses themselves and erosion protection designs. So, basically, the standard format and content is a fairly short, concise document which lays out information needs by the staff.

Any questions so far?

(No response.)

MR. JOHNSON: I'll try to make this as short and painless as possible.

(Slide.)

If I start to get too detailed, please stop me and let me know. If you don't understand something, please stop me.

The standard review plan for Section 6.3.1 outlines first the review responsibility as to answer the question that was there before. In each of the standard review plans, we lay out exactly which branch is responsible. These are one of the items that's going to change because of the reorganizations.

We have no control over that. Also, it does not specify the individual reviewer. I don't know if that's good or bad. From one standpoint, it might be good because

we turn over so many people so fast that it's probably not wise even to specify, because it seems like it changes from day to day.

The second area of the standard review plan, we lay out the areas of review that we will consider. And for this particular area, we look at the hydrologic description of the site. We look at the flood analyses themselves, possibly dam failures if it's applicable, and the erosion protection design.

The review itself is broken out into an acceptance review and a safety evaluation review. In the acceptance review, we ask:

Is the information adequate? Is the information requested in a standard format and content provided?

If the answer to that is no, we ask then to give us more information or possibly even reject the application. If the information is good enough, then we proceed with the safety evaluation review.

And once again, the kind of questions we're trying to answer are:

Are the design assumptions and technical analyses correct and conservative? And are the regulatory requirements that we specified previously met?

(Slide.)

Section 4 lays out the regulatory requirements

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that need to be met. Basically, these three requirements require the applicant to submit the information and, once again, the 61.23 and 44 state that we need to have reasonable assurance of long-term stability without the need for maintenance.

One thing we try to do in each of these sections of the standard review plan is to tie them back into a specific part of the regulation. And we thought that was a very good idea in terms of trying to tell an applicant exactly what the NRC staff's position is with regard to interpretation of that regulation.

Section .2 lays out any regulatory guidance that we might have that might assist the applicant or licensee to do a review. In this case, we have one reg guide which was developed for the uranium mill tailings program, which could be applicable.

DR. MARK: Could I ask what should come to mind when I read "long-term"?

MR. JOHNSON: 61.7 specifies time of consideration and time of containment, if you will, of 300-500 years. Basically, that's the long-term period that we're dealing with here.

I think they figure by that time most of the bad stuff will have decayed down and there won't be too much left in the repository at that point.

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So that pretty much covers that. Now we get to the regulatory evaluation criteria.

(Slide.)

Which states exactly what criteria we're going to use. A hydrologic description will be acceptable if there's enough information that we'll need to review it.

The flooding determinations, the dam figure analyses that will be acceptable if they're reasonable, and if they're done in accordance with standard computational practices. And the site can withstand very large rainfall and flood events, like the probable maximum flood, the probably maximum precipitation.

Erosion protection designs are acceptable if they meet the criteria that you see laid out there. If they're correct and conservative, designed for a big flood, designed in accordance with common practice and durable for long-time periods.

Then, finally, in the evaluation findings, we'll lay out any regulatory requirements that have been met. And we'll discuss our analysis and review that led to those conclusions.

Then of course part six, as Larry mentioned, was the implementation section, which is the boiler plate section, which states in effect:

Here's an acceptable way of doing things, but if

you have another good idea, we're certainly willing to review that on a case by case basis.

I think Part 7 indicates our preferences may be useful for that particular section of the standard review plan.

I thought it would be helpful also if we gave you an example of what a typical design that might come out of looking at this criteria --

(Slide.)

-- this particular design here, or this particular layout is from the uranium mill tailings remedial action program. The acronym is UMTRAP. In the UMTRAP program, DOE has been giving quite a bit of money to go out and reclaim some old uranium mill tailings piles.

Basically, the kinds of criteria that we have applied at the uranium mill tailings piles will also be applied at low level waste sites. The long-term stability period is 200-1,000 years. We've already written a standard review plan with the uranium mill tailings program. And we thought it might be useful to show you here exactly what the real life application of the criteria would be.

The slide isn't the best one in the world, but I think you can get an idea of what happens, especially when we give you a cross-sections.

But, basically, you have a gently sloping top

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portion of the pile, which breaks off into a steeper portion of the pile. Drainage coming off the hill is intercepted by a diversion ditch, which then conveys it safely around the pile.

In some cases, you might have a stream which would need to be protected against flooding. In this case, it's far enough away so that it's not a problem.

But you could have some cases where it could happen.

(Slide.)

Finally, I'll show you a section once again trying not to get into too much detail here. Basically, as we indicated, we have a flat top slope on the pile. The tailings themselves in this case were located slightly below existing grade.

A cover was applied. Then a rock cover was then put on the pile to protect it. Gently sloping tops, steeper side slopes down to an apron or, in this case, a diversion ditch, which you saw, for diverting water down the pile.

Basically, this wouldn't be too different from what you would see in a typical low level waste site, particularly one in the Western United States.

This is Lake View, Oregon. It's an arid site. And the kind of low level waste repositories would not be too different from this.

So here's an example of the application of the standard format and content and the standard review plan.

Are there any questions with regard to this specific application?

(No response.)

DR. MOELLER: In terms of just general questions, and I'm not sure when I should have asked, in the standard format and content, you indicate that if the projections at the operation of a site can exceed EPA's, PAG's and so forth, then they need to have an emergency plan.

I gather -- am I correct that you do not really anticipate that many of the low level sites would have to have an emergency plan?

MR. PITTIGLIO: The best answer I can give you is that is correct. However, we did throw that in there just to make it known that there is a possibility that the plan could be required.

DR. MOELLER: At the subcommittee meeting, you mentioned, as I recall, that you anticipated maybe 100 employees at a typical site.

MR. PITTIGLIO: Yes, that was the example. It was based on pretty much -- I think Jim Shaffer gave the example -- based on his experience with a couple of sites that are currently operating.

DR. MOELLER: You mentioned in here about fire

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departments.

Do you anticipate -- I guess you don't anticipate -- that they would have their own fire department?

MR. PITTIGLIO: We don't. That's the kind of question that it's hard to answer because, right now, we're not totally convinced of what activities will go on at the site.

That again is thrown in because there's a possibility that there may be some repackaging facilities, and so forth, at the site. And if that's the case, there would probably be a need for having some kind of general fire protection fairly close to or within the site.

But we don't know at this time what the actual--it may just be a typical shallow land burial site where it'll come off the truck and go directly to the trench, versus a repacking facility.

We just don't know.

DR. MOELLER: Are there any other questions here? Jack Parry?

MR. PARRY: Is there anything in the regulations that prohibit mixed wastes or combination site? That is, radioactive waste disposal site being used for other hazardous wastes?

MR. PITTIGLIO: I'm not the one to give you a

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real strong answer. There is right now -- NRC and EPA are working to try to come up with a code to resolve concerns about the double-liner and things.

The only that that's a problem is there could be some Part 61 regulations that are in somewhat conflict with EPA as far as like the double-liner. And then that poses a problem about maintenance.

So, right, now NRC has been working with EPA and I think they're fairly close to coming to an agreement that will dissolve the discrepancies.

So the answer is there will probably be a co-site like that.

DR. MOELLER: Any other questions?

(No response.)

DR. MOELLER: Thank you, Larry and Ted, for coming down, particularly late on a Friday afternoon. I see that Dan Fehringer is here. So we will move on then.

Is that all right, Mr. Chairman, to move ahead, or do you want to break?

(No response.)

DR. MOELLER: Let's move ahead.

Dan, we've already introduced the topic. I'll repeat that you're going to be discussing whether the rulemaking for the definition of high level waste.

MR. FEHRINGER: Thank you. I do not have slides

to use here this afternoon, so I'll be talking from the handout sheet that was passed out to you.

It's dated March 3rd, scratched out and repenciled for today's date. This is the same package of slides that I used this week to present this information at the Waste Management '87 Conference.

The purpose of this rulemaking is listed on the second page. It is to revise our current definition of high level waste in Part 60 to conform to the definition that is in the Nuclear Waste Policy Act of 1982.

And on the following page, a list of the text of that definition in the Waste Policy Act. It consists of two parts. There's a clause A, which is very similar to the current definition in Part 60. This is the source base definition, which refers to the primary reprocessing waste stream in a reprocessing plant, but it is modified from the Part 60 text in one significant respect.

It would include the primary waste stream only if that waste contains sufficient products in sufficient concentrations.

The Waste Policy Act has a clause B that is very much different from the existing definition of high level wastes. This would include other highly radioactive material that the Commission determines by rule requires permanent isolation. Clause B authorizes the Commission to

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look at all other sources of waste other than reprocessing plant.

And if the Commission determines that a waste meets these two criteria, then those wastes can be classified as high level wastes.

On the next page, I list the things which we think a revised definition would accomplish. First, we think that a definition can be made risk-based rather than strictly source-based, as is presently the case with Part 60. We would look at the characteristics of wastes before classifying them as high level or not high level rather than just the source from which those wastes are derived.

Second, classification of wastes would identify the need for waste generators to enter into contracts for transfer of any high level wastes to the Department.

Third, this would alow the department to plan for the receipt or disposal of those wastes.

And, fourth, this would determine which of the NRC's regulatory requirements apply to specific types of waste.

Part 60 is a regulation for a facility, and it's a repository that is used for disposal of high level waste. But it may also be used for disposal of other types of waste.

And it will be helpful to the Department of

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Energy to know which of the requirements in Part 60 are applied to each particular package of waste that is received at that facility.

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DR. MOELLER: Excuse me, backing up to the previous -- or maybe it is the one you are on, where you say "Definitions A and B," and A, in the third line, it says:

"Any solid material that contains fission products in sufficient concentration."

I guess the reason you have said solid material there is that you are assuming that no one will give you liquids.

I mean, is the liquid waste then not a high level waste?

DR. MARK: In the line before it is there.

DR. KERR: It says including liquid waste.

DR. MOELLER: Okay, including liquid and any solid material.

Okay, I missed it. Excuse me.

MR. FEHRINGER: And let me point out that these are words from the Nuclear Waste Policy Act. These are the Congress' words rather than ours, but the Congress does include the two different types of waste, I think, and the solids derive from those liquids.

DR. MOELLER: I missed the fact that the liquid was included in the previous line.

DR. MARK: You say requires permanent isolation, and I think on next set of notes we are talking of

DAVbur

transferring stuff to DOE for presumably long-term handling.

What kind of a period is in mind when one says it requires this special action? Five years? 50 years? Five weeks?

MR. FEHRINGER: In the context of the Waste Policy Act, the phrase "permanent isolation" is fairly clearly equated with a deep geologic repository. It is one of those terms of art that is used to describe what a repository provides for you. It does not have time period associated with it in the Waste Policy Act.

DR. MARK: But if I think of high level waste which might come a year from now and seem perfectly healthy; it would have a half-life of a month. There is nothing in this which distinguishes that. It might require keeping well out of sight for the next six months but after that it wouldn't?

DR. MOELLER: That is not permanent isolation.

DR. MARK: So I was asking does permanent apply?

MR. FEHRINGER: As we get further into the presentation, I will show how we are distinguishing that type of situation where you have very intensely radioactive wastes but they are very short-lived and do not have the long-term hazard that the others have.

DR. MARK: That answers my question.

DAVbur

MR. FEHRINGER: Turning to page 4, I have indicated schematically on the lefthand side of the page what our current waste classification system looks like and on the righthand side of the page the waste classification systems that we would like to have when we have completed this rulemaking.

In both cases we have Classes A, B, and C, fairly clearly defined by the concentration of the radionuclides in the waste.

But above Class C the current state of affairs classifies waste based on the source that they are derived from. If they come from sources other than reprocessing plants, they are low level wastes. If they come from the first cycle waste stream of a reprocessing plant, they are high level wastes, and that is a situation that does not seem to make good technical sense.

As indicated on the righthand side of the page, we would like to draw a line which will clearly distinguish high level wastes from those wastes that are not to be regarded as high level even if they do have concentrations above our current Class C limits, and we want that line to be a risk-based distinction between high level and non-high level wastes.

On the next page, the one labeled 7, I have tried to indicate how we propose to draw this line. It ends up

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being two lines that are necessary in order to classify wastes as high level or non-high level.

On the vertical axis we have the concentrations of short-lived radionuclides. Those are the radionuclides that make a waste intensely radioactive if they are present in large quantities.

On the horizontal axis we list the concentrations of long-lived radionuclides. They do not make the waste highly radioactive, but they do indicate the need for long-term isolation or, in this case, permanent isolation.

What we want to do is show conceptually by the two lines that bisect the spectrum of waste in the four quadrants. There is a horizontal line that will distinguish wastes that are highly radioactive from those that are not highly radioactive, and then there is a vertical line that will distinguish wastes requiring permanent isolation from those that do not require permanent isolation.

Once we have drawn those two lines, then only those wastes in the upper righthand quadrant would be classified as high level.

Recalling the words that Congress used in its definition, high level wastes are those that are highly radioactive and in need of permanent isolation. When both characteristics are present; that is, when wastes are in the upper righthand quadrant, then they would be classified as

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high level waste.

A waste in the upper lefthand quadrant would be of the type that Dr. Mark mentioned, a waste which is intensely radioactive but which has only short-lived nuclides present. That we would not regard as a high level waste. That would be a highly active special class of low level waste.

Similarly, in the lower righthand quadrant we have another special class of low level wastes. Those are the wastes that contain very long-lived nuclides which do not have high levels of radioactivity, and an example would be the trans-uranic wastes that have been generated in both commercial and defense programs. They have long-lived nuclides and require permanent isolation, but they do not have the high radioactivity characteristic.

And, finally, the lower lefthand quadrant, we have the existing concept of a low level waste, waste which is neither highly radioactive nor in need of permanent isolation, and those are wastes that are suitable for disposal by shallow land burial.

The following page, I have indicated where some existing wastes might fall within this classification system. If this classification system applies to these wastes -- I say "if" in order to spark your interest for the next page of this handout package -- it is not at all clear

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that all of the wastes listed on this viewgraph would be subject to a definition that we would develop in this rulemaking, but if they were this is approximately where they would fall out.

The cesium and strontium capsules that the Department of Energy has generated at the Hanford site would be in the upper lefthand quadrant. They are highly radioactive but short-lived in geologic terms.

In the lower lefthand quadrant we have the decontaminated salts that will be generated at both Savannah River and West Valley. Those are neither highly radioactive nor in need of permanent isolation.

In the lower righthand quadrant, again where the trans-uranic wastes would be, and I deliberately show that class of waste, that type of waste edging into the high level waste category. It is our information that some wastes that have previously been classified as trans-uranic wastes probably contain a sufficient amount of fission product contaminant so they would be considered high level waste under this classification scheme.

Finally, in the upper righthand quadrant, we have the glasses that are likely to be made at Savannah River and West Valley and farther into the upper righthand quadrant commercial spent fuel for commercial reprocessing wastes if we ever have that source of waste.

Right in the middle of the figure is the type of waste that will certainly be one of the more controversial ones in this rulemaking, those wastes currently in storage and tanks at Hanford.

By this classification system only a very few tanks would be considered high level waste. A few would be considered ordinary low level waste, and a somewhat larger number would probably be classified as something analogous to trans-uranic wastes where they have long-lived nuclides present in significant concentrations but not enough total radioactivity left to be considered highly radioactive.

Those wastes have in the past been considered high level wastes. You can imagine that the people in the Pacific Northwest would be quite interested in the evolution of this rulemaking.

Before I turn to the last page, let me just mention one more thing about the placement of the two lines that divide this figure into quadrants.

For the sake of illustration in this advanced notice, we have used the Class C limits for short-lived and long-lived nuclides, respectively, that currently exist in our Part 61 regulations.

The advanced notice promises that we will do the technical analyses to either confirm that those are the proper places to draw the lines or to determine where the

DAVbur

proper place is if Class C is not the proper place.

The main thing we want to do with the advanced notice is to see if we can get a consensus on the general concept, which is to divide the spectrum of wastes into four quadrants, or, if there is not a consensus, find out why not and see what we should do instead of this approach.

DR. MARK: Suppose I have an operation that is putting out stuff with a fair amount of thorium in it, thorium 232. That has a good long life, but it doesn't get very intensely radioactive.

Where would it come in this chart, or would it be of no concern?

MR. FEHRINGER: Conceptually, it would be analogous to the TRU waste class in the lower righthand quadrant. We have long-lived nuclides present and not the high level of radioactivity that would be necessary to classify something as high level waste.

As we get to the next page, I will qualify that once more by pointing out that we have no regulatory authority over naturally occurring radioactive materials, and there is a question --

DR. MARK: So I can shovel those out in the street?

MR. FEHRINGER: As far as the NRC is concerned, we have nothing that would prevent you from doing that.

DAVbur

DR. KERR: You have responsibility for mill tailings, or somebody does.

MR. FEHRINGER: Mill tailings are specifically culled out as a form of byproduct material in the Atomic Energy Act.

Let me see if I can respond just quickly. I understand our licensing authority derives from the Atomic Energy Act and it is limited to source, special nuclear, and byproduct material.

Byproduct material is specifically defined by Congress as including mill tailings, but not including radium or thorium.

DR. KERR: My point was you said you did not have responsibility for natural uranium materials, but mill tailings certainly are.

MR. FEHRINGER: All right.

DR. SIESS: Not as wastes.

MR. FEHRINGER: Other than mill tailings, we do not have authority for naturally occurring materials.

MR. EBERSOLE: Where would you put old control rods and fairly active steel that had a substantial cobalt content?

MR. FEHRINGER: Irradiated metals are an interesting case. We don't have real good information, but what we have indicates that they might cluster around the

DAVbur

center of this graph.

They appear to be both short-lived and long-lived activation products in many metals, the ratio of course depending on the type of metal that you are concerned with, but nickel in particular has both short-lived and long-lived activation products.

It appears that some activated metals will be very close to the center of this conceptual division of waste types.

MR. EBERSOLE: So they might go anywhere?

MR. FEHRINGER: Right, depending on the type of material, the amount of flux it has been exposed to, and so on.

DR. SIESS: Does that make it more useful to classify by content rather than by source?

MR. FEHRINGER: I am not sure whether it really is more useful to classify based on risk. If you are going to classify a waste based on its characteristics, you must know what those characteristics are, and that means utilities will have to measure what is present in activated metals, for example, rather than just treating them by source.

There are some downsides, of course. The advantage is that aesthetically it is much more pleasing to base your classification on risk or hazard rather than

DAVbur

strictly on the source, where there may be no correlation with risk at all.

DR. SIESS: Philosophically, it makes sense, but in terms of procedures somebody has got to go through a lot of analysis to decide what it is, and some things.

Would there be any objection if somebody wanted to take the stuff that Jesse was talking about and just call it high level?

MR. FEHRINGER: I don't think the NRC would object to that.

I think the Department of Energy would because their contract fees and such are based on certain assumptions about the population of waste they must dispose of, and they don't want to start taking all the low level waste relabeled as high level.

Turning to the last page, let me discuss for you the types of wastes that we think a revised definition of high level waste would apply to.

First, it clearly would apply to commercially generated wastes from sources other than reprocessing.

All those things like activated metals need to be classified, and we propose in the advanced notice that those clearly would be wastes that would be treated by this definition.

Second, this definition might apply to

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reprocessing waste.

We are not certain about the wisdom of applying a numerical definition to those wastes, partly because of the need to characterize the wastes that we mentioned a moment ago, partly because of the existing statutes that we live under.

Our responsibility to license disposal of high level wastes derives from the Energy Reorganization Act, and it is the advice of our legal counsel that a revised definition here would not affect that responsibility to license facilities for waste disposal.

So we might end up with a situation where a waste would be considered high level under one statute, not high level under another, which would be messy at best and possibly counterproductive.

There is a third reason why we might decide that applying this definition of reprocessing waste does not make sense.

This definition would be developed under the authority of the Nuclear Waste Policy Act, and that act specifically does not apply to wastes disposed of in defense-only facilities.

For example, if the Department of Energy decided to pursue its concept for disposal of the Hanford wastes it placed in the existing tanks, any definition we develop here

DAVbur

would be irrelevant for classifying those wastes under that kind of a disposal concept.

It still would tell the world what our best judgment is on how to classify wastes, but legally it would have no standing.

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DR. MARK: Where under this would wastes from the FFTF come from? They are from the Department of Energy, but that doesn't mean they are Defense anything.

MR. FEHRINGER: It is a good question. If the Department disposes of wastes in a repository developed under the Waste Policy Act, this definition would clearly apply. If the Department said they could dispose of those wastes in Defense only facility and allege that they were Defense wastes, that would raise an interesting question.

DR. SIESS: For the lawyers or the NRC?

MR. FEHRINGER: For the lawyers of the NRC.

DR. KERR: I apologize for not asking this question earlier regarding low level waste, but maybe you can tell me whom I should ask. There now exists a significant traffic in the United States in topaz that has been irradiated with neutrons, some of it in U.S. reactors. Apparently some of it can react with chrome, and it becomes radioactive in a condition with fast neutrons, and it changes color. It also absorbs thermal neutrons and the impurities are characteristic of natural topaz.

Is this a low level waste?

MR. FEHRINGER: I would say that the radioactivity content in there would qualify as by-product material, because it is produced by radiation in a reactor.

DR. KERR: I would too.

DAVbw

DR. SIESS: Is it waste? Who's throwing them away?

(Laughter.)

DR. KERR: There is a significant amount of the stuff out there, and as far as I know, it is not licensed by the NRC.

DR. SHEWMON: If it is irradiated before it goes to the artist, I imagine it is waste. I doubt if they stick jewelry in there.

DR. KERR: Some of both is being done. Not jewelry, but cut stones.

MR. FEHRINGER: That is the first I have heard of that source.

DR. KERR: Really?

DR. SHEWMON: Is it pretty?

DR. KERR: Very pretty. It's nice blue. Depending on how much irradiate it, you get different intensities of blue.

DR. SHEWMON: How hot does it get?

DR. KERR: Very hot, immediately after it is taken out of the reactor, but it cools off, but it doesn't cool off fast.

MR. MICHELSON: Do you get a dose from wearing it?

DR. KERR: I am sure you get some.

DAVbw

MR. MICHELSON: Even though it is close to the skin and everything. What is it, a gamma?

DR. KERR: Gamma is present in the contribution, I guess. There are some betas.

DR. SHEWMON: You could talk to Dade. He could give you an opinion on whether it should be on your rest as opposed to brooch.

DR. MOELLER: A couple of questions, to be sure I am correct. Let me just make a couple of statements, and you help me with them.

Now the proposed NRC changes in the definition of high level wastes would make 10 CFR 60 compatible with the Nuclear Waste Policy Act, or at least it would make the definition compatible.

MR. FEHRINGER: Yes. The definition of high level waste would be expanded as the Waste Policy Act authorizes.

DR. MOELLER: Does 10 CFR 60, as it currently exists, use a definition that is based on the Energy Reorganization Act of 1974?

MR. FEHRINGER: The Energy Reorganization Act does not define the term high level waste. It is the opinion of our legal counsel that the proper definition to be read into the Energy Reorganization Act is that that was present in the NRC Regulations when that Act was passed.

DAVbw

That was not the Part 60 definition, but it is the same words. It was the Part 60 Appendix F definition that existed in 1974. Conceptually, it is the same as what is in Part 60.

DR. MOELLER: And the definition in the Nuclear Waste Policy Act is a risk-based definition.

MR. FEHRINGER: We are intepreting it that way. It uses the terms "highly radioactive" and "requiring permanent isolation and insufficient concentrations," which we are saying is meant to refer to risk.

DR. MOELLER: So I could say, without being totally in error, that although the Energy Reorganization Act does not define high level waste, you can interpret some of the words to give you a definition, and that is the definition that currently exists in 10 CFR 60.

MR. FEHRINGER: Yes. Correct.

DR. MOELLER: Does that conclude your presentation?

MR. FEHRINGER: Yes.

DR. MOELLER: Jack Parry?

DR. PARRY: Dan, we have gone over this. I think this is our third time, and pardon me for bringing it up again.

As I understand this, if a commercial reprocessor or a waste processor of any type were to carry out a

DAVbw

fractionation, as the Department of Energy has done, on their waste, they would then be able to reclassify the waste, in effect, as low level and drop out of having to go into a high level waste repository.

Is that correct?

MR. FEHRINGER: If you are referring to the proposed classification system, the advance notice, that would be a possibility. It is one of the issues we will have to address as we develop a proposed rule. Should it, in fact, be possible for a waste generator to split his wate stream into a short-lived component and a long-lived component, neither of which would be high level waste? Maybe it is a perfectly legitimate thing to allow, but perhaps it is not. We will need perhaps to address ways to prevent it from happening.

DR. KERR: Any other questions or comments?

(No response.)

DR. KERR: Thank you very much.

What else, Mr. Moeller?

DR. MOELLER: We have drafts of two letters on the two topics, which we can do tomorrow or whatever you desire.

DR. KERR: Mr. Fraley has revised the agenda for tomorrow and stretch, as he can, he has not been able to extend it beyond 1:00 p.m., and I believe there is

DAVbw

sufficient time to do these tomorrow.

DR. MOELLER: They are essential letters, and it would be timely to get them out this month.

DR. KERR: It appears to me that we will have plenty of time to do this tomorrow.

We have a letter to Mr. Markey, and these two.

DR. SIESS: And Generic Issue 61.

DR. KERR: That is correct.

Anything else tonight?

(No response.)

DR. KERR: The meeting is recessed until 8:30 in the morning.

(Whereupon at 5:10 p.m., the meeting was adjourned, to reconvene at 8:30 a.m., Saturday, March 7, 1987. in unreported session.)

ABWR PROGRAM STATUS

- LICENSING BASIS AGREEMENT
- EPRI REQUIREMENTS DOCUMENT
- PROGRAM PLAN
- ACRS PARTICIPATION

LICENSING BASIS AGREEMENT

- ADMINISTRATIVE MATTERS
- SCHEDULE OF REVIEW
- RELATIONSHIP OF ABWR AND EPRI PROGRAMS
- PARTICIPANTS
- CONTENT AND FORMAT OF APPLICATION
- FUTURE ISSUES
- ADDITIONAL ISSUES

PROGRAM PLAN

- INTITIAL BRIEFING OF COMMISSION 9/86
- PROGRAM PLAN SENT TO COMMISSION 11/86
- ADDITIONAL BRIEFING SET FOR 4/87
- DISCUSSION OF PROGRAM PLAN AND LBA

ACRS PARTICIPATION

- COPY OF DRAFT LBA TO ACRS 12/86
- ACRS BRIEFINGS 1/87 (FULL AND SUB-COMMITEES)
- DISCUSSION WITH ACRS STAFF 2/87
- STAFF EXPECTS TO RECEIVE CONSTRUCTIVE CRITICISM ABOUT LBA FROM ACRS
- STAFF EXPECTS TO RECEIVE COMMENTS FROM ACRS ON ABWR DESIGN AFTER FSAR IS SUBMITTED (9/87)

2
3-6

ALWR New Issue Screening Criteria

Screening for Applicability

The screening criteria to establish issue applicability are listed below. If the answer to any of the following questions is "yes," then the issue shall not be considered further as having the potential for impacting the ALWR design or construction and will not be considered in the review of the Requirements Document:

(1) Does the issue duplicate an issue previously identified or prioritized?

(2) Is the issue considered a non-safety issue (e.g., environmental, economic, etc.)?

(3) Is the issue applicable only to existing plant(s) or plant features not included in the ALWR standard design?

(4) Is the issue beyond the scope of the ALWR Requirements Document?

(5) Is the issue research related (i.e., is additional research required to understand or resolve the issue)? It is assumed that appropriate new issues will be identified as applicable once the appropriate research is completed.

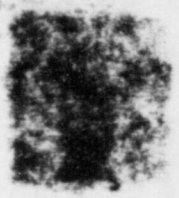
(6) Is the issue considered as a regulatory impact issue?

(7) IS INSUFFICIENT INFORMATION AVAILABLE TO EVALUATE THE ISSUE? REVIEW OF THESE ISSUES WILL BE DEFERRED UNTIL SUFFICIENT INFORMATION IS AVAILABLE.

ANY ISSUE THAT FALLS INTO CATEGORIES 2 OR 4 ABOVE IS CONSIDERED POTENTIALLY APPLICABLE TO AN ALWR LICENSEE AT A LATER DATE (I.E., AT TIME OF SITE-SPECIFIC OR OPERATING LICENSE (OL) REVIEW) AND SHOULD BE RETAINED FOR EVALUATION OF ITS APPLICABILITY AND POTENTIAL SAFETY SIGNIFICANCE AT THAT TIME. THE NRC WILL MAINTAIN A LIST OF THESE ISSUES FOR USE IN THE REVIEW OF ANY APPLICATION REFERENCING THE REQUIREMENTS DOCUMENT.

ALWR New Issue (Issues Identified After 7/1/86)

Screening Process Procedure



Step 1 - New issue identified.

Step 2 - NRC staff prioritization of new issue.

Step 3 - If issue is prioritized as high or medium by the NRC staff, EPRI will check it against the 7 criteria for applicability to the ALWR. EPRI will make a recommendation to NRC regarding applicability.

Step 4 - NRC staff resolution of issue (thru CRGR).

Step 5 - Based upon staff proposed issue resolution, EPRI will make a recommendation to NRC regarding whether or not a change should be made to the ALWR Requirements Document, using the 3 criteria for assessing the significance of the issue.

Note - The above new issue screening procedure will continue until the ALWR Requirements Document is approved by NRC. EPRI involvement in maintaining the Requirements Document beyond that point is "TBD".

SCREENING FOR SIGNIFICANCE

ANY ISSUE THAT IS DETERMINED APPLICABLE TO THE ALWR VIA THE INITIAL SCREENING IS THEN LOOKED AT (AFTER STAFF RESOLUTION) TO SEE IF IT IS SIGNIFICANT ENOUGH TO WARRANT A CHANGE IN THE ALWR REQUIREMENTS DOCUMENT.

IF THE ISSUE MEETS ONE OR MORE OF THE FOLLOWING CRITERIA A SPECIFIC SET OF PLANT REQUIREMENTS WILL BE ADDED TO THE REQUIREMENTS DOCUMENT TO ADDRESS THE ISSUE:

(1) WOULD THE CORE MELT FREQUENCY GOAL ESTABLISHED IN THE ALWR REQUIREMENTS DOCUMENT BE EXCEEDED AS A RESULT OF THIS ISSUE?

(2) WOULD THE OFFSITE ACCIDENT RADIOLOGICAL CONSEQUENCES DOSE REQUIREMENTS ESTABLISHED IN THE REQUIREMENTS DOCUMENT BE EXCEEDED AS A RESULT OF THIS ISSUE?

(3) WOULD THE COMMISSION'S SAFETY GOALS BE EXCEEDED AS A RESULT OF THIS ISSUE?

THE PRIMARY BASIS FOR EVALUATION OF AN ISSUE AGAINST THE ABOVE CRITERIA WILL BE THE VALUE/IMPACT ASSESSMENT THAT IS PROVIDED FOR THE RESOLUTION OF GENERIC ISSUES BY THE NRC. IN THOSE CASES IN WHICH THE GENERIC VALUE/IMPACT EVALUATION DOES NOT CLEARLY ESTABLISH THAT THE ISSUE NEED NOT BE CONSIDERED IN THE ALWR DESIGN, EPRI WILL GIVE FURTHER INFORMATION TO PROVIDE THE BASIS FOR NOT CONSIDERING THE ISSUE IN THE DESIGN OR TO PLACE APPROPRIATE NEW REQUIREMENTS IN THE REQUIREMENTS DOCUMENT CONSISTENT WITH THE ISSUE RESOLUTION.

SUMMARY OF NRC'S WORK ON THE STANDARD FORMAT AND CONTENT (NUREG-1199) AND STANDARD REVIEW PLAN (NUREG-1200) FOR LOW-LEVEL WASTE DISPOSAL FACILITIES

- OVERVIEW
- APPLICATION

ACRS PRESENTATION BY
C. L. PITTIGLIO, JR.
T. L. JOHNSON

FRN JANUARY 23, 1987

- NUREG-1199, STANDARD FORMAT AND CONTENT OF A LICENSE APPLICATION FOR A LOW-LEVEL RADIOACTIVE WASTE DISPOSAL FACILITY

  - MECHANISM TO DETERMINE ADEQUACY OF LICENSE APPLICATION; LLRWPAA SEC 5(E)

- NUREG-1200, STANDARD REVIEW PLAN FOR REVIEW OF A LICENSE APPLICATION OF A LOW-LEVEL RADIOACTIVE WASTE DISPOSAL FACILITY

  - ESTABLISH PROCEDURES AND CAPABILITY TO PROCESS LICENSE APPLICATION, LLRWPAA SEC. 9(1)

  - TO EXTENT PRACTICABLE COMPLETE REVIEW WITHIN 15 MONTHS OF RECEIPT OF APPLICATION, LLRWPAA SEC. 9(2)

NUREG-1199

Standard Format and Content

of a license application for a Low-Level Radioactive Waste Disposal Facility

Safety Analysis Report

U.S. Nuclear Regulatory Commission

Office of Nuclear Material Safety and Safeguards

January 1987

STANDARD FORMAT AND CONTENT

- SPECIFIES INFORMATION TO BE PROVIDED IN SAFETY ANALYSIS REPORT (SAR)
- ESTABLISHES UNIFORM FORMAT FOR PRESENTING INFORMATION

PURPOSE OF STANDARD FORMAT AND CONTENT

- LICENSE APPLICATION (SAR) CONTAINS REQUIRED INFORMATION
- ENSURES COMPLETENESS OF INFORMATION
- HELPS LOCATE INFORMATION IN SAR
- CONTRIBUTES TO SHORTENING THE REVIEW TIME

STANDARD FORMAT AND CONTENT (NUREG 1199)
CONSISTS OF 11 CHAPTERS

1. GENERAL INFORMATION
2. SITE CHARACTERISTICS
3. DESIGN AND CONSTRUCTION
4. FACILITY OPERATIONS
5. SITE CLOSURE PLAN AND INSTITUTIONAL CONTROLS
6. SAFETY ASSESSMENT
7. OCCUPATIONAL RADIATION PROTECTION
8. CONDUCT OF OPERATIONS
9. QUALITY ASSURANCE
10. FINANCIAL ASSURANCE
11. REFERENCES

NUREG-1200

Standard Review Plan

for the review of a license application for a Low-Level Radioactive Waste Disposal Facility

Safety Analysis Report

U.S. Nuclear Regulatory Commission

Office of Nuclear Material Safety and Safeguards

January 1987

PURPOSE OF THE SRP'S

- ASSURES QUALITY AND UNIFORMITY OF STAFF'S REVIEWS
- WELL DEFINED BASE FROM WHICH TO EVALUATE PROPOSED CHANGES
- GUIDANCE FOR STAFF REVIEWERS
- MAKES INFORMATION ABOUT REGULATORY MATTERS WIDELY AVAILABLE
- IMPROVES UNDERSTANDING OF THE STAFF'S REVIEW PROCESS

SRP'S DEFINES REVIEW PROCESS

- IDENTIFIES INDIVIDUAL RESPONSIBLE FOR REVIEW
- PROVIDES BASIS FOR THE REVIEW
- CONCLUSIONS SOUGHT

STANDARD REVIEW PLANS (NUREG-1200)
CONSISTS OF 11 CHAPTERS: (60 INDIVIDUAL SECTIONS)

1. GENERAL INFORMATION
2. SITE CHARACTERISTICS
3. DESIGN AND CONSTRUCTION
4. FACILITY OPERATIONS
5. SITE CLOSURE PLAN AND INSTITUTIONAL CONTROLS
6. SAFETY ASSESSMENT
7. OCCUPATIONAL RADIATION PROTECTION
8. CONDUCT OF OPERATIONS
9. QUALITY ASSURANCE
10. FINANCIAL ASSURANCE
11. LICENSE CONDITIONS

EACH CHAPTER OF THE SRP'S ARE DIVIDED INTO THE FOLLOWING SECTIONS:

1. RESPONSIBILITY FOR REVIEW
2. AREAS OF REVIEW
3. REVIEW PROCEDURES
4. ACCEPTANCE CRITERIA
5. EVALUATION FINDINGS
6. IMPLEMENTATION
7. REFERENCES

JANUARY 1988

- REVISIONS TO NUREG 1199 AND 1200
  (INITIAL DOCUMENTS PROVIDED DIRECTION ON SLB)

  - PROVIDING ADDITIONAL GUIDANCE ON ALTERNATIVE DISPOSAL METHODS; LLRWPAA SEC. 8(B)

//

EXAMPLE OF

APPLICATION OF STANDARD FORMAT AND CONTENT AND

STANDARD REVIEW PLAN

6.3.1 LONG-TERM STABILITY - SURFACE DRAINAGE AND EROSION PROTECTION

A. PURPOSE OF INFORMATION AND ANALYSES

10 CFR 61.23(E) 10 CFR 61.44	REQUIRE REASONABLE ASSURANCE OF LONG-TERM STABILITY WITHOUT NEED FOR ONGOING ACTIVE MAINTENANCE

B. INFORMATION AND ANALYSES NEEDED IN SAR

- HYDROLOGIC DESCRIPTION - TOPOGRAPHIC AND DRAINAGE FEATURES
- FLOODING ANALYSES
- EROSION PROTECTION DESIGNS

6.3.1 SURFACE DRAINAGE AND EROSION PROTECTION

1. REVIEW RESPONSIBILITY - GEOTECHNICAL BRANCH (WMGT)
   DIVISION OF WASTE MANAGEMENT

2. AREAS OF REVIEW

   2.1 HYDROLOGIC DESCRIPTION
   2.2 FLOODING DETERMINATIONS
   2.3 DAM FAILURES
   2.4 EROSION PROTECTION DESIGN

3. REVIEW PROCEDURES

   3.1 ACCEPTANCE REVIEW

   - IS INFORMATION ADEQUATE AND COMPLETE?
   - IS INFORMATION REQUESTED IN SF&C PROVIDED?

   3.2 SAFETY EVALUATION REVIEW

   - ARE DESIGN ASSUMPTIONS AND TECHNICAL ANALYSES CORRECT AND/OR CONSERVATIVE?
   - ARE REGULATORY REQUIREMENTS MET?

4. ACCEPTANCE CRITERIA

4.1 REGULATORY REQUIREMENTS

10 CFR 61.11
10 CFR 61.12 — REQUIRE SUBMITTAL OF INFORMATION AND TECHNICAL ANALYSES
10 CFR 61.13

10 CFR 61.23(E) — REQUIRE REASONABLE ASSURANCE OF LONG-TERM STABILITY
10 CFR 61.44 — WITHOUT NEED FOR ONGOING ACTIVE MAINTENANCE

4.2 REGULATORY GUIDANCE

- DRAFT REGULATORY GUIDE, "DESIGN OF LONG-TERM EROSION PROTECTION COVERS FOR RECLAMATION OF URANIUM MILL SITES" (CURRENTLY UNDER REVISION)

4.3 REGULATORY EVALUATION CRITERIA

4.3.1 HYDROLOGIC DESCRIPTION

ACCEPTABLE IF:

(1) INFORMATION IS ADEQUATE TO PERFORM INDEPENDENT ANALYSES
(2) INFORMATION REQUESTED IN SF&C IS PROVIDED

4.3.2/4.3.3 FLOODING DETERMINATIONS AND DAM FAILURES

ACCEPTABLE IF:

(1) ANALYSES AND ASSUMPTIONS ARE REASONABLE, CORRECT, AND/OR CONSERVATIVE
(2) SITE AND PROTECTIVE FEATURES CAN WITHSTAND PMP/PMF

4.3.4 EROSION PROTECTION DESIGNS

ACCEPTABLE IF:

(1) ANALYSES AND ASSUMPTIONS ARE CORRECT AND/OR CONSERVATIVE
(2) EROSION PROTECTION IS DESIGNED FOR PMP/PMF
(3) EROSION PROTECTION IS DESIGNED IN ACCORDANCE WITH COMMON ENGINEERING PRACTICE
(4) EROSION PROTECTION IS DURABLE FOR LONG-TIME PERIODS

5. EVALUATION FINDINGS

- WILL STATE THE REGULATORY REQUIREMENTS THAT HAVE BEEN MET
- WILL DISCUSS STAFF ANALYSES AND REVIEW PROCEDURES LEADING TO CONCLUSIONS

ADVANCE NOTICE OF PROPOSED RULEMAKING (ANPR)

DEFINITION OF "HIGH-LEVEL RADIOACTIVE WASTE"

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MARCH 6, 1987

PURPOSE

REVISE THE DEFINITION OF "HIGH-LEVEL RADIOACTIVE WASTE" IN 10 CFR PART 60 TO CONFORM TO THE DEFINITION IN THE NUCLEAR WASTE POLICY ACT OF 1982

NUCLEAR WASTE POLICY ACT OF 1982

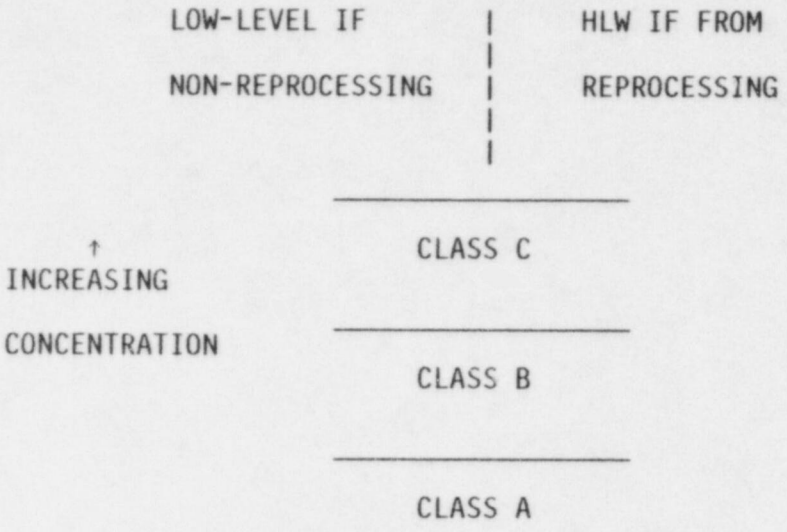
"HIGH-LEVEL RADIOACTIVE WASTE" MEANS:

(A) THE HIGHLY RADIOACTIVE MATERIAL RESULTING FROM THE REPROCESSING OF SPENT NUCLEAR FUEL, INCLUDING LIQUID WASTE PRODUCED DIRECTLY IN REPROCESSING AND ANY SOLID MATERIAL DERIVED FROM SUCH LIQUID WASTE THAT CONTAINS FISSION PRODUCTS IN SUFFICIENT CONCENTRATIONS: AND

(B) OTHER HIGHLY RADIOACTIVE MATERIAL THAT THE COMMISSION, CONSISTENT WITH EXISTING LAW, DETERMINES BY RULE REQUIRES PERMANENT ISOLATION.

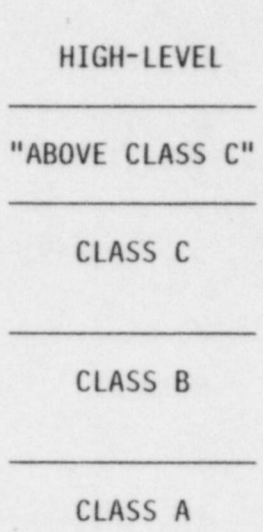
A REVISED DEFINITION WOULD ACCOMPLISH:

1) MAKE THE DEFINITION RISK-BASED RATHER THAN SOURCE-BASED.
2) IDENTIFY THE NEED FOR WASTE GENERATORS TO ENTER INTO CONTRACTS FOR TRANSFER OF HLW TO DOE.
3) ALLOW DOE TO PLAN FOR RECEIPT AND DISPOSAL OF WASTES.
4) DETERMINE WHICH OF THE NRC'S REGULATORY REQUIREMENTS APPLY TO SPECIFIC TYPES OF WASTES.



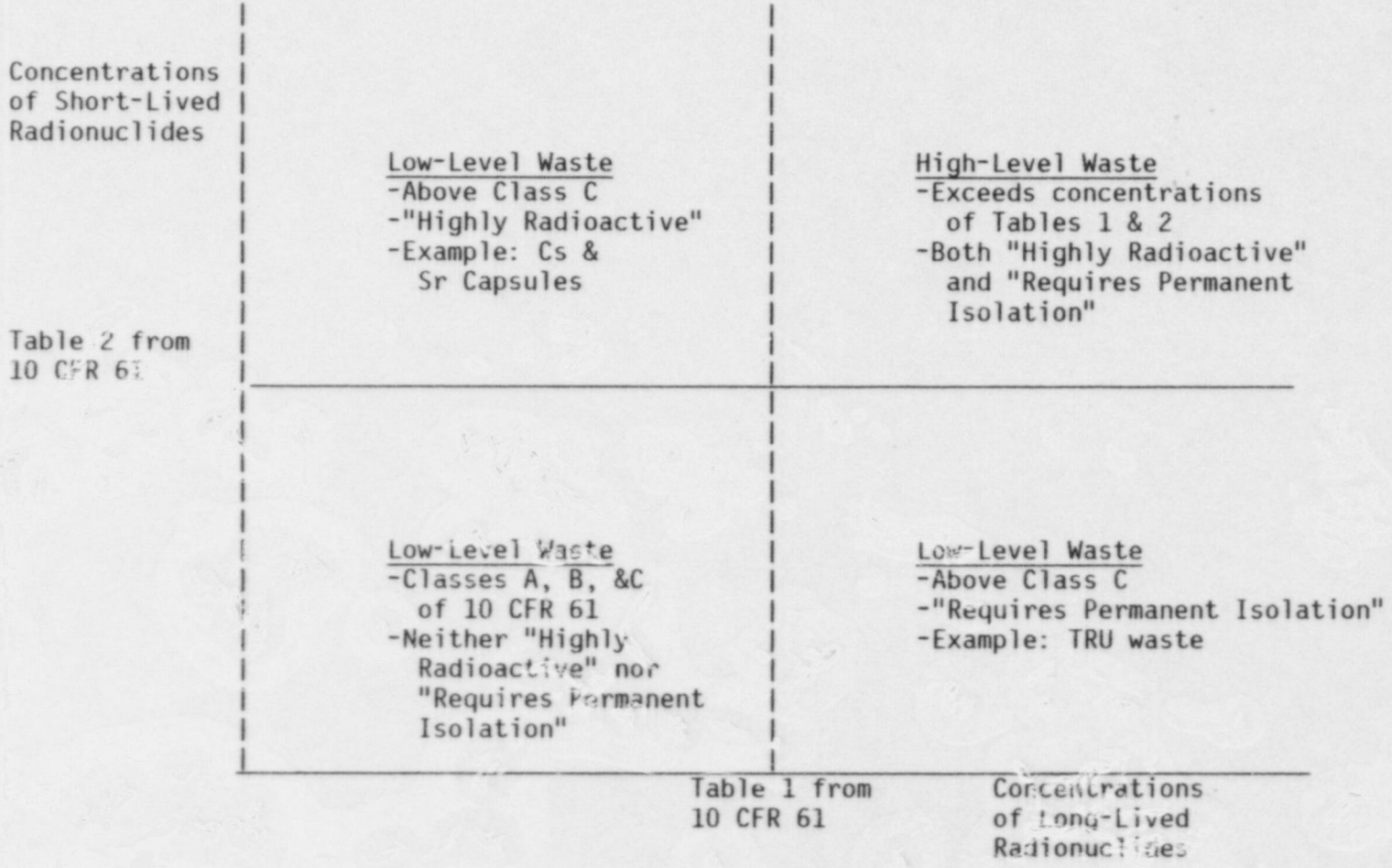
CURRENT WASTE CLASSIFICATIONS.

(WASTES OTHER THAN SPENT FUEL)

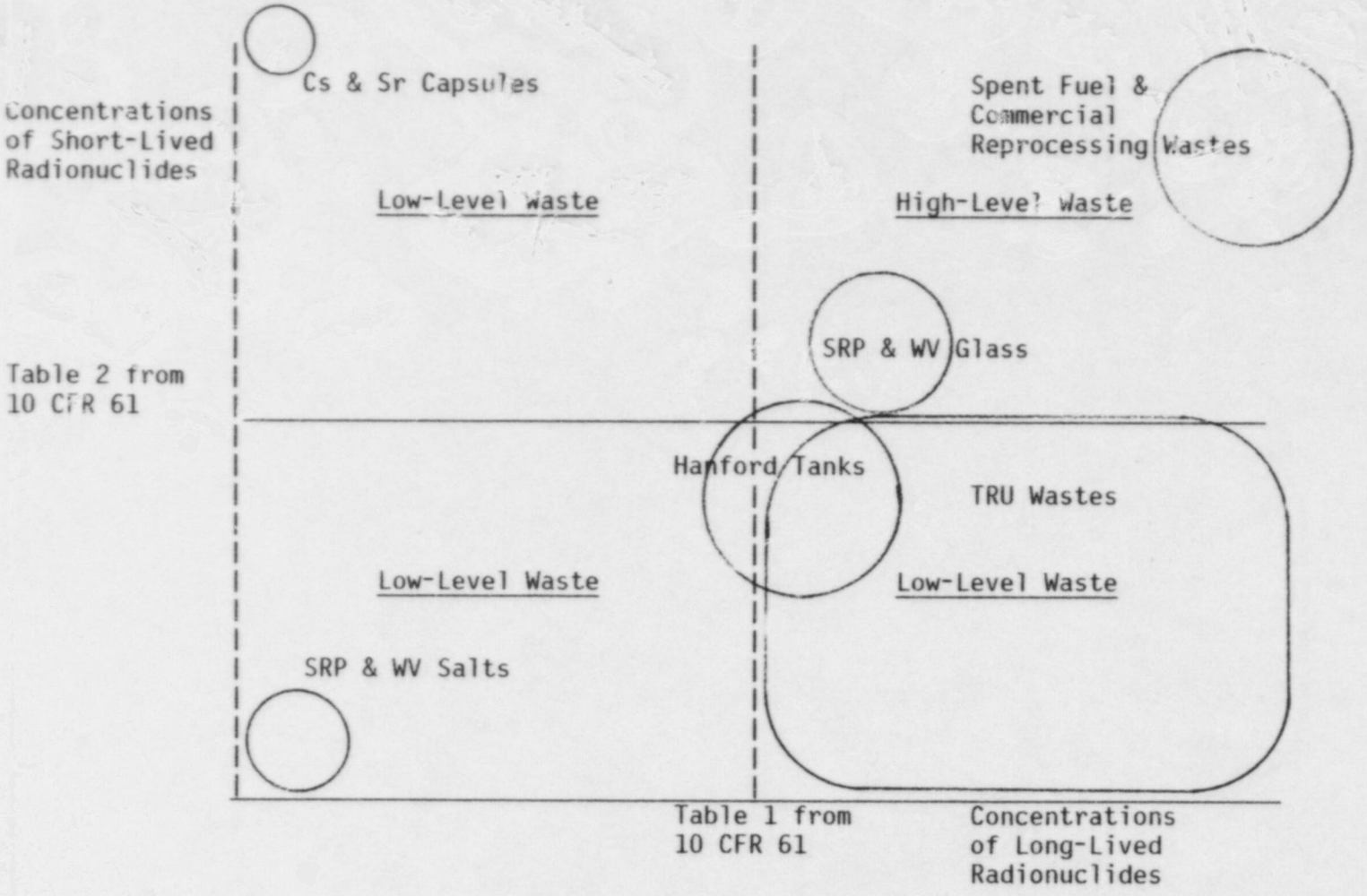


DESIRED WASTE CLASSIFICATIONS.

(NOTE: NO REVISIONS TO CLASSES A, B, & C)



CONCEPTUAL DEFINITION OF HLW INCLUDED IN ANPR.



EXAMPLES OF WASTE CLASSIFICATIONS WITH CONCEPTUAL DEFINITION OF ANPR

APPLICABILITY OF REVISED DEFINITION

1) WOULD APPLY TO COMMERCIALLY-GENERATED WASTES FROM SOURCES OTHER THAN REPROCESSING.
2) MIGHT APPLY TO REPROCESSING WASTES. RETENTION OF A SOURCE-BASED CLASSIFICATION FOR REPROCESSING WASTES MIGHT BE PREFERABLE BECAUSE OF ENERGY REORGANIZATION ACT PROVISIONS FOR LICENSING WASTE DISPOSAL.
3) WOULD NOT APPLY TO WASTES DISPOSED OF IN DEFENSE-ONLY FACILITIES.