ORIGINAL ACRS T-1823

OFFICIAL TRANSCRIPT OF PROCEEDINGS

Agency: Nuclear Regulatory Commission

Title: Advisory Committee on Reactor Safeguards
Subcommittee Meeting on the Improved
Light Water Reactors

Docket No.

LOCATION: Bethesda, Maryland

DATE: Tuesday, December 4, 1990 PAGES: 1 - 153

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UNITED STATES NUCLEAR REGULATORY COMMISSION'S

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

DATE: December 4, 1990

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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

SUBCOMMITTEE MEETING ON THE IMPROVED

LIGHT WATER REACTORS

Nuclear Regulatory Commission

Conference Room P-110

7920 Norfolk Avenue

Bethesda, Maryland

Tuesday, December 4, 1990

The above-entitled proceedings commenced at 8:30 o'clock a.m., pursuant to notice, Charles Wylie, Subcommittee Chairman, presiding.

PRESENT FOR THE SUBCOMMITTEE:

C. Wylie, ACRS Subcommittee Chairman

J. Carroll, ACRS Member

C. Michelson, ACRS Member

D. Ward, ACRS Member

E. Wilkins, ACRS Member

APPEARANCES [continued]:

M. El-Zeftawy, Cognizant ACRS Staff Member
M. Virgilio, NRC/NRR
G. Imbro, NRC/NRR
R. Nease, NRC/NRR
W. Rasin, NUMARC
R. Ng, NUMARC
M. Rowden, NUMARC

P R O C E E D I N G S

[8:30 a.m.]

MR. WYLIE: The meeting will now come to order. This is a meeting of the Advisory Committee on Reactor Safeguards Subcommittee on Improved Light Water Reactors. I am Charlie Wylie, Subcommittee Chairman. The ACRS Members in attendance are Mr. Jay Carroll on my right, Mr. Carlyle Michelson, Dave Ward, and Ernest Wilkins.

The purpose of this meeting is to review the NRC staff SECY-90-377 regarding the level of design detail under 10 CFR Part 52. Dr. El-Zeftawy is the cognizant ACRS Staff Member for this meeting.

The rules for participation in today's meeting have been announced as part of the notice of this meeting previously published in the Federal Register on November 20, 1990. A transcript of the meeting is being kept and will be made available as stated in the Federal Register Notice.

It is requested that each speaker first identify himself or herself and speak with sufficient clarity and volume so that he or she can be readily heard.

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

For myself, I believe that the staff has done a commendable job in identifying what it needs for its safety review and design certification of plants. I note much of

Appendix B level of design completion is stamped "preliminary" and I am sure that my colleagues will have some questions regarding Appendix B. I have a few of my own.

I note a great reliance will probably be placed on the reg guide which will follow, which will go into much more details regarding procedures and information that's going to be required and how the applicant is to submit those. Also, regarding the question of changes to Tier 1 and Tier 2 information after certification, I note that the staff feels that even changes to Tier 2, material may open up the certification to hearings on the changes.

Initially, I think, NUMARC disagreed with that and I think perhaps the staff and NUMARC may expand on that subject in their presentations. We have indicated that we would write a letter at the ACRS -- the ACRS would prepare a letter on this subject at this upcoming ACRS meeting. I'll ask the members here to consider what they would like the Full Committee to hear from the staff and NUMARC on Thursday, and also any input that you have that you would like to be considered in a letter as we proceed through today's activities.

With that, I will ask for comments from any of our Subcommittee members before proceeding.

MR. MICHELSON: I've got a question. When is this

regulatory guide going to come out? It was never real clear what the schedule might be.

MR. VIRGILIO: At this point, as we'll discuss in our recommendations, we've recommended to the Commission a course of action that will include the reg guide. Once we get approval to go forward with that reg guide, I think the answer is going to depend, but we would estimate it would be about a year's worth of effort.

MR. MICHELSON: I was just trying to kind of fit it in to the ABWR schedule.

MR. VIRGILIO: We would envision that it would be a parallel effort while we're doing our review of the ABWR.

MR. MICHELSON: Well, how do we know what is supposed to be in the ABWR SAR? You won't get it just from reading 377.

MR. VIRGILIO: We'll discuss that in the presentation today, but the SAR, the format and content of the SAR is driven by our standard format and content and the standard review plan.

MR. MICHELSON: Let me say it differently, then. How do I know what body of information is supposed to be available for review for the ABWR? I won't get that alone from reading SECY-377.

MR. VIRGILIO: We'll discuss that in the presentation.

MR. MICHELSON: Okay.

MR. WYLIE: Any other comments or questions?

[No response.]

MR. WYLIE: If not, let's proceed.

MR. CARROLL: I guess Carl jogged something in my memory from reading this. Are you going to discuss what's going on on 50-59? It sounds like we've got an Alfonse & Gaston sort of routine going on here between the staff and NUMARC. Or are you too young to know who Alfonse & Gaston are?

[Laughter.]

MR. VIRGILIO: Thank you for the compliment. Any time anybody tells me I'm too young for anything now, it brings a smile to my face. I think we can talk a little bit about 50-59, if you'd like. It wasn't part of the prepared presentation.

MR. MICHELSON: But it is an integral part of this whole plan.

MR. VIRGILIO: Yes, it is.

[Slide.]

MR. VIRGILIO: Good morning. It's a pleasure to be here again. My name is Marty Virgilio. With me today I have Gene Imbro who will be explaining and providing a little bit more information with regard to the appendix to the SECY paper 90-377. Rebecca Nease is also here with me

to help respond to some questions. Rebecca was extremely instrumental in helping develop the SECY paper.

[Slide.]

MR. VIRGILIO: By way of background, in May 1989, the Commission promulgated the Part 52, reforming the licensing process through early resolution of safety issues and through promoting safety through standardization. In the spring of 1990, working with the Commission to resolve process and scheduling questions and specific technical issues, the staff raised a policy issue on level of detail and the degree of standardization achievable.

In July 1990, the Commission was presented with a paper by the staff, SECY-90-241, which offered options for consideration with regard to level of detail and standardization achievable. In response to that SECY-90-241, the staff received an SRM and that included a number of questions, seven questions specifically that drove the development of 90-377, the SECY paper that we're going to present to you this morning.

SECY-90-377 responds to the questions that we were asked by the Commission and also provides a recommendation with regard to standardization policy issues. In short, this recommendation proposes that the design be developed to a level of maturity that will support decisions on safety matters and systematically achieve a level of

standardization.

In addition, the staff proposes a set of controls that will permit changes needed to construct and operate the facility without compromising the regulatory reforms included in Part 52.

In today's presentation, we'll discuss the graded approach to design finality, the contents of the application and certification, and the changed process for the material that we're going to require be available.

[Slide.]

MR. VIRGILIO: The next slide provides additional background. In SECY-90-241, our original paper on this issue, we discussed a number of concepts and features of the rule, and they stayed the same in 377, just so we have a common point of departure. The contents of the application still need to be sufficient to support safety judgments, allow the preparation, construction and installation specifications, and procurement specifications without recourse on the part of the applicants to a lot of design engineering work.

It also needs to be sufficient to allow us to judge the acceptability of the ITAACs. Tier 1 and Tier 2 are the formatting of the application into certified and non-certified portions of the design. What is certified is what we are calling Tier 1. It's the solidification of key

features of the design and design requirements via rulemaking.

Material available for audit is information normally found in procurement and construction and installation specifications. Levels 1, 2, 3, and 4 were addressed in SECY-90-241. By varying the content of the application, the certification, and the material available for audit, we demonstrated by example using the HVAC system four different levels of standardization that could be achieved.

[Slide.]

MR. VIRGILIO: If you go to the next slide, what I've provided are the definitions that were contained in 90-241 for each of the four levels. Again using the example of the HVAC system, we were able to demonstrate by example each of these four levels. In general, following the staff's proposal contained in 90-377 for a graded approach based on safety, you'll find a resulting level of detail of Level 2 or greater for the more safety-significant design features and lesser degrees of standardization for other design features, all commensurate with their safety significance and their importance to safety.

[Slide.]

MR. VIRGILIO: On the next slide, we now get into the specifics of SECY-90-377. Design detail will reside in

three bodies of information; the information that's submitted and certified, the material that's submitted and contained in the application but not certified, and the material that's available for audit.

The FSAR we envision to be an FSAR consistent with what we've had in recent licensing reviews, the 1985 to 1990 timeframe, minus the as-built and site-specific information. With regard to material available for audit, this is material that's normally contained in procurement, construction, and installation specifications.

MR. MICHELSON: Excuse me. You're talking down there about organizing the two parts or tiers. Do you mean the FSAR is organized into two parts?

MR. VIRGILIO: The application.

MR. MICHELSON: Just the application. The FSAR remains as a single body and certain portions of that will be identified for certification purposes?

MR. VIRGILIO: I'm not sure exactly how we'll do the mechanics right now, but the application is the FSAR. In some manner or form, we're going to have to identify specifically those features that are Tier 1 features and those features that are the remainder.

MR. MICHELSON: You haven't mentioned here, of course, that the staff writes an SER. To what extent does that enter into the finality considerations?

MR. VIRGILIO: In my mind, the SER will, in fact, describe and detail what is, in fact, resolved through the review of the application and certification.

MR. MICHELSON: Where resolutions have been reached, is that now Tier 1 information or Tier 2 information?

MR. VIRGILIO: I would be a part of both. What we propose to include in our SER, as we do our review and document it, would be the resolution of all issues, be they Tier 1 and Tier 2 issues. I almost envision, and we haven't worked through the mechanics of this yet, that the staff's safety evaluation will endorse the SSAR, just in the similar manner, the way we did it during the licensing under Part 50.

MR. MICHELSON: My concern, of course, is to what extent do things that you endorse now be subject to change and under what circumstances can they be changed and so forth, and that's where Tier 1 and Tier 2 comes in.

MR. VIRGILIO: We will get to that in terms of the changed process, if you can just wait a second.

MR. WARD: Marty, would you go back a minute? I'm trying to see how the Tier 1 and Tier 2 split with your three groups of --

MR. VIRGILIO: Okay. I will go back over that. Tier 1, in my mind, is the top level design criteria and key

design features that are included in the application.

MR. WARD: That are certified?

MR. VIRGILIO: Yes, and are certified by rulemaking. Tier 2 would include the remainder, the narrative discussion, the demonstration that those top level criteria have, in fact, been carried forward in the design process. It would be the narrative in your FSAR, what they call SSAR for this process.

MR. WARD: So it's non-certified material in the FSAR.

MR. VIRGILIO: That's correct.

MR. WARD: And also all material that's available for audit?

MR. VIRGILIO: Now, all material available for audit is that third body of information.

MR. WARD: That's not Tier 2.

MR. VIRGILIO: That is not Tier 2, unless we need it to form our safety judgment. We'll conduct audits and as we complete our audits we'll look back and make a judgment. If we needed that information to support our safety determination, it will be brought forward and docketed and either included in the application or referenced in the application.

MR. WILKINS: In that case, it becomes Tier 2.

MR. VIRGILIO: Yes. It becomes Tier 2 then if

it's necessary for our safety judgment.

MR. MICHELSON: Is the SER the mechanism by which you bring things forward and identify what tiers they're to be in?

MR. VIRGILIO: I would envision the Q&A process, like we did under the Part 50, would be we would ask to have information submitted, that information submitted to become part of the SSAR and, therefore, part of the application.

MR. MICHELSON: You're saying that anything that you think needs to be in Tier 2 or Tier 1 will have to be in the FSAR.

MR. VIRGILIO: Yes. If it's needed for our safety judgment, it has to be in the public domain.

MR. MICHELSON: If there were questions and answers asked and exchanged which you decide don't belong in Tier 1 or Tier 2, they remain on the docket as questions and answers, but do not have any finality to them.

MR. VIRGILIO: That's true. Or if we go out into the field and conduct an audit and we find that that information really did not support the safety judgment, that we had adequate information in Tier 1 and Tier 2 and the audit itself provided no more information, no more findings to support our safety conclusion, then that information would remain in the vendor's shop, would not be drawn back in as part of the application. It would remain outside of

what we use to form our safety judgment and outside of what we would grant issue finality to.

MR. MICHELSON: So unless it's in the FSAR, then it doesn't have a Tier 1 or Tier 2 connotation.

MR. VIRGILIO: That's correct.

MR. CARROLL: But there can be material in the FSAR that is neither, is that right?

MR. VIRGILIO: Pardon?

MR. CARROLL: The FSAR can contain material that is neither Tier 1 or Tier 2.

MR. VIRGILIO: The FSAR, being part of the application, will, in fact, be Tier 2. Now, there may be information in the FSAR that we didn't need to make our safety judgment, but it's there and we may exclude it by our SER, but I would doubt that. My expectations would be that we would review the entire SSAR and make safety findings and issue finality would follow from those safety findings.

MR. MICHELSON: I guess it's conceivable you might even ask certain parts be removed from the SSAR to reduce confusion.

MR. VIRGILIO: That's conceivable. It certainly is. Let me just backtrack a little to make sure we've covered all the points. In 90-377, we propose that applicants develop this third body of information, the material available for audit, in a sufficient detail to

support audits of all safety design features to a depth commensurate with their safety significance.

The staff is only going to audit a portion of the information developed and we will only use a subset of what we audit to form our safety judgments. The remainder serves to foster standardization. Audits will supplement the staff review of the application in two ways. First, audits will provide additional information related to specific design features. It will help us gain a better understanding of the design itself.

Second, audits will help us understand the process by which the Tier 1 and Tier 2 commitments are carried forward into the design itself. So there are two reasons why we're doing these audits. One, to gather a better understanding of the design and, two, a better understanding of the process by which the design is translated into the detailed design products.

MR. MICHELSON: Let me go back and ask again for a moment. On the FSAR, typically in the past when reviewing an FSAR, certain documents are submitted, such as perhaps a pipe break study or a fire hazard study or things of this sort. Those don't appear as --- if I picked up an FSAR, I wouldn't find them. They're separate documents. They're on the docket, but not what I would call the FSAR, per se.

In this case, how are such documents going to be

treated from the viewpoint of the whole discussion today?

MR. VIRGILIO: I would envision that they would either be included in appendix to the FSAR or referenced.

MR. MICHELSON: So you would just retitle these documents Appendix so-and-so and then those appendices are treated just like the FSAR.

MR. VIRGILIO: Yes. Or another way to do it might be to include it as a response. One way we could do it, too, would be to reference this information.

MR. MICHELSON: But the Q&As are not in this Tier 1/Tier 2 thing unless they're brought into it. If they're brought into it, I understood from an earlier response that they become a part of the FSAR. Now, clearly, a fire hazard study is not just a trivial thing. So I assume it's a part of the FSAR.

MR. VIRGILIO: Yes.

MR. MICHELSON: And will be treated in all respects that way, as will pipe break studies and certain seismic studies and so forth.

MR. VIRGILIO: Yes. If it's needed for us to make our safety judgment, it has to be a part of the application.

MR. MICHELSON: I really am thinking of those called for in the standard review plan. There are a number of analyses required by the standard review plan to be reviewed by the reviewer, but they're not said to be a part

of the FSAR necessarily. I assume if they're in the standard review plan, then they will be a part of the FSAR?

MR. VIRGILIO: Let me say it another way. If we need it to make our safety judgment, it will be part of the application.

MR. MICHELSON: Presumably that's why it's in the standard review plan. That's the reason they're there; because you do need them, a reviewer has to look at them, and I would think that they'd have to be now a part of the FSAR, although in the past they haven't been called FSAR, per se.

MR. VIRGILIO: Because of the issue finality portion of Part 52 and that goal, in order to gain issue finality, that information has to be visible. It has to be litigated, both what's in Tier 1 and what's in Tier 2, and the content of both tiers go through the process. Through that process, we wind up with finality. So it may be a little different than the traditional review in that regard. If we're looking for finality, this information has to be publicly available, it has to be included as part of the application.

MR. WARD: Marty, would you clarify for me the standing of material that's merely referenced in the FSAR? Might some of that material be Tier 1 or Tier 2 or does it have to be really part of the FSAR as an appendix or

something?

MR. VIRGILIO: I could envision that you could reference something in the FSAR, but it had to be publicly available, it had to be part of the docket, if you would. In Part 52, it talks about the application. It really doesn't talk about the docket. So I would see that this material had to be part of the application. Now, whether it became part of the application by reference, it would still have to be publicly available. It would still have to be part of the docket.

So I'd see this as sort of semantics, as whether it's in the docket and referenced as part of the application, but publicly available in either case, or part of the application itself. It all has to be visible. It all has to be available if we're going to grant issue finality and consider those issues resolved.

MR. WARD: How is one going to know what in the FSAR -- this is going back to an earlier question -- what in the FSAR, including the references, is Tier 1 and what is Tier 2? I guess you said you're going to have to work that out.

MR. VIRGILIO: Yes. I envision that the FSAR itself might have to be reformatted in such a way that it specifically calls out this is Tier 1 information and the remainder is, by default, Tier 2 information.

MR. WARD: So a reference would be cited in that way?

MR. VIRGILIO: Yes. We could do it that way. I think that would be acceptable. But the reference couldn't be a reference to material that was held in the vendor's shop.

MR. WARD: I understand.

MR. VIRGILIO: It would have to be material that was on the docket and publicly available.

MR. WARD: Thank you.

MR. VIRGILIO: I think that covers that slight.

[Slide.]

MR. VIRGILIO: On the next slide, what I've done here is demonstrated the graded approach based on safety. When viewed collectively, the three bodies of information will provide the level of detail shown on this slide. What we envision is greater than Level 2 for certain Nuclear Island features. For example, we're talking about the reactor vessel and major primary coolant system components, Level 2 for key Nuclear Island features. ECCS and essential support systems would be Level 2. Level 2 for key Turbine Island features. For example, the turbine control system, we would envision, would be at that level.

Then we would see Level 4 at certification and Level 2 at the combined operating license stage for those

site-specific features for which information is not currently available. This is a graded approach. Greater than Level 2, down through Level 2, to Level 3 in part.

MR. WYLIE: I was just going to ask in the greater than Level 2, is it your intent then in the reg guide to identify for all areas what that means?

MR. VIRGILIO: The intent is on a system-by-system basis to provide information that would show at a glance what would be required to be developed and available for audit.

MR. WYLIE: What I inferred when I read this was that some of those features would be Level 1 and others would be Level 2.

MR. VIRGILIO: No. We would get better than Level 2 on some features, but what we found is that to get Level 1 is neither feasible nor practical. You would almost need custom-written procurement specifications and there would be commercial implications. You would possibly single out all but one vendor to be able to supply that information or you would be forcing people to build to custom specifications, which we didn't feel we needed for our safety judgment and we thought it was beyond what the Commission had envisioned in promulgating Part 52 and its desire to further standardization.

MR. WYLIE: So Level 2, then, would be defined in

the reg guide to the depth or detail that you want for that particular system.

MR. VIRGILIO: Yes.

MR. MICHELSON: This question of site-specific features bothers me. I thought I knew what a site-specific feature was. Clearly, for instance, I can't design an intake structure for water until I know where the water is and so forth. But I sense in looking through your document, and I don't think you did it on purpose, but you seem to be excluding all emergency cooling water as a site-specific feature. You're getting that as an example.

So I'm concerned. Does that mean that you're not going to design emergency cooling water piping within the reactor building and so forth? Clearly that is not site-specific. It's only site-specific out at the intake structure, but it certainly isn't site-specific back at the Nuclear Island.

MR. VIRGILIO: I agree.

MR. MICHELSON: Now, the pumping will be site-specific, but the piping in the Island, certainly you can design fully and review it fully before you ever site the thing on a particular water body.

MR. VIRGILIO: Yes. We agree with that. When we refer to site-specific, we were specifically talking about the intake structure and possibly the piping connecting the

intake structure to the --

MR. MICHELSON: I went to your appendix, though I didn't find these water systems among some things that you're going to do at the Design Level 2 and so forth. You cited them as site-specific.

MR. IMBRO: I think the portions of those systems that reside in the intake structure or in the yard, so to speak, are site-specific. There are portions of those systems that reside in the aux building or in the reactor building.

MR. MICHELSON: Or the control building.

MR. IMBRO: Or the control building; are, then, the Level 2.

MR. MICHELSON: They are not that specific.

MR. IMBRO: They're not that specific.

MR. CARROLL: You've got to be careful there because you don't know what materials to use if you have everything from a fresh water plant to a salt water plant. You may know where you want to put the piping, but you probably don't know to the extent you can.

MR. MICHELSON: I think what I'm saying, you're site-specific no further into the system than you have to be. Clearly, if you're going to use salt water, you've got to be up through the first heat exchanger site-specific for that purpose. But this doesn't mean that you just ignore

all the emergency and service water and so forth.

MR. IMBRO: No.

MR. MICHELSON: Simply because it's called site-specific. That wasn't your intent, then.

MR. IMBRO: No.

MR. MICHELSON: We'll get into the details later as to where that came up.

MR. WYLIE: But you are going to require design criteria for those systems, are you not?

MR. IMBRO: Yes.

MR. VIRGILIO: Consistent with 5247(a)(2). There are certain things that have to be provided at the time that they submit the application.

MR. WILKINS: The location of the piping, it seems to me, inside the buildings, even though you couldn't specify the material, the locations --

MR. IMBRO: Yes. In the buildings, the location of the piping would be pretty closely specified. Of course, you don't the relationship between the construction of the buildings, so you don't know what the hard piping is going to look like. You might have a cooling tower.

MR. MICHELSON: Service water is in the same category, the non-essential service water, which you can have in the Nuclear Island for various purposes. It's not considered site-specific.

MR. IMBRO: That is true.

MR. CARROLL: Just a nomenclature comment. I got criticized by my colleagues the other day for calling something between Level 2 and Level 1 two-plus. You've improved on it, except you've got the same problem; greater than Level 2 theoretically is something approaching Level 3.

MR. WILKINS: I would have called less-Level 2. On the other hand --

[Laughter.]

MR. WILKINS: The semantics, the psychology is much better this way. Hell with the mathematics.

MR. WYLIE: Wait a minute. Now you've confused me.

[Laughter.]

MR. WYLIE: I think that greater than Level 2, to me, means somewhere between 1 and 2.

MR. VIRGILIO: Yes.

MR. WILKINS: That's what a mathematician would say. That's why I say to hell with the mathematics.

[Slide.]

MR. VIRGILIO: If we move on to the next slide, we'll shift from talking about the level of detail to the flexibility provided to make changes. We envision that key elements of the design and key design criteria will be solidified through the rulemaking process and not be changed

without prior NRC approval. This is the Tier 1 information. What I've just shown basically are the processes by which we would follow to make changes to the Tier 1 information.

MR. WILKINS: Let me ask sort of a quasi-legal question. If an applicant requests either an exemption or a waiver, does the process of granting the exemption or the waiver onerable or subject to challenge in the same way that rulemaking to amend certification is challengeable?

MR. VIRGILIO: Yes. Yes. The answer is yes. It's the same process as we go through today for an exemption to the rules for an operating license.

MR. MICHELSON: Do you give it public notice and do you have the opportunity for the public to have a hearing, if they wish, and that sort of thing?

MR. VIRGILIO: Yes. 52.63 puts you back into 50.12, which is the regulation we follow today for granting an exemption to the regulations for any operating reactor, plus it imposes a standardization criteria and it says that the Commission shall evaluate the impact on standardization of any changes.

But basically you're following the 50.12 process we use on a day-to-day basis to handle operating reactor exemption requests, and that goes through the environmental assessment and notice and comment process.

[Slide.]

MR. VIRGILIO: Let's move on and talk about the flexibility provided for the information not included in the certification. This is the Tier 2 information. Because this Tier 2 information forms the basis for the finding that the more general features included in Tier 1 provide adequate safety and the basis for the issues resolved through the certification process, the staff is proposing conditions to govern changes in the non-certified portion of design addressed in the application.

These controls change with key milestones in the process, and those are the three bullets that I've shown on this slide. Between the design certification and the COL, what we propose to use for Tier 2 is the same process that we are going to use for Tier 1; that is, the rulemaking exemption, waiver or amendment.

Between the COL and the authorization to operate, what we propose to do is use provisions paralleling those of 50.59. Following authorization to operate, we propose that Section 50.59 govern changes to the Tier 2 information. This is key in that following the issuance of the COL, this proposal provides ease and flexibility needed to construct the facility and to accommodate technological advances while still preserving the safety and the licensing reforms of Part 52.

This approach does provide an opportunity for an

erosion of standardization, but we believe this erosion is mitigated by four factors. First, you still have to comply with Tier 1. Second, there is a vulnerability for relitigation of issues changed. Third involves the cost of redesign, and we believe that will be substantial and a disincentive to changes. Fourth, industry now is developing controls to preserve standardization in addition to these we've discussed through the design process and through the life of the facility.

MR. CARROLL: What does that last statement mean?

MR. VIRGILIO: Right now we have some insight in what industry is developing. NPOC has developed a strategic plan for nuclear power, and in that strategic plan they have outlined a number of proposals that they are going to be following, developing guidelines for standardization through the operations phase.

I don't know and the staff doesn't know at this point much more than that. NUMARC will be up this afternoon and maybe they can provide more insights on where they're going.

[Slide.]

MR. VIRGILIO: With regard to the flexibility for that information contained in the third body, what we've provided here in the bullets are those controls that will govern the changes. 10 CFR Part 50, Appendix B, will ensure

that the changes are done in a manner that preserves both safety and quality. Of course, changes to this third body of information, they'll have to comply with Tier 1 and Tier 2 or go through the process for changes that we just discussed for Tier 1 and Tier 2.

MR. MICHELSON: Now, in a design process, of course, it's an evolutionary thing, it's ever-changing until you reach final design and even then it's changing for a while. At the point that you do your audit, they may be only partway through the design. At that point, after you have done your audit, does that mean any changes thereafter have to be documented with a 50.59 type documentation?

MR. VIRGILIO: No. We're not proposing that 50.59 apply to this third body of information.

MR. MICHELSON: They can just change it any way they wish.

MR. VIRGILIO: Well, no. They're limited by at least these three bullets that we've shown you here. They have to comply with Part 50, Appendix B. They have to comply with Tier 1 and Tier 2.

MR. MICHELSON: Hopefully the whole process is under that, if it's safety-related components. Tier 1 and Tier 2 doesn't apply because -- okay. You comply with anything that Tier 1 and Tier 2 might have specified about it.

MR. VIRGILIO: Right. But this third body of information is just the translation of Tier 1 and Tier 2.

MR. MICHELSON: So it can be changed as the vendor wishes, so long as he doesn't violate any Tier 1 or Tier 2 commitments and as long as he's got a QA program to govern the changes.

MR. VIRGILIO: Right. Now, you've also got the cost of design, which is also going to be a significant factor.

MR. MICHELSON: Just as a practical matter, the design is still going on. After you've done your audit, it's still going on for some time. I was just trying to find out if there was something special because you've done your audit, does that somehow freeze something.

Now, if the staff looks at something at a certain point in time and does their audit to look at it, and then at a later point in time it's changed again, to what extent do the vendors have to say, man, what you looked out we threw out, we're doing something else now.

MR. VIRGILIO: We would expect them to keep records of their changes consistent with Appendix B.

MR. MICHELSON: But it's your responsibility to know that what you've looked at and thought was great is no longer existing.

MR. VIRGILIO: If we looked at it and thought it

was great and furthermore needed it to form our safety judgment, that information would be captured in Tier 2 and a different process would apply.

MR. MICHELSON: Once it's captured, partway through the design process and when you did your audit, you captured it and you identified it somehow as a part of Tier 2, thereafter then does 50.59 pertain?

MR. VIRGILIO: 50.59 would pertain in the way I showed on the last slide in the graded approach, depending on what milestone you were at at the time that you --

MR. MICHELSON: Let me ask the question differently then. If you capture it partway through the design process and say it's a part of Tier 2, how are you informed that it's changed thereafter?

MR. VIRGILIO: It has to be by prior NRC approval. If, during the process, we're not at the COL milestone yet, we do an audit and find some information and find that information not only valuable but necessary for us to make our safety judgment, it becomes part of Tier 2 and thereafter, until we get to the COL and beyond, can only be changed with prior NRC approval.

MR. MICHELSON: The designer then is now committed to tell you of any changes he's made to what you've already audited and picked up as part of Tier 2.

MR. VIRGILIO: Yes. That's the staff proposal.

MR. WILKINS: Of course, implicit in that is that when you make a decision to move something up into Tier 2, you tell the vendor that you are doing this.

MR. VIRGILIO: Yes, we would have to.

MR. WILKINS: I would think so.

MR. WYLIE: Is this something that is going to be covered in your reg guide?

MR. MICHELSON: It will have to be.

MR. VIRGILIO: Not necessarily.

MR. MICHELSON: It better be.

MR. VIRGILIO: This is the information that's really covered through the review process. I would envision that this comes out of the staff's safety evaluation.

MR. WYLIE: No. I'm talking about the process.

MR. VIRGILIO: I think we've described the process --

MR. MICHELSON: The commitment to inform the NRC if you've made changes to what they had audited and brought up as a Tier 2 requirement, any changes thereafter, that will be described somewhere in a procedure, I assume.

MR. VIRGILIO: It will be part of the rulemaking process. So it will be a feature of the design certification rule. But the reg guide will further address this issue. I think we've laid out the elements in the SECY paper and if the Commission approves this process, I don't

expect you're going to get more in terms of the philosophy. The reg guide may, in fact, include some more implementing details, but this is basically the philosophy.

MR. CARROLL: You do have one hole in what you have up there, and I think Carl touched on it. There are things today you probably want to make some safety judgments about, but which have not historically been considered "safety-related" and falling under Appendix B QA program. Main feed water system comes to mind.

How do you convey to applicants that you want information about the main feed water system available for audit and if they change it, it's subject to a QA program and so forth?

MR. VIRGILIO: Gene will get into that in a little more detail later on, but let me say now that we are on an ad hoc basis out in the field conducting these audits consistent with Part 52.47(a)(s). We're doing our review of the application on an ad hoc basis as we see we need more information. We're going out into the field, and if the applicant has not yet developed this, they are in the process of developing information, in order for us to do our review, obtain additional information about the design, and to look at the design process, the translation of the Tier 1/Tier 2 into the actual design details.

For example, if the auxiliary systems branch

reviewer right now is looking at this and considers that he needs to know more information about the main feed water system in order to make a safety judgment, they're asking these questions right now.

MR. CARROLL: Does the applicant understand that in terms of information that he has to have available for audit, that he has to, for example, have tracks on the changes he made?

MR. VIRGILIO: As far as whether Appendix B applies, yes, I believe so. I don't think that's any change to anything we've done. Appendix B to Part 50 has always applied to the design details that are developed to support the safety systems.

MR. CARROLL: Yes, but main feed water isn't a safety system.

MR. VIRGILIO: We'll get into more detail on that a little bit later, but I understand your point.

[Slide.]

MR. VIRGILIO: In summary, what we're proposing to the Commission on the last slide is that they agree with the general approach on graded design details, graded consistent with the system's importance to safety, that they agree with the staff's approach on the content of the application, the certification, and the changed process for the material in the application, the material certified and the material

held for audit, and we're asking the Commission to authorize the development of the reg guide that we've been speaking about this morning.

MR. CARROLL: I guess if I were you, I would ask them to authorize one more thing, and that is a massive effort to update the standard review plan to meet the 1990 situation.

MR. VIRGILIO: This week the staff is having meetings and it is currently not a done deal, but it's certainly something that we have ongoing right now. We're currently looking at today's standard review plan. We're looking at the regulations. We're looking at the generic issues that have been resolved and documented in 0933. We're looking at the information notices, the bulletins, the generic letters that we've issued over the years, and we are making some judgments about the need.

MR. CARROLL: How about severe accident issues?

MR. VIRGILIO: They come out of the SECY-90-016, our paper on where we're going to go beyond the traditional design basis for these new advanced plants. That's being considered right now as we speak as to the adequacy of the standard review plan and the adequacy of the guidance that we're giving the reviewers and the industry at this point in time for the development and review of the acceptability of key safety systems.

MR. MICHELSON: Are you participating in that?

MR. VIRGILIO: No, sir, I'm not.

MR. MICHELSON: Who might we talk to and see if they're covering certain items or not?

MR. VIRGILIO: Charlie Miller. That work is being done under Mr. Crutchfield's division.

MR. MICHELSON: Is that where it's being done? I thought he was working on SARs and so forth. This standard review plan is a massive undertaking of its own.

MR. VIRGILIO: It certainly is.

MR. MICHELSON: It's interesting. Has he got enough people to do revision to the standard review plan at the same time?

MR. VIRGILIO: Yes.

MR. MICHELSON: That's nice. In the past we've asked for certain areas to be revised since they never were ever covered, and the answer keeps coming back there's no manpower to do this sort of thing with. Apparently it's now been found.

MR. WARD: There is an effort under the license renewal program to create something parallel with the standard review plan. I should think there should be some commonality in these programs.

MR. VIRGILIO: The people who worked on that are, in fact, meeting with the staff this week. We recognize the

advantages of having that review guidance documented and we're meeting to discuss how it could be done for support of the advanced reactor design. As I said, it's not a done deal, but they're meeting this week to discuss those issues.

MR. WYLIE: In reading through your document, you very heavily depended on the standard review plan. You refer to it quite often.

MR. VIRGILIO: In the appendix, we recognized that the standard review plan may not have all the information that we would like to have available to the reviewers, particularly in the areas where technology has advanced. I think we talk about in the appendix the instrumentation and control areas, the example we site where we believe technology has advanced and it may have left the standard review plan behind.

What that means is that we're relying on the staff to make judgments on an ad hoc basis. That's not a dangerous process. You've got management oversight and controls. But with the standard review plan, what the standard review plan does is it provides a formal guidance, a process that's been reviewed, it's been publicly aired.

MR. CARROLL: In the example you're raising, I guess I have some real concerns that there is anybody on the staff that is smart enough to review modern digitally-based controls or protection system. I think there are some

people who think they might be smart enough, but looking at the experience the Canadians had on Darlington on software V&V, I think you need some very unique expertise.

MR. MICHELSON: That was just the software, not the hardware, which is also pretty interesting.

MR. CARROLL: So I worry about ad hoc approaches in some of these areas of new technology.

MR. MICHELSON: I've spent a little bit of time recently looking at the standard review plan from the viewpoint of what they ask the reviewers to do, and then look to see what information a reviewer of this paper will have. In the case of the standard review plan, I was looking particularly at pipe breaks outside of primary containment. In the standard review plan, the kinds of things that are asked for are not that difficult to do because the plant is there already, the pipes are all there, everything is there, all the information you could possibly need is there, it's built, it's doable.

But then I ask, well, with the kind of information we're talking about under Levels 1, 2, whatever, is that kind of information going to be available to the reviewer to go through that standard review plan and do what it says is to be done, including, of course, what the utility is required to do in his submittal, the analysis he's required to perform.

It was not at all clear.

MR. VIRGILIO: I'd say it has to be.

MR. [illegible]HELSON: It has to be because the preamble says it has to be. It's a part of it. We said we would do everything required to assure the safety of this plant before we'd even certify it, and part of it is to meet the requirements, I think, of the standard review plan for reviews of plant.

So it's something that gave me some concern because it looks like the level of detail, including all the non-safety systems that you have to know a lot about when you start talking about flooding an area from a pipe break or starting a fire or whatever, you have to know a lot about what the non-safety systems might do that are in that area in terms of preventing that safe shutdown.

So if that level of detail is available, then I think we've got it made. It's not clear that that level of detail will be made from the paper we're talking about generating here. You will convince me later today I hope that you have everything you need to do to specify equipment qualification, because you've got to specify that ahead of time. You've got to buy the piece of equipment according to whether it might have to be flooded during a particular vent and still operate or whatever.

I've got to name the events, I've got to do the

analysis, there's a lot of things I have to do. It's not clear that you're prescribing that level of detail.

MR. VIRGILIO: We'll get into that a little bit later. That pretty much concludes the prepared portion of the presentation. Gene is going to walk you through some of the slides, figures and drawings that were included in the appendix to make sure it's clear as to what we were meaning to say and what they're intended to convey.

MR. WYLIE: All right. These are right out of the SECY.

MR. IMBRO: Yes, that's correct. My name is Gene Imbro. I'm a Section Chief in the Office of Nuclear Reactor Regulations, Special Inspection Branch. I put a lot of work into preparing the attachment to the Commission paper. I have with me also two of the consultants that provided us some inputs on the design process. There's Jim Leivo, whose specialty is instrumentation and control; and I have also Victor Ferrarini, whose specialty is engineering mechanics, piping analysis, seismic qualification.

MR. MICHELSON: What are the affiliations of these two consultants?

MR. IMBRO: Jim Leivo is an independent consultant and Victor Ferrarini is associated with Engineering Analysis Services, EAS.

MR. CARROLL: Do they both have industrial

experience?

MR. IMBRO: Yes. Mr. Leivo worked for quite a number of years with Westinghouse and also then he worked with NUS Corporation in instrumentation and control.

MR. MICHELSON: I guess the key question is have any of these people designed large nuclear power plants.

MR. IMBRO: Yes. Mr. Ferrarini is an owner of a company that participates extensively in nuclear piping analyses. In addition, I believe he's worked for Grinnell for a number of years in the piping area. There are other consultants, of course, that participated in other disciplines. We had a consultant in mechanical systems and also another consultant in the electrical area. Those people were unable to join us today.

The positions that we reached are positions that the staff is responsible for, but the consultants really did provide us some insights into some aspects of the design process.

[Slide.]

MR. IMBRO: I just wanted to start out with this curve which is part of Attachment B. It's basically a curve that we developed through our visits with different architects and an NSSS vendor. It's kind of a compilation of the experiences of industry and our own experiences. What it really intended to show was that you can achieve a

high degree of design finality without expending 100 percent engineering effort.

What we're proposing in the Commission paper is that at the time of design certification, we have about 50 percent completion of the engineering hours, and that would achieve design finality somewhere in the neighborhood of 80 percent. Obviously this curve is not really a fine line as it's drawn here. There's a considerable band around it.

But for rough speaking terms, I think once you get to the point of 50 percent design, when you're able to prepare basically all your equipment specs or the majority of your equipment specs, you have the design pretty well locked in. Certainly there will be changes due to vendor-specific information, due to as-built reconciliations, but those changes are not really going to impact on standardization.

MR. WARD: Gene, how is that fraction on the ordinate defined?

MR. IMBRO: The design finality?

MR. WARD: Yes.

MR. IMBRO: I guess it's more intuitive. I don't really know how to calculate that number.

MR. WARD: That curve looks like somebody did it.

MR. WILKINS: When I first saw this curve, you and some of the staff have shown it to us before, I assumed that

it was calculated rather methodically as the number of engineering drawings that did not change.

MR. IMBRO: No. I guess it's more of an intuitive approach really. In the beginning you have a lot of flexibility. You haven't really expended a whole lot of hours during the conceptual design stage. You really don't know exactly what the plant is going to look like, but you're trying to develop overall standards.

As you start to expend more hours and up to the point where basically -- and people have kind of said that at about the 50 percent engineering completion, you basically have enough engineering done that you could write all your specs for equipment. Once you do that, the design is pretty well locked in.

So there's a degree of variability, then, that's very small when you get to that point of expenditure of engineering hours. Once you go beyond that, there's a lot of engineering time that's spent doing detailed design, like designing pipe hangers and pipe supports, like writing the procurement specs and going back and forth with vendors and dealing vendor exceptions to specs.

MR. WARD: It's an attractive concept and I guess if you had given that little oral paragraph without showing the curve, it might have been appropriate. I had hoped when I saw that curve that -- and you mentioned that there was

some input from industry to develop that -- that there was some hard data used to develop that from architect engineers or something.j

MR. IMBRO: No. It's more intuitive. It really seems to follow, though, because past this point, you really do expend a number of engineer hours. But in terms of a standardization of the facility, the design changes are almost imperceptible. You're doing really detailed design.

MR. WARD: You were just telling me that, but I --

MR. MICHELSON: Prove it.

MR. IMBRO: Trust me.

MR. MICHELSON: Trust him.

MR. WARD: Why?

MR. MICHELSON: Don't ever ask us to do that.

MR. WILKINS: Let me ask a slightly different question. Over what spectrum of industry is this curve applicable? That is, is this the nuclear industry or is it manufacturing industry in the United States?

MR. WARD: All activity is manned.

MR. IMBRO: Maybe that, too. But at least for the process in this, I would be not surprised if the petrochemical industry couldn't develop something similar. So I think anytime you have a large complicated design in building a process plant, like a paper pulp plant or something like that, I think you're going to have something

like this. I think it's applicable to nuclear, but I think it's also -- I wouldn't confine it to nuclear.

MR. WILKINS: You're giving me your philosophy now, but you're not really answering my question. Maybe you have already. On the basis of input from what kinds of industry did you arrive at these numbers?

MR. IMBRO: Specifically, we spoke to three architect engineers and we spoke to Westinghouse. I guess from the conversations with them, plus our own insights, I think, I think it was really pulled together through our own intuition.

MR. WILKINS: This is the kind of curve which I would think that schools of industrial engineering or manufacturing engineering or something of that sort ought to know and ought to have a very broad base of experience and data for.

MR. WARD: I'll bet they do. I'll bet if you go to an AE, they know very precisely what that looks like and I'm just trying to find out how they define it.

MR. CARROLL: I think that's part of the problem. Everybody has his own definition of both engineering hours and finality.

MR. MICHELSON: The shape is clearly correct and it's driven by economics. You don't keep changing the design because that costs you money every time you make a

change. So you figure out up front what you want and then when you go to detailing, you don't change it anymore. You just detail it. So the shape is intuitively correct. It's just a question now of where you shift it around a little bit.

MR. IMBRO: We drew a fine line, and it's not really a fine line. There certainly is some error band around this and it's going to vary. But what we tried to do is just present the concept that you didn't really have to go to Level 1 to achieve a substantial degree of standardization. That was the only thing we were trying to show with this.

If you take numbers off of here, I don't vouch for their accuracy. It was just to show a concept.

MR. WARD: My only problem is I think this is the conclusion you wanted to come to. So you draw a curve and say, hey, that sounds reasonable. I hope it is.

MR. IMBRO: Again, one more point on this. This is really an integrated curve for the whole overall of systems in the plant. I'll show you on the next slide how that will break down a little bit better.

[Slide.]

MR. IMBRO: Same curve, again. What we're trying to do here is show by level of detail, as we point out in the paper, how that correlates to this curve. Clearly we

said that the Nuclear Island would be something greater than Level 2. So however you want to measure design finality, just think of it as a concept. It would be somewhere up in here with more engineering hours expended.

Primarily, you'd be able to, for the Nuclear Island, get up into this area because the applicant is the NSSS vendor for the systems that the NSSS vendors traditionally supply. They do have as-built data. They will need dimensional data to perform their safety analyses. So you'll definitely be up here for the systems in the Nuclear Island.

MR. CARROLL: Is there some logic to that, though, necessarily? Simply because, say, Westinghouse traditionally provides in their scope a reactor coolant pump that they manufacture, you're saying, hey, that ought to be greater than Level 2.

MR. IMBRO: You missed a key point, though. The systems we tried to put in a "Nuclear Island" category are those systems that probably have the most safety significance and those systems whose failure would require some kind of accident mitigation actuation.

So we felt not only would it be available, but it's also I think the staff may need that level of information to be able to make safety judgments for these important safety systems. So it's not just, hey, it's

available and we want it because it's available, but I think also the staff may require that level of detail to be able to make their safety judgments on these systems.

MR. CARROLL: I'm not sure you've convinced me, because there's a whole bunch of stuff that Westinghouse -- it was just what the vendor manufactured or wanted to manufacture. There's a whole bunch of stuff of equal safety importance in the NSSS that he's gone out and gotten competitive bidding on; pumps, for example, or other pumps that may be just as important.

So all I'm cautioning is don't fall in the trap of saying just because it's there, it's more important.

MR. IMBRO: That's true and that's a good point. I think that if there were other information that we needed that was not supplied by the NSSS vendor, that if we needed such information to make our safety judgment, I think then we would require that. Typically, the systems up in this area are designed pretty much by the NSSS vendor.

MR. MICHELSON: Yes, but what bothers me is in your Level 2, for instance, unless I missed it completely in your SECY, you make no mention of the essential AC or DC power systems which are obviously extremely important.

MR. IMBRO: That's in there, as well.

MR. MICHELSON: Maybe I'm just not reading. I was looking at Page 4 and I just didn't see it on there, but I

guess it must be in here.

MR. IMBRO: If you look back in the appendix in attachment --

MR. MICHELSON: I'm looking at Page 4 of your SECY paper. Most people will not read Appendix B.

MR. MICHELSON: The Commissioners aren't going to read all through that appendix.

MR. IMBRO: It's certainly there. I think we tried to just track some of the highlights to put in the Commission paper, but I think that a lot of the detail resides in the appendix.

MR. MICHELSON: What you're really saying, I guess, is it was intended to be there. Whether it's there or not is another question.

MR. IMBRO: I think what we tried to do is put highlights in the front to the Commission to focus on.

MR. MICHELSON: I'd be a little careful about highlights when you get down to some pretty good details on this Level 2, but you don't hit the big ones. I'd wonder about it if you were highlighting or not.

MR. IMBRO: It is clearly part of Level 2.

MR. MICHELSON: Okay.

MR. IMBRO: Then down in -- we've termed it site-specific kind of Level 4 basically because you really don't know what the site -- even though you've designed the plant

to a kind of generic site, there are still details of the site that you don't know. So you can really only get to more or less the conceptual design stage on things like the intake structure and the arrangements of equipment in the intake structure.

MR. MICHELSON: Again, the comment that I made earlier, in your SECY on Page 4 you list the essential service water as being a Level 4 conceptual design. I would disagree with that as acceptable, except in the intake structure and yard.

MR. IMBRO: I agree with that point. I agree.

MR. MICHELSON: Those messages don't come through the SECY. I don't know, other people who read it, whether they just read it in or what.

MR. IMBRO: I think a lot of this will be fine-tuned when we develop the reg guide, but I think clearly that was the intent. I agree with your point.

[Slide.]

MR. IMBRO: Again, this is kind of like illustrating the same thing we just spoke about. The site-specific systems would be roughly to this level of completion. You'd have a greater completion for the balance of Nuclear Island and Turbine Island and somewhat higher level of completion for the priority system and containment.

MR. WYLIE: Let me go back to what Carl was just

discussing, though, and as a question. Those site -- they're really not site-specific in a way, but they are external to the buildings, but certainly a certain criteria could be placed on those as to where they enter the buildings and how they're protected and separated and all these good things and be spelled out in criteria.

I don't know whether that's going to be done or not. But there are other things, like where the locations of the two off-site transmission lines enter the site. Now, that's not site-specific necessarily as to where they enter the buildings.

MR. IMBRO: No. It's not site-specific.

MR. WYLIE: You have to know that in order to run your safety assessment as to whether one occasion could take out both lines, for example.

MR. IMBRO: Maybe it didn't come through in the Commission paper, but I think clearly our intent was that for those systems that are within the buildings, the aux building, reactor building, even though they have site-specific aspects to them, those portions of the systems that reside in the major buildings would really be designed up to a Level 2.

Clearly, there are things about the site that you don't know that influence the design. You could really only do a conceptual design, but you can specify criteria, and,

in fact, in a lot of cases we've those criteria as -- we suggested that they be Tier 1, so that those would be a - of locked in very tightly.

MR. MICHELSON: What did you have in mind for the fuel handling arrangements on a particular plant, since they didn't seem to show up in the listings?

MR. IMBRO: I don't think we really talked about that in the paper at all.

MR. MICHELSON: It's pretty important from certain viewpoints of safety, of course.

MR. IMBRO: Yes. Again, I'm sure there are other things we probably missed in this paper and I think given the time constraints we had, I'm not really trying to apologize. I think we tried to hit on the major things. That is not to say that we covered everything.

MR. WYLIE: But the reg guide will pick all those up.

MR. IMBRO: Yes.

MR. WARD: Is that right? So when you say maybe it wasn't clear in the paper, but what we really meant was, your counting on the reg guides to document what you really meant?

MR. IMBRO: I wrote the paper, so I guess it's all clear to me, at least I think it is. But I guess to the extent that that is causing confusion, I think we do need to

possibly sit down with industry and sit down with folks like yourselves and try and understand what the problems are, where the misunderstandings are, and try and explain what we meant and understand what other people are saying.

MR. WARD: I think that's a good idea, but what's the avenue for doing that?

MR. IMBRO: I think the reg guide will be. I think if the Commission directs us to write the reg guide, then certainly that will go through the public comment process.

MR. MICHELSON: But that's a year off.

MR. IMBRO: Right. It's a year off and it will come to ACRS for review, just like all reg guides do.

MR. MICHELSON: But in the meantime we're going to be plowing through an ABWR without a reg guide, and that's why we're asking some of these questions now, I guess, because we aren't going to ask them again until the reg guide comes out. We'll be done much of the ABWR by then, I hope.

MR. CARROLL: Not if you read appendix whatever.

MR. MICHELSON: Well, something's got to happen.

MR. CARROLL: Appendix F or Attachment F.

MR. MICHELSON: Yes. What do we do with the ABWR.

[Slide.]

MR. IMBRO: I real quickly wanted to go through

how we categorized the systems. Again, in the Nuclear Island, we basically thought as a rough first cut to take those systems whose failure would require some kind of protective action or systems that formed a primary barrier, like the containment. We included those in the Nuclear Island, our definition of Nuclear Island, and we suggested that they have a level of detail greater than Level 2, which is not Level 1.

What it means is that possibly certain aspects of these things you'd have dimensional information on, but not all. Balance of Nuclear Island is kind of another rough grouping. We tried to go through kind of a hierarchy of safety significance from highest to less, and balance of Nuclear Island, we felt kind of those systems that were necessary for accident mitigation, as a rough cut.

MR. MICHELSON: Now, what you didn't mention in this nor in the paper was what do we do about all the non-safety systems that might be located in what you might call the balance of Nuclear Island? You may have an auxiliary boiler in there for all I know.

MR. IMBRO: That's true.

MR. MICHELSON: Where do we get that information and to what detail does it have to be developed so we can do proper environmental qualification specifications for equipment and so forth?

MR. IMBRO: Why don't I put up this other slide.

[Slide.]

MR. IMBRO: This is the type of information that we think you'd have available to be able to do hazards analysis, and this is kind of what you're getting at. It's kind of a busy slide, so I apologize for that.

MR. MICHELSON: What kind of hazards are you going to be referring to?

MR. IMBRO: It's the traditional; high energy line break, flooding, internal missiles, fire, those kinds of things.

MR. MICHELSON: Now, one of our problems, at least my problem is unless you give me a handout, some of this stuff doesn't come through with my 20/30 vision too well.

MR. IMBRO: We can make you a copy of that. No problem. Basically, this information was extracted from Attachment B and a lot of this design criteria is going to be Tier 1. We're requiring, at the completion of design, at the time of design certification, to specify locations of equipment. It doesn't say safety or non-safety. I think we're talking about all. Cable and conduit tray arrangements are specified, electrical logic and schematic diagrams, cable and raceway schedules which specify the cable routing, the location of instrument sensors will be specified in terms of -- pretty much because you know where

they're going to be in the piping.

MR. MICHELSON: When you say something specifies a cable routing, what do you really mean? I'm not sure what - -

MR. IMBRO: What I mean is that you have a good idea of the cable tray routing themselves.

MR. MICHELSON: Do you know what tray a particular cable will be in?

MR. IMBRO: Yes, that, too. You know where the cable trays are and what cable is going to be in what tray.

MR. MICHELSON: And that will be available for audit or whatever.

MR. IMBRO: Yes, that's right.

MR. WARD: When you say you know where a tray is, that means you know it goes through a given room?

MR. IMBRO: Yes.

MR. WARD: Or it goes through a particular corner of that room or what?

MR. IMBRO: You'd probably know to within feet, a couple of feet where the trays are going to be. You'd know that they're going through this room against a certain wall type thing. So you'd know pretty specifically where the cable trays are going to be routed, and that's something that people traditionally do up front when you design a plant, because when you think about space considerations,

the one thing you want to block out space for right away is cable trays. So even up front you pretty well know where the cable trays are going to be located.

Cable routing is pretty much computer-done anyway. Once you get your schematic diagrams done and you know what wires are going from where to where, then the cable routing really falls out of that.

MR. MICHELSON: When you tell us about these things, are you saying that this is the kind of information that's available before certification?

MR. IMBRO: Yes.

MR. MICHELSON: Thank you.

MR. WYLIE: You show, for example, in your design on E.1.1, you show location of cable tray, conduit, HVAC supports. I don't know how exactly I'd take that.

MR. IMBRO: I think we meant that the supports wouldn't be necessarily specified, but the general routing would be. You didn't necessarily need to go through that detail.

MR. WYLIE: That was my question. Are you talking about routes?

MR. IMBRO: No. Supports.

MR. WYLIE: You're talking about supports.

MR. IMBRO: For the cable tray and conduit.

MR. MICHELSON: I misunderstood. My question was

do you know which cable is in which tray?

MR. IMBRO: Yes.

MR. MICHELSON: You do.

MR. IMBRO: Yes.

MR. MICHELSON: That's routing.

MR. IMBRO: Right. We have the routing. I think Page B.1.1 really talks to location of supports of the cable trays and conduits. You know where the routing is going to be. You might not have gone down through the detail of how you're going to actually support them and hang them, but you know where they're going to be.

MR. WYLIE: Let me ask a general question, then. I note again back on B.1.1 you've got building layouts. Some of the first drawings you'd make on a plant are the general arrangement drawings which shows the buildings, the structures, the components, the piping down to a small size, the duct works. Everything is shown. It's not dimensioned, necessarily. Is that what you mean by building layouts?

MR. IMBRO: Yes. They arrangement of the buildings, the size of the rooms, the general arrangement type information.

MR. WYLIE: Did I miss it? I didn't see general arrangement drawings shown.

MR. IMBRO: I think it may not be specified there, but building layout was really intended to locate the

different compartments, to locate where --

MR. MICHELSON: They can be done to varying degrees of detail, of course.

MR. IMBRO: That's right.

MR. MICHELSON: For instance, if I have an electrical inverter, do I know where it's located before I certify the plant?

MR. IMBRO: Yes, but I think you wouldn't find that type of information on a GA. A GA usually doesn't get that detailed.

MR. MICHELSON: No. But some drawings, whatever you want to call that layout drawing, is going to have to show me where the inverter is, where the motor control centers are and things of this sort.

MR. IMBRO: That's where we're saying locations of equipment to be specified up front, because you really need that.

MR. MICHELSON: Equipment, in your definition, how small a piece of equipment are you going to locate?

MR. IMBRO: It may be as small as an instrument, as a transmitter.

MR. MICHELSON: Is that what you mean by location?

MR. IMBRO: Absolutely.

MR. MICHELSON: That's pretty detailed.

MR. IMBRO: But I think you need to do that to be

able to do a hazards analysis.

MR. WILKINS: But you may not need the locations down to a centimeter.

MR. IMBRO: That's right.

MR. MICHELSON: No.

MR. IMBRO: But within a box. Granted, that's a good point. We're not saying that everything needs to be locked in that tightly. For example, you're going to know the location of the instrument racks. We're asking that you have this type of information developed and you know what devices are on what racks, and then that's a potential target.

Routing of instrument tubing; again, you're going to know the general routing of where it's going to go. You're not going to know it down to an inch, there will be some variability, but you'll know kind of a general pathway where the instrument tubing is going to pass through.

For routing of piping, we got fairly specific in routing of piping. For Class I piping, almost all inside the containment; in fact, it probably is all inside the containment; anything greater than an inch should be specified pretty closely. For high energy piping, two-and-a-half inches or greater, that would also need to be specified within say inches.

MR. MICHELSON: That's just for Class I piping.

How about Class II and III high energy piping?

MR. IMBRO: No. Class I was just this. This also applies to Class II and III.

MR. MICHELSON: Those numbers give me a little bit of difficulty. I don't know how you arrived at that six-inch number, for instance. Clearly in doing e break analyses, there's a whole lot of hazards associated with four-inch and three-inch and so forth.

MR. IMBRO: I agree.

MR. MICHELSON: Depending on where it is.

MR. IMBRO: I agree.

MR. MICHELSON: And you're not going to ask for that information?

MR. IMBRO: Well, I think we tried, as much as it may sound unbelievable, we tried to be somewhat reasonable when we did this.

MR. MICHELSON: If you read your standard review plan, I don't see how you can exclude any size.

MR. IMBRO: I'll get to that in a minute. I agree with your point, yes. You do need that type of information to complete hazards analysis. But I think that up front these are the things that generally get routed primarily because either there are large loads involved, so they need to know how the piping is going to be routed, or the piping itself is physically large and it's hard to move around.

So specifying this level of detail up front I don't think places a tremendous burden on the industry because I think this type of thing is traditional.

MR. MICHELSON: But the problem with your SECY paper is that you remain silent on what you do about smaller pipes.

MR. IMBRO: I'm going to tell you that now.

MR. MICHELSON: You're going to tell us.

MR. IMBRO: Yes. I think the design criteria as specified up here is really going to control the routing of the other piping. My philosophy on hazards analysis --

MR. MICHELSON: Yes. The criteria will control the routing, but it won't tell me where they are, it won't tell me what room they're in and so forth.

MR. IMBRO: That's right.

MR. MICHELSON: Criteria aren't written that way.

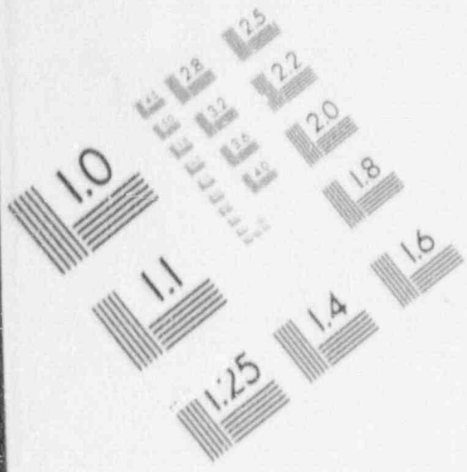
MR. MICHELSON: How do I know where this four-inch water line -- it might even be a hot water line for all I know right below the high energy cutoff.

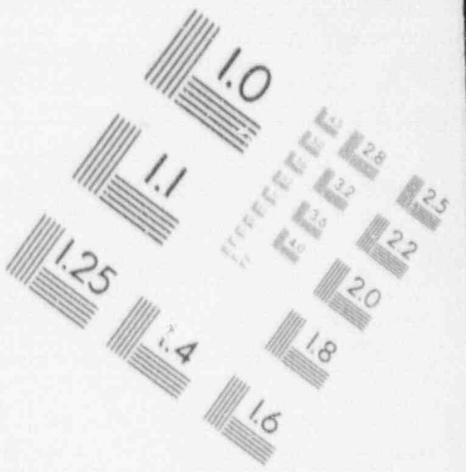
MR. IMBRO: It's a good point. I think that this type of information will allow you to get a real good head start on doing a hazards analysis. I don't think it's going to be the complete answer.

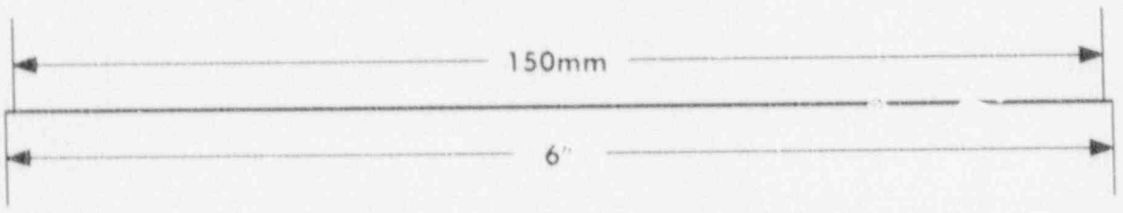
MR. MICHELSON: Then you remain silent also on non-safety piping that might be more than six inches.

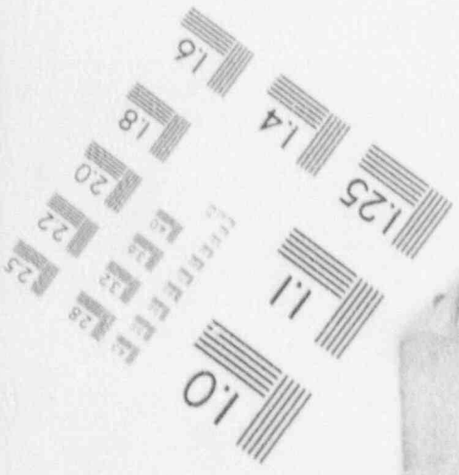
1

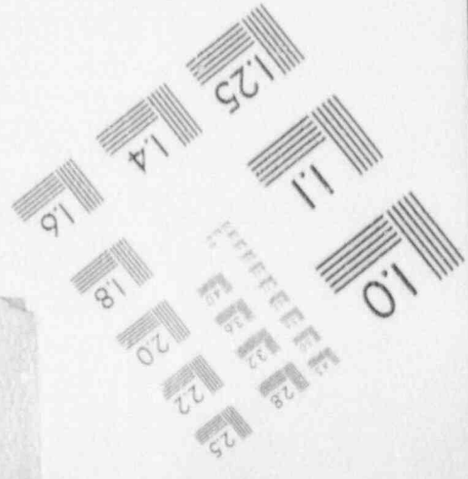
IMAGE EVALUATION TEST TARGET (MT-3)











MR. IMBRO: We haven't specified. I think, in our mind, this also could apply to non-safety piping, as well.

MR. MICHELSON: There's a lot of big non-safety piping associated with non-safety cooling water.

MR. IMBRO: Whatever you need to do your hazards analysis.

MR. MICHELSON: I think that's right. Whatever you need to do your hazards analysis is how you define the scope.

MR. IMBRO: That's right. And I think this was meant to not be restricted to strictly ASME piping.

MR. MICHELSON: Those words in there I think in the SECY would have been all right.

MR. IMBRO: We tried our best. I don't think we could illustrate every nuance, but that's a good point and I think it's worth mentioning now. But also, let me again get back to the thing I was trying to say before. I don't know that it's possible to have people go through that level of detail where we'll be able to have a final hazards analysis done at the time of design certification.

I think that certainly you're going to have to do walkdowns at the end before the plant operates.

MR. MICHELSON: I agree with you and I think, though, that ahead of time you have to lay out a plan. How much of this is environmental qualification information you

develop up front, what part are you going to leave to audits or to walkdowns later, recognizing that walkdown may result in changing equipment and whatever, which is what we're trying to avoid with this whole process to begin with.

MR. IMBRO: Right.

MR. MICHELSON: But none of that plan is laid out. You remain silent on how you're going to achieve environmental qualification specification, even though you're required to do it and you said you would do it before certification. You'd do everything it takes to specify the components.

MR. IMBRO: We couldn't flush out everything, but I don't have any problem with what you're saying. I would agree with those concepts. But I think we've driven the design completion to quite a high degree before certification and I think that a lot of the hazards analysis can remain to be done when the final plan gets laid out. People have designed plants before. It's not a total mystery. They're going to have design criteria which are probably going to be Tier 1.

What we're talking about basically are smaller lines that can be rerouted if they have to be, instrumentation can maybe be relocated. There's always give and take in the design process.

MR. WARD: What is going to be the purpose of the

hazards analysis at that point?

MR. IMBRO: Well, I think with this type of information, I think you can go a long ways in doing hazards analysis. You might not be able to fill in all the holes and I guess what I'm suggesting is maybe you don't have to do that at the time of design certification, that maybe some of that can be done later. You have a controlled process because you've specified criteria.

Also, again, for these piping that we're asking people to route within reasonable tolerance, we've asked that preliminary stress analyses be performed and those will -- since we really don't have any arbitrary intermediate breaks anymore, basically you're going to have breaks at terminal ends or breaks at high stress locations.

MR. MICHELSON: You're going to have breaks in less than six-inch piping, I assume.

MR. IMBRO: Sure.

MR. MICHELSON: But you're not going to talk about those until I don't know when. In other words, it's not clear why you drew your line at six inches there, other than you're trying to reduce the amount of detail engineering that needs to be done.

MR. IMBRO: That's right, because a lot --

MR. MICHELSON: But you cannot go in and take your breaks because there's a lot of pipes that are below six

inches, a large number.

MR. IMBRO: I agree that there's work that needs to be done and a lot of pipe is smaller than six inches and that all needs to be looked at, but I don't know that -- I'm not sure that it all needs to be done to that level of detail at design certification. Somebody needs to do it sometime.

So basically what I was trying to say is you'll know to a reasonable accuracy what your break locations are going to be. You basically are going to know your targets. You have criteria that control the design process. So you're able to do, at least I feel, a reasonable hazards analysis. Again, it doesn't address all those small piping.

MR. MICHELSON: It doesn't address a number of other things either that you can't do without more information. You can't do your fire hazards analysis properly either.

MR. IMBRO: I think you can get a good handle on that because you know the locations of equipment and you know the cable tray locations and you know how much cable is in each tray. So you have a reasonably good idea of what the fire loadings are in the room. I think even as a part of the general arrangement drawing, you're going to start thinking about specifying fire areas and fire zones.

You have all these other things to consider, too,

that kind of give you a point in the right direction, as it were.

MR. CARROLL: Having been through this process a time or two, there is one thing you're leaving out that I have found very important; not that it's needed specifically for the hazards analysis, but after you've laid out all your piping and your equipment and your cable trays and your instrument tubing and that sort of thing, then somehow or other along come those no good heating and ventilating guys.

They say, hey, we can't get our ducts in here, move everything. I think you need to put a caution in, because I think that's happened in an awful lot of plants. Electricals thought they had the cable trays all located and the HVAC guys came in and made them move everything.

MR. IMBRO: The HVAC duct routing was one of the things we also specified to be completed at the time of design certification.

MR. CARROLL: It's not on this list.

MR. IMBRO: It's not on this chart, no.

MR. CARROLL: But it's a caution that those guys really take up a lot of room.

MR. IMBRO: That's true. And usually because of that they're typically laid out -- the spaces blocked out for them are early in the job. But, of course, there are always problems that arise.

MR. MICHELSON: The inference, I guess, is that heating and ventilating doesn't have much to do with hazards. Of course, it has a whole lot to do with hazards.

MR. IMBRO: Sure.

[Slide.]

MR. IMBRO: I was going talk a little bit about Attachment B, but before I do that me I'd just quickly go through this just to kind of give you an idea of what we were talking about in terms of conceptual, preliminary, detail and final.

The conceptual design phase is, again, like we were talking about down here, kind of like Level 4, preliminary design phase, and these are kind of squishy, too. There's not a firm line anyplace here. Preliminary design kind of fall into maybe 10 to 30 percent completion. Detailed design phase would then go from there up to approximately -- to the time where you're able to specify equipment. Final design phase we think of as preparing procurement specs, reconciling of vendor data, reconciling as-built data, dealing with vendor exceptions to specifications and that type of thing.

So when we talk about in the next slide conceptual, preliminary, detail and final, that's kind of what we're referring to.

MR. MICHELSON: Before we get to your next slide,

I wanted to ask a couple of questions about the preamble material in SECY-377. The particular statement that bothered me, and maybe you can clarify, appears on Page 6 where it says "The level of detail to be developed will not exceed that normally contained in procurement specifications and construction and installation specifications."

Of course, it's quite obvious that those kinds of specifications, as you well know, do not contain such details as where things are routed and so forth and, yet, the level of detail you need must include where equipment is located, not just what the piece of equipment is specified to be. So the statement threw me a little bit because clearly it's more than just what's in your specs. Much more.

MR. IMBRO: Yes.

[Slide.]

MR. IMBRO: I just kind of picked this sort of at random, maybe because I had a mechanical systems background anyway. But it just kind of is a way of illustrating how we developed or what kind of information is on here and how to read the table.

MR. CARROLL: What page is that?

MR. IMBRO: It's about 1-40 or something like that, more or less. Thirty-six, 1-36.

MR. CARROLL: B-1-36.

MR. IMBRO: Right. So what this is going to tell you is that this table is developed for the mechanical systems discipline. It addresses that portion which deals with the balance of Nuclear Island as we've defined it in Attachment C. It basically has a list of engineering products down the side.

It tries to break things down as to when in the design process these engineering products become available. So you'd have things that come about in the conceptual phase, preliminary phase, on the next sheet it goes into detail, and final.

Complete at design certification means that it's completed to the extent you can do that without vendor information, without as-built data, because obviously you don't have that at the time of design certification.

The next one, technically achievable, was our intuition or a guess from our own personal industrial experiences and talking with industry, things that could be done without those two constraints of no vendor-specific information and no as-built data.

So the consensus was that if it has an X in this column, that it was possible to develop this type of information. Tier 1 is indicative of just that; that we are placing something in Tier 1, it's a high level criteria, it would become part of the design certification rule. That

pretty well locks it in.

Our intent was to put as much as we could into Tier 1, primarily to drive standardization to the highest degree that we thought was possible. Obviously we are thinking that there are many safety benefits, although probably unquantifiable, that can be gained by standardization. I think by putting as much into Tier 1 as we thought was reasonable, that would control standardization. The balance would be controlled by the fact that by completing 50 percent of the design, you're probably going to have $500 million invested in the design at that point and I think economics would not dictate that you change the design to any great degree.

MR. WARD: Wait a minute, Gene. Could we talk a little bit about this? You said that you want to put as much into Tier 1 as you can or as is reasonable.

MR. IMBRO: Yes.

MR. WARD: Is that something you're negotiating somehow? How do you decide what's reasonable? What sort of a process?

MR. IMBRO: I guess it's kind of in the eye of the beholder, I suppose. I mean, what's reasonable to us may not be reasonable to industry.

MR. WARD: Whose eye has been used so far?

MR. IMBRO: The staff's.

MR. WARD: Now, what does it mean, for example, on the next page, on 37, there are some -- well, let me first ask you this. On this page, when you have an X in the first two columns and you haven't put -- let's look at the first one there where you don't have an X in the Tier 1 column. List of evaluation and studies. Why haven't you put an ,' in the Tier 1 column there?

MR. IMBRO: I think generally it's those things -- you have to recognize that, and I'm sure you do, that when things are put in Tier 1, it's very difficult to change. It requires rulemaking proceedings. So what we included in Tier 1 were those things that we thought were possible to go through the design of the plant and not change. For example, things like functional design criteria type of things.

You know you're going to lock those in up front. You really want to lock those in up front. For example, even on down here, list of evaluations and studies, I think you're not really sure of everything that you're going to have to do. You have a real good idea. So it wouldn't be -- I think it wouldn't be reasonable to ask people to commit to something that then they may have to change later, because it's such an involved process to change anything that's a commitment and a Tier 1 commitment, because it's kind of embodied in the DC rule.

So we tried to take the criteria type things that really controlled design and, to a large degree, say we think these should be Tier 2, we don't think these should change, they're kind of generic things that could apply uniformly across the design of almost all systems.

MR. WARD: I'm trying to understand the philosophy. You've put in the Tier 1, first of all, apparently all those things that you think are necessary to support a meaningful hazards analysis. Is that right? Is that a fair --

MR. IMBRO: No, not really. I don't know that we've -- I don't know. I guess I'd have to go back and look. I'm not sure that all those things I put on the last page were Tier 1. I think there's a spectrum of them. Some would be Tier 1, particularly the criteria. Locations of equipment, I don't recollect if that's Tier 1 or not, but I don't think so. Certainly it's something that would need to be completed at design certification.

So those things that we talked about on a couple of slides back were really probably --

MR. WYLIE: I think location of equipment was Tier 1.

MR. IMBRO: Maybe within a defined area.

MR. CARROLL: Within specified tolerances.

MR. IMBRO: Yes.

MR. CARROLL: Is your language on Page 37.

MR. WYLIE: Let me ask you a question related to what Dave's driving at. If it's not indicated within Tier 1, is it necessary then in Tier 2?

MR. IMBRO: Yes. It would be in Tier 2. Let me answer it this way. Some of it would be in Tier 2 and some of it probably would reside in the third body of information that was available.

MR. WYLIE: So it's indeterminate then as to where it is.

MR. IMBRO: Yes. But as Marty said earlier, whatever is in the application is either Tier 1 or Tier 2. If we feel it's necessary to bring in the application to make a safety judgment, then --

MR. WYLIE: What difference does it make whether it's Tier 1 or Tier 2, like this equipment list, for example?

MR. IMBRO: Probably not a whole lot of difference. I think it needs to be available. I think people need the information to do a hazards analysis, for example.

MR. WYLIE: Your Tier 2 stuff is going to be available, right?

MR. IMBRO: Yes.

MR. WYLIE: For certification.

MR. IMBRO: But remember what really comes in Tier 2 is pretty much controlled by standard format and content in Reg Guide 170, because we're not really saying that the application has to be anything -- at least the FSAR -- needs to be anything more.

MR. WYLIE: There's a whole rack of stuff over in the electrical area that is not indicated it's in Tier 1. So I just wonder where it is.

MR. IMBRO: I think a lot of probably would be in Tier 2 or in the third body of information.

MR. MICHELSON: Along that line, on Page B-1-9, you don't start doing cable tray arrangements until the so-called final phase, in which case it's already beyond design certification according to the table.

MR. IMBRO: I think that's talking about construction drawings. If you look up further --

MR. MICHELSON: I couldn't find, though, where cable tray arrangement drawings, construction drawings may mean now you're getting into the supports and so forth.

MR. IMBRO: I don't really want to get into all this.

MR. MICHELSON: I'd like to get -- let's use electrical.

MR. IMBRO: Okay. Page B-1-8. B-1-8 is in the preliminary phase and about three or four entries down it

says cable tray arrangement drawings, conduit layout drawings.

MR. MICHELSON: You're going to do those? Those mean really detailed drawings, where the cable trays are going to be, where the conduits are going to be.

MR. IMBRO: With a reasonable accuracy.

MR. MICHELSON: The next item then is where is your pull schedules? How do I know what's in the cable trays, which you indicated earlier that I would know?

MR. IMBRO: Yes.

MR. MICHELSON: I found those under construction all right.

MR. IMBRO: B-1-7, cable and raceway schedule. It's toward the bottom of the page.

MR. MICHELSON: That will be where you will tell me which cable is in which tray and the conduit and so forth.

MR. IMBRO: Right. Yes.

MR. MICHELSON: Some of these titles, you know, we have to be sure we understand what they mean.

MR. WYLIE: But you don't know whether that is part of Tier 2 or whether it is information available for audit. You really don't know.

MR. IMBRO: I think to that level of detail, it's probably information available for audit.

MR. WYLIE: Okay. I'm not suggesting it be in Tier 2.

MR. IMBRO: I don't think you need to include the cable arrangement schedule in the application.

MR. WYLIE: I'm just trying to find out where it is.

MR. MICHELSON: But you would need to know it if you're trying to do a local fire analysis.

MR. IMBRO: Exactly.

MR. WARD: I'm trying to figure out what this table means. Why, for example, haven't you put another column in there that shows what's Tier 2? We're left with some ambiguity here. If you don't have an X under the Tier 1 column, you don't know where it is. Is that just so what?

MR. IMBRO: No. It isn't so what.

MR. WYLIE: Because you're going to treat each of these three categories differently. If I look at the flexibility charts --

MR. IMBRO: Tier 1 and Tier 2 will be almost treated the same until a time that a COL is issued.

[Slide.]

MR. VIRGILIO: What we did is we took an ECCS pump and tried to divide up some characteristics associated with that pump to show you what would be in Tier 2. We recognize the table is lacking that column, the distinction between

available for audit and what's in Tier 2. What we've done is we've said Tier 1, and if I could put a definition to what we've put up there, I would say it's the principal design basis and criteria, principal design features, and, as Gene pointed out, then we looked at the details of the design and made some judgments about how much more we could push into Tier 1 principally to foster standardization.

But we started out with the definition of it was the design basis and criteria and the principal design features. Then we shoved a little bit more in there to foster standardization. If you look at what's submitted and not certified, we've provided some details there. That's Tier 2. That stuff is in the application.

If I were going to put a definition to Tier 2, I would say it was that information that we needed to ensure that the design conforms to the design requirements and provides adequate safety. These are typical details, if you would go back to an SER that we would have written under the Part 50 process, that we would have used to support our judgments that that top level criteria, in fact, had been translated into the design, and that design provided adequate safety.

MR. WARD: What you just said makes sense to me, but is that documented? You said if you were going to put a definition to this, and then you defined it. Is that

definition documented?

MR. VIRGILIO: I think it's between the lines in the SECY paper, if it doesn't come out expressly and state it. It was clearly the intent as we started down this path and it will be where the reg guide will come out in terms of -- I envision the reg guide to help us make that distinction between what's in Tier 1, what's in Tier 2, and what's available for audit.

MR. WARD: You seem to have some crisper definitions in mind and so forth, but we almost have to drag them out of you and I just wonder why.

MR. VIRGILIO: The last time we were here, we tried to work with definitions and then people said but I need examples. So we've gone to the other side of saying here are the examples that define the definitions we have tried in the past, that people said I can't see it without the details.

You're right. Maybe this paper is absent some of the crisper definitions, but we thought we were doing better by providing the details that would demonstrate those definitions.

MR. MICHELSON: Put in both and I think you've got it. You've done some defining in here. You just haven't --

MR. WILKINS: No, they really haven't. They could just say that doesn't conform to your definition.

MR. WYLIE: Maybe we ought to take a break now.

MR. MICHELSON: Let me ask one more question on mechanical. It's just beyond mechanical on Page 51, B-1-51, there's a section called engineering mechanics. In looking through the listing, I have to go all the way down to the detailed phase to find out when you do your hazards analyses on missiles, pipe whips and line breaks. I find that you do it after design certification.

The design certification column was not X'd.

MR. IMBRO: Page 51?

MR. MICHELSON: Yes. Page 51.

MR. MICHELSON: Is it somewhere earlier and I just missed it? It's not quite conforming with what I think you told me earlier, unless --

MR. IMBRO: I think what that's trying to say, and I guess you have to a little bit read between the lines.

MR. MICHELSON: I can't read between any lines here.

MR. IMBRO: I understand. It's probably our fault. We need to do state it more clearly. But I think what that tried to say was that you won't be able to fully complete the hazards analysis at the time of design certification, which we talked about before.

MR. MICHELSON: I don't think that conforms with your basic commitment here to satisfy all safety questions

before certification.

MR. IMBRO: I think you can satisfy --

MR. MICHELSON: All to me means all. That's your words, not mine.

MR. IMBRO: Okay. That's what we said.

MR. MICHELSON: Yes.

MR. IMBRO: But I think that from a safety point of view, if you have the design progressed to a reasonable degree of completion and then have criteria and have a controlled process to control the rest.

MR. MICHELSON: Then you better go back and explain to the Commissioners who will read this that you don't really intend to do all the things needed to assure that all safety questions have been closed.

MR. IMBRO: I think that does resolve the safety -- well.

MR. MICHELSON: You're going to leave some open. You're going to leave some open till later walkdowns and whatever. Maybe that's in there. I didn't find it in here.

MR. IMBRO: There are a lot of things that can't be done up front and I think there are a lot of reconciliations that need to be done. I just don't think that it's reasonable or even feasible to get all this detail and --

MR. MICHELSON: Perhaps then you better change

your words, which are the words, I think, out of Part 52.

MR. IMBRO: All right.

MR. MICHELSON: I think that you're building yourself a box if you really aren't going to satisfy all safety questions before certification.

MR. WILKINS: It seems to me it's even more serious if it's not reasonable or perhaps even if it's unreasonable, it's not feasible to answer the questions that you're committed to answer, then this whole process is just going to fall flat on its face.

MR. IMBRO: I would not paint it that black. I think we've gone very far in specifying a high degree of standardization. I think that from a safety conclusion point of view, I think we will be able to reach safety conclusions without that excruciating level of detail. Maybe that's a difference of opinion we share.

MR. WYLIE: Let's take a break and be back at 35 after.

[Brief recess.]

MR. WYLIE: We will resume the meeting.

MR. WARD: May I ask a question?

MR. WYLIE: Sure.

MR. WARD: Is that what we're doing now?

MR. WYLIE: Yes.

MR. WARD: Okay.

MR. WYLIE: Question and answer.

MR. WARD: I don't know if this is a question or a comment. We seem to be still struggling with the definition of, of course, finality, what that's all about, and particularly worrying about how important non-finality is. It's been one of the grand traditions of the NRC, AEC before, that it goes ahead and makes decisions and then it puts in place some sort of what I used to call the confirmatory activity to follow up and maybe there's only 90 percent confidence in that decision and to get up to 95 or 99 percent confidence that the decision is right before whatever action is taken is taken, there is some confirmatory work.

There is some benefit to that sort of a process, but you haven't been explicit about doing that sort of thing in this program. I wonder if that would be useful to do that. Do you see what I'm driving at?

MR. VIRGILIO: If there's a confirmatory portion to this program, in my mind, it's the ITAACs. It is the method by which we'll ensure that the design details that we've certified are translated into the as-built plant. That's really the followup. But we have tried to disconnect that from issue finality.

What we review and approve as part of the certification is, in fact, what is going to be -- they'll be

the matters that are resolved, unless, and you go back to Part 52-103, ess somebody can bring forward information that, in implementing the ITAACs, you can demonstrate that the acceptance criteria has not been met. Then you've opened up the question again and you've got opportunity for hearing.

Now, I recognize that these issues are not resolved and there are matters that are being discussed in the Courts now, but if you look back at Part 52, particularly at 52-103, that's where you get your followup and that's where you get your confirmation and that's where your vulnerabilities are to a second hearing if the acceptance criteria is not satisfied.

MR. CARROLL: So you carefully chose your words when you said issue finality. That's distinct from as-built design finality, isn't it?

MR. VIRGILIO: Yes. That's the way the program was conceived.

MR. CARROLL: Issues have been finally resolved. Now the question is have you really built the plant that way.

MR. VIRGILIO: That's correct. Ic opens up the issue of finality if you can demonstrate that the plant hasn't been built in accordance with the acceptance criteria outlined in the ITAACs.

MR. WILKINS: But that doesn't open up the question as to whether those criteria are valid, does it?

MR. VIRCILIO: The question of whether the criteria are valid -- what is in Tier 1, what is in Tier 2 and the ITAACs, all that material is the subject of the first hearing.

MR. WILKINS: Yes, and that's behind you and not subject to attack again.

MR. VIRGILIO: Yes.

MR. WILKINS: But on the other hand, it can be alleged, perhaps accurately, that the plant was not built in accordance with those criteria.

MR. VIRGILIO: That's the provisions of 52-103.

MR. WILKINS: I'm speaking purely as a taxpayer, a citizen, that's good, that's the way it ought to be.

MR. VIRGILIO: We think so, too.

MR. WYLIE: Other questions? Carl?

MR. MICHELSON: No.

MR. WYLIE: You don't have any questions?

MR. MICHELSON: I asked all my questions.

MR. WYLIE: My goodness.

MR. MICHELSON: Not all of them, but all of them worthy of asking.

MR. WYLIE: Go ahead.

MR. WILKINS: I'm trying to formulate this so that

it makes some kind of sense. I'm not sure I can do it. You have to make -- NRC has to reach a determination that the plant will operate safely if it is built according to what we know with the Tier 1 information as supported by the Tier 2 information that's in the application.

In the course of making that decision, you have available to you some information that's in the vendor's files that you can look at and audit. If you look at it and decide that it is necessary for you to look at it, then you pull it out and call it Tier 2.

What was disturbing me a little bit this morning was that I thought I heard Gene say that you might not be able to make that determination. Now, he didn't say that, so let me be very careful. That's what I deduced from what he said, because I think what he said was you wouldn't have all the information needed to make all the determinations.

If you can't make all the determinations in every regard, then how do you know it's really safe?

MR. VIRGILIO: I think that what you would do is -- in my mind, I'd go back to 52-47 and it talks about interface criteria. If there are situations where we cannot form our safety judgment and make final conclusions because the design isn't complete, there are provisions in the regulations that allow us to use what we would call interface criteria.

In my mind, that translates to the old open items. These are issues that we will take up later and the later is at the COL stage.

MR. CARROLL: Wasn't it more restrictive than that, though?

MR. VIRGILIO: More restrictive in what sense?

MR. CARROLL: It could only apply to interface criteria. You made it sound like you could have a whole big laundry list of open items without restriction. You didn't mean that, did you?

MR. IMBRO: No. I don't think that's the case. I think what we're saying is we're going to have the design completed to a sufficient level of detail that we should be able to judge whether Tier 1 and Tier 2 criteria were appropriate.

You know the criteria specified up front, you have a good idea of how they're being implemented and what they mean, and, based on that, you should be able to achieve issue finality, and I don't think it's going to be a difficult undertaking for all of these items.

MR. WILKINS: I can understand this interface criteria, that makes sense to me. Then whatever happens on the righthand side of the interface later has to fit with those criteria.

MR. CARROLL: But I thought I heard Marty --

MR. WILKINS: I thought I did, too.

MR. VIRGILIO: Let me just go back to the regulations. The interface requirements to be met by those portions of the plant for which the application does not seek certification, these requirements must be sufficiently detailed to allow completion of the final safety analysis and design-specific probablistic risk assessment required by the above paragraphs.

MR. MICHELSON: What part of the plant aren't you seeking certification on?

MR. VIRGILIO: The full scope. We've discussed this.

MR. MICHELSON: Maybe have a total misunderstanding then of what we're doing.

MR. IMBRO: It's only the site-specific portions that you need to develop interface criteria for.

MR. MICHELSON: The rest of them, it isn't a question of partial scope. It's full scope, I thought.

MR. IMBRO: Would also say at the time of the combined operating license, you need to bring that up to the same level of completion as the balance of Nuclear Island.

MR. MICHELSON: Maybe I do have a question, then, just to hear it from a little different viewpoint. I'll try to ask it a little differently. There is the question of there will be a large number of components in this plant

which will require some kind of environmental qualification. What do you have in mind as to where that qualification might be specified or what stage of the process it might be specified, keeping in mind these basic ideas will have everything up to the procurement and construction specification stage?

MR. IMBRO: Environmental qualification, if I'm recollecting correctly, is Tier 1.

MR. MICHELSON: Well, the criteria clearly are Tier 1. Are the qualifications on each component Tier 1?

MR. IMBRO: I would expect that by the time you got to the 50 percent engineering point, you know what the environments are going to be, you know where your breaks are going to be, you know what the pressures are going to be. You know it to sufficient detail to be able to do a bounding analysis.

MR. MICHELSON: We aren't talking --

MR. IMBRO: And then you can qualify it to that, to within that envelope.

MR. MICHELSON: But you clearly believe that environmental qualification of all equipment must be specified before certification.

MR. IMBRO: Yes.

MR. WILKINS: Carl is very good at asking questions, and I must say I wish I could ask them as

articulately. He said environmental. You didn't say abnormal environmental, but I think that's in the back of his mind. I think that's certainly in the back of his mind.

MR. MICHELSON: My definition.

MR. WILKINS: It's not the normal environment. I can see that being specified right up front and no problem.

MR. WARD: It's kind of a phony hypothetical accident environment, which may or may not have all that much to do with real accidents, which is part of the problem.

MR. MICHELSON: These are outside of containment only we're talking about. Inside containment I'm not as concerned. There you pretty well define what you've got to do there. So I think I got my answer and still the same one as I got from different ways of asking it. But I do want to say that I believe at least that to describe the environmental qualification requirement for each and every component is not a small task because of the detailed -- unless you're going to do some real enveloping. In other words, over-specifying a number of components.

It's not a small task because it's very locale-specific. You have to examine each locale from the viewpoint of what happens if that particular pipe breaks at its postulated location or what happens if the fire starts in that area and so on and so on. That's how you describe,

then, what is the environment that it has to stand. This include inadvertant actuations of fire protection systems and the process of the accident and a number of other things.

It's not a small task, but I think really I believe it does have to be done in order for you to complete your review per the standard review plan.

MR. WYLIE: Other questions?

[No response.]

MR. WYLIE: Let me ask one, just a matter of clarification. I assume then, and you do refer to in the body here of requiring general arrangement drawings which show the major component locations, building locations, basically the design and the compartmentization of the building and so forth.

It also indicates that there are other drawings that follow that show the locations of equipment in the plant. There's a distinction; major equipment versus the remainder of the equipment.

I would assume then that the reg guide will spell out then what you're looking for in each of those categories. Is that right?

MR. IMBRO: Yes.

MR. WYLIE: I just wanted to get a clarification on that. On Page 5 of Appendix A, you have a paragraph on

innovative portions of the design. Specifically, you point out that the use of distributed microprocessors, fiber optics, multiplexers, and so forth and digital controls and instrumentation are something of a relatively new application in the advanced plants.

You don't say you require it necessarily, but you say that prototypical testing is one means of verifying the reliability and safety of that equipment. Can you expand on that a little bit as to what you had in mind as to what you're going to require?

MR. IMBRO: I don't think we've gone that far in the process yet. I think what we were trying to get across is that at the discretion of the staff, that people may need to do some additional -- they might have to advance the design to the greater than Level 2 category, particularly for things that have never been used before and that people may need to do prototype testing.

MR. WYLIE: Again, is this something that you're going to spell out in your reg guide, what you require?

MR. IMBRO: We're sure putting a lot into the reg guide, but --

MR. WYLIE: It seems we are really building a big volume.

MR. IMBRO: I don't know that this would be put into the reg guide. I think maybe more appropriately it

could be put into standard review plan guidance perhaps that addresses these new sophisticated control systems.

MR. WYLIE: Is that the intent?

MR. IMBRO: I don't know that it's really been thought through that far yet, quite honestly.

MR. WYLIE: It seems to me that's an important area and one that needs to be addressed.

MR. CARROLL: Just to follow up, Charlie, that paragraph seems to indicate there's a lot of credibility for the evaluation performed by the staff of RESAR 4/14. Do you know when that was done?

MR. WILKINS: I do.

MR. CARROLL: I do, too. I guess the obvious question is haven't we learned something in that time span. It makes it sound like that's the standard by which we're going to judge things.

MR. IMBRO: I think we were just trying to make the point that this is not a novel concept, that we've asked people to do prototype testing for innovative concepts before. I don't think we're going to use the same criteria that we used to judge RESAR 4/14.

MR. CARROLL: Do you know if you have any criteria that's better than you used to judge RESAR 4/14?

MR. IMBRO: I'm not really an expert in that area. I can't answer that.

MR. CARROLL: The answer is you don't.

MR. IMBRO: Maybe not.

MR. CARROLL: As best I can tell. That's a big deficiency in this whole program, because all of these plants are going to use that kind of instrumentation.

MR. MICHELSON: Did RESAR 4/14 use multiplexing for reactor protection, local transmitters out in the building for reactor protection?

MR. CARROLL: That's my impression.

MR. WARD: You said it did for reactor protection? We've got an expert back there.

MR. LEIVO: Ken Leivo. It was eleven years ago, but the system did use fiber optic links between analogue channels.

MR. MICHELSON: But from out in the building to the control room or just within the control room?

MR. LEIVO: I don't believe it did.

MR. MICHELSON: I'm not sure. My recollection was it did not. That is the new plan, though, to do local transmission from various parts of the building into the control room using these cables. So it becomes a problem of protecting the environment around these local transmitters which in many cases might be in more harsh environments than they would in the control room.

MR. WYLIE: Any other questions?

MR. WARD: Charlie, let me.

MR. WYLIE: Sure.

MR. WARD: In this SRM we got after we met with the Commissioners, they seem to want us to zero in on two questions. What information an application should be codified in a manner that it can't be changed without an amendment or an exemption and, two, what process should be used for changing the design below that level of detail. Do you think that we heard enough to understand what the staff's proposal on that is, do you think? I guess we have.

MR. WYLIE: I think so.

MR. WARD: You are more knowledgeable about this, and I just want to make sure we have.

MR. WYLIE: I think so.

MR. MICHELSON: I'd like one clarification in that regard. Does the staff envision changing 50.59 to more clearly fit to this kind of a process? 50.59 wasn't quite designed for what you're going to use this for. Are you going to change 50.59, in other words?

MR. VIRGILIO: No. We're not going to change 50.59, but at one point in the process, and that is at the time we issued the design certification, we'll include in the design certification 50.59-like provisions.

MR. MICHELSON: You will kind of reword it as a part of the particular rule for that particular design.

MR. VIRGILIO: Yes.

MR. MICHELSON: That would be fine.

MR. CARROLL: That's a clarification I've recently gotten; that they don't intend to use 50.59, per se. They intend to develop language that's similar to or based on.

MR. WILKINS: Until after the authorization.

MR. VIRGILIO: Let me make sure that's clear. Between the design certification and the COL, what we're proposing is that you have the same processes controlling both Tier 1 and Tier 2. That's the amendment, the exemption, or the waiver. Now, once you've been granted the COL, we propose to include in the COL language roughly equivalent to what is in 50.59 today, and we do that because of certain provisions in the rule itself that are best read to imply that 50.59 is applicable to a licensee authorized to operate.

So we re making that distinction. We feel like there is a gap in Part 52 and we're trying to cover that gap by putting in the COL itself the 50.59 words. We don't intend to change them. Right now, as a parallel effort that's not a part of this, we're implementing or we're allowing industry to implement the NSAC-125 document and we're conducting audits and inspections to get feedback to determine if that's the right approach.

MR. MICHELSON: That's my concern. Does that

document now in its interpretations apply equally to how we would change these designs and the COL thereafter?

MR. VIRGILIO: For those portions, remember not Tier 1, Tier 1 is going to be controlled by the rulemaking process, but for the Tier 2 information, 50.59 and its current provisions are what we consider adequate to control safety.

MR. MICHELSON: But not the NSAC-125 interpretations.

MR. VIRGILIO: It's sort of a separate effort from this that's ongoing. We're right now collecting information with regard to the implementation of NSAC-125 through inspections and audits. I imagine it's parallel, but it's not a part of this effort.

MR. MICHELSON: You will go back to the original 50.59 words or interpretations for this purpose, is that right?

MR. IMBRO: After the plant begins to operate.

MR. MICHELSON: After the COL.

MR. IMBRO: I think the way the rule is crafted, even though they're issued a combined operating license, there's still, I guess, an opportunity -- the Commission has to make another determination as to then whether they are allowed to operate. Once they're allowed to operate, once that final determination is made, that occurs after COL,

then 50.59 will apply.

MR. MICHELSON: When authorization for operation occurs, then it will be 50.59 covered.

MR. IMBRO: Yes.

MR. MICHELSON: Before that it will be per the change in the certification and a waiver or whatever.

MR. IMBRO: Yes.

MR. CARROLL: I have a question. When we met with the Commissioners last month, Chairman Carr alluded to or made sort of an offhand comment that maybe all this isn't really going to work, maybe what we need is an FOAK approach, first of a kind. We didn't follow up on that and I'm not sure I'm accurately quoting the good Chairman, but can you give us some insight as to what he was alluding to or what his thinking is on this?

MR. IMBRO: My only speculation would be, and, of course, I'm not inside the man's head, but I think that what he was saying is maybe that you could build a plant as a first of a kind and then once you went through all the evolutions, then certify it and then make it fixed as a certified plant.

MR. CARROLL: So the follow-on plants could be.

MR. IMBRO: Yes. I inferred that's what he meant, but that's my own interpretation.

MR. MICHELSON: The first of a kind would be two-

step licensing.

MR. IMBRO: Yes. That is my speculation.

MR. CARROLL: I guess the question is who would belly-up to the bar and expose themselves to that. One other issue, Gene. I guess a meeting ago or so, you made a presentation to us on design basis documentation. I made the point that I think you ought to say in all of this some very clear words that people ought to be very conscious of design basis documentation issues in proceeding through this process.

I guess I haven't found the words I'm looking for yet.

MR. IMBRO: They're probably not in there and addressing it in that regard. I think that we did make a conscious effort to try and put as much of the design and the criteria documents in Tier 1 and I think that will help to a great degree to keep the design basis intact. But, no. We didn't really address it from that context. I think it's necessary, it's a good idea.

MR. CARROLL: Would you think about putting some words into the reg guide on that subject?

MR. IMBRO: We certainly could consider that.

MR. CARROLL: I'll remember you were considering it when we look at the reg guide.

MR. WILKINS: Tell me again what the timetable for

the reg guide is.

MR. VIRGILIO: In my mind, everything is contingent upon the Commission approving the proposal.

MR. WILKINS: Understood.

MR. VIRGILIO: Once we get through that hurdle, we've made some rough estimates of about a year and we would see that this would be done in parallel with our review of the ABWR and AP-600 and whatever other applications we might have before us.

MR. WILKINS: But what's that N.1 year consist of? That's when the reg guide is published on the street?

MR. VIRGILIO: Yes. That's a very optimistic goal, considering you're talking about the public comment and --

MR. WILKINS: Let me back up a bit. There are certain internal reviews and so on that will go forth. Does the ACRS have a function in reviewing the reg guide?

MR. VIRGILIO: Yes.

MR. WYLIE: Yes.

MR. WILKINS: Then what I'm really looking for is when can the ACRS expect to get the draft of the reg guide that it would be expected to review in that same schedule of one year for final completion?

MR. VIRGILIO: You realize I'm just speculation. Again, after the Commission approves it in whatever words

they approve this, it may alter the course that we're on right now. If we were on the course that we're currently proposing to the Commission, I could envision coming back to you in maybe nine months or so with something a little bit more detailed.

MR. WILKINS: Nine months from the starting point.

MR. VIRGILIO: From the Commission approval point. That's a very optimistic schedule.

MR. WILKINS: It sounds like it to me.

MR. VIRGILIO: The importance of this matter in the eyes of the Commission, I could see we would put the resources against this in order to do it in an expedited fashion.

MR. MICHELSON: In the case of the ABWR, since it does have to go on in parallel without knowledge of necessarily what you have in mind, how do you assure coordination between what you're doing and what the ABWR people are doing? Presumably you should be in sort of lock step of some sort.

MR. VIRGILIO: Iterations and review by the technical staff. I look at it as right now they are conducting audits for the two reasons that we talked about earlier today; principally for the reason to gain insights on the design details. We've been to the vendor shops. We've seen some of the material that they have audited.

That would certainly help us in fostering a reg guide that would say what types of information do we want for these particular systems.

I would imagine there would be an awful close link between the technical reviewers who are doing the review of the ABWR, the AP-600 and the other applications that we have before us, and the development of this reg guide.

MR. MICHELSON: Yes, because clearly I would think that whatever ABWR comes up with will have to meet the regulatory guide. So we don't want to find out late in the game that you're not meeting the guide. You make sure it's kind of developed as you go along.

MR. VIRGILIO: And the only way that this could be developed successfully is wit a lot of very tight coordination between the people doing it.

MR. MICHELSON: Now, you're in a different organizational unit than the reviewers, is that right? Are you in this new division that they formed or are you in another division?

MR. VIRGILIO: I'm in another division, that's correct.

MR. MICHELSON: So there is an inter-divisional coordination that's required. It's not just between branches, it's between divisions, even.

MR. VIRGILIO: That's correct.

MR. WILKINS: But it's still all in NRR.

MR. VIRGILIO: That's correct.

MR. MICHELSON: That's that one saving grace.

MR. CARROLL: You keep mentioning ABWR, Carl, and I agree that that's --

MR. MICHELSON: Not the only one.

MR. CARROLL: That's the head of the pack, but I think the same words that you have in Attachment F about ABWR sound like they equally well apply to CE System 80-Plus.

MR. IMBRO: I am not that familiar with the CD System 80-Plus.

MR. CARROLL: We asked them what level of detail they had gone to and obviously they're not to the level of detail you're recommending.

MR. MICHELSON: That might change their mind.

MR. CARROLL: Yes. Appendix F is going to ruin GE's day.

MR. WYLIE: Any other comments?

[No response.]

MR. WYLIE: I'd like to thank the staff for their presentation. I think at this point we'll call on NUMARC to make their presentation. Bill Rasin?

[Slide.]

MR. RASIN: Thank you, Mr. Chairman. Somewhat

different from the agenda that I saw when I came in today, I will be the only presenter. I do not have any of the lawyers or the vendor technical people with me. Most of them are off oxygen now, but they're not quite up to travel.

[Laughter.]

[Slide.]

MR. RASIN: What I would like to do is review very briefly the industry position on level of detail which we've consistently presented, make a few comments on SECY-90-377, and then tell you where we are at this point in time. Obviously we're not ready to go through the tables and the detail that Gene and the staff did.

[Slide.]

MR. RASIN: As we have said before and certainly the last time we were before you, we see the Tier 1 part of certification as FSAR Section 1.2 scope of information, amplified to a level equating that in a current SER.

MR. CARROLL: What's an example of a current SER? Would that be Comanche Peak?

MR. RASIN: Comanche Peak or Limerick. I'm not too familiar with Seabrook. I would say any recent generation SER, and the level of detail we would certainly see varying with safety significance.

[Slide.]

MR. RASIN: We believe that the design must be

sufficiently detailed to enable the NRC to complete their safety evaluations, assure construction conformance can be attained, and to prepare their inspection plans and schedules for their review of the construction process subsequent to COL.

We believe that the statement from Part 52 is what we have been saying all along and that the issue of detail will have to be resolved in each certification rulemaking. I think our view is I guess somewhat similar to the staff's in that we've tried to express our thoughts through definitions to date and that hasn't worked for us either.

The staff has made an attempt at detail beyond what we have tried to do and I guess we will try that route as well as see what works. We are concerned that we're trying to do all of this definition up front to a higher degree than we think was intended or warranted by Part 52.

[Slide.]

MR. RASIN: With regard to SECY-90-377, the staff has made a tremendous effort in a short period of time and I think gone a long way up the curve on understanding the design process, how it's conducted, and what happens at various stages. I think in that respect they have made a real contribution to the discussion of this issue with the information they've put forward.

In reading the text of the document, we note the

acceptance of the two-tier approach, the flexibility provisions. We certainly see a philosophy of a graded approach to the level of detail, although we don't necessarily see that carried through in the tables. We see the philosophy that the level of detail should equate to what we have been saying; the FSAR as-built minus as-procured information.

However, again, we don't see that necessarily carried over into the tables.

MR. WARD: Bill, when you say you note the NRC acceptance of these items, by that you mean this is essentially what the industry proposed and now you're saying the NRC has accepted those proposals? What do you mean by acceptance?

MR. RASIN: Well, acceptance in principal in the SECY. Obviously that has not been accepted by the Nuclear Regulatory Commission. We believe what the staff has accepted is philosophically close to what the industry has been proposing as what we see as the most feasible way of implementing Part 52.

MR. WYLIE: But you don't agree with the way that the staff has done it.

MR. RASIN: Well, let's go on into now some of the things --

MR. CARROLL: Before you take that off. You have

fallen into the trap of using 50.59. You should say using a 50.59 approach or something like that.

MR. RASIN: Yes. I stand admonished. You're quite correct.

MR. CARROLL: Just so we get rid of that.

MR. RASIN: We have no problems with that concept. The way the staff conceived that is the way we understood.

[Slide.]

MR. RASIN: The level of detail, I think, that has taken us aback is the new standard of feasible and practical and whether this is proper to be the new regulatory standard of the day. Whether, in fact, those tables are feasible and practical is something that we're studying very hard right now, we may or may not agree with the feasible or the practical part of it.

We do acknowledge that it certainly is a valiant attempt to define that. Nevertheless, we don't see an exposition of a commensurate safety benefit to justify this feasible and practical standard as opposed to a reasonable assurance of protection of the public health and safety, and that's something that is of great concern to us from a regulatory philosophy point of view.

MR. MICHELSON: But you don't disagree with the need for the staff to be able to complete its safety evaluations, which I assume means what the standard review

plan prescribes.

MR. RASIN: Absolutely.

MR. MICHELSON: So whatever information needed to perform what the standard review plan prescribes would have to be provided, and you don't disagree with that.

MR. RASIN: We do not and I think you will see that further on. We see new and substantial requirements suggested in the SECY for design certification certainly beyond what we have seen in Part 52. The independent design certification or verification or audit, kind of a third-party audit concept is in there, and we certainly need to understand that a little bit more and we see that no where in the regulations today.

This new Category 3 or Tier 3 or whatever you want to call it, available for audit information, being specified to a great level of detail and admittedly well beyond what's needed for the safety determination is also a concern and that ties back to the feasible and practical.

The prototype testing clauses I think we need to understand a little bit more. We are concerned to see them show up and the way we read them is not necessarily consistent with the way we read Part 52. So we'll have to explore that a little more, as well.

MR. W[illegible]IE: What bothers you there, Bill?

MR. RASIN: Again, I think it's going to be a

matter of interpretation and degree. We thought we understood the statements in there regarding prototype testing for advanced plants. To what degree that applies in part to sections of our evolutionary plants we have to understand a little bit more.

MR. WYLIE: The way I read that, it was mainly where this was something new that had never been used before in a plant, and not necessarily had anything to do with evolutionary plants.

MR. RASIN: Yes. And the question is new to what degree. I don't know. We're just concerned we don't understand that. If the entire instrumentation system of the plant needs to be mocked up in a prototype as part of the design approval process, I guess we have some pretty serious concerns.

MR. WYLIE: I didn't read that into it.

MR. RASIN: Well, let me say that, as you are well aware, in industry, we already read the staff's documents from the worst possible perspective and imagine the worst possible things. It's a natural tendency on our part.

MR. WILKINS: Time tested.

MR. RASIN: However, experience shows us that over the long run, that's usually the most correct interpretation.

MR. CARROLL: Back to the independent design

certification bullet, that issue jumped out at me when I was reading this thing on the plane yesterday, but I can't find it. In what context was that used?

MR. RASIN: Maybe the staff could better answer their own document, but we saw in there the implication that an independent third-party audit kind of review would be a requirement for the certification process.

MR. CARROLL: I thought I did, too, but I can't find it anymore.

MR. VIRGILIO: Page 14.

MR. CARROLL: Page 14.

MR. VIRGILIO: Under the section entitled "Description of the Standardization" portion at the bottom of the page.

MR. CARROLL: You are referring, Marty, to the statement "The staff audit of the design detail will most likely involve integrated design inspections or independent design verifications."

MR. VIRGILIO: Yes. That is correct. That is the second reason why we wanted the information available for audit, to provide us assurance that the top level criteria in Tier 1 and Tier 2 had been translated properly into the design details. This is our safety review of the process.

MR. CARROLL: The independent design verifications you're talking about will be done -- what does independent

mean, done by who?

MR. IMBRO: It could be either a third party group or else a group within the organization that's off the project that has some independence.

MR. CARROLL: So you do envision the applicant to do this.

MR. IMBRO: Yes. It's kind of an either/or. It's nothing different than we have done on any of the NTOLs post-Diablo Canyon. In fact, even Diablo Canyon, I think, had an IDVP.

MR. CARROLL: You better believe it did.

MR. IMBRO: It probably was the grandaddy of them all.

MR. MICHELSON: That's not quite a certification. That's just a verification.

MR. RASIN: Yes. Our problem is it's not a regulatory requirement and seems to be becoming one. That as a general practice, we need to think about it and have some more discussion as to what's intended there.

[Slide.]

MR. RASIN: The finality statements, depending upon l one reads them, they're either very happy or very concerned, and we still have an even number of lawyers looking at them. So we're at an indeterminate state right now. But we're concerned that if we're misinterpreting

them, then over time they will be misinterpreted by others and we're afraid that this will lead to an unpredictable licensing process that we're all trying to get away from with this whole process. So that may be a point of just clarification or better understanding of what's meant.

With respect to the development of the reg guide on level of detail, our view has been that what is required for the safety determination and what is required to show that you meet the regulations in Part 50, which Part 52 references you to, is the standard review plan, and that's clearly called out in 50.34(g), that that, in fact, is the test as to whether you meet the regulations.

Obviously the information needed for the staff to make that determination must be submitted. There's no question about that. Again, we think that's the proper standard, not a feasible and practical standard.

[Slide.]

MR. RASIN: Finally, in the preliminary review of all the vendors, our numbers aren't too much different than those hinted at in the SECY document by the staff. With four active ALWR projects at this time, we see about a $500 million price tag for complying with the level of detail, as our first reading allows us to understand it in the SECY document.

MR. MICHELSON: Is that per project?

MR. RASIN: No, sir. That's total of the four projects. Obviously the ABWR, the CE, it's a little easier to determine that number than it is for the passive plant designs at this time. Also, the passive being less far along might allow you some other options. For any of the other designs, it's a significant sum of money.

MR. WARD: But that's additional over what's the base?

MR. RASIN: That's additional over the baseline that is being spent right now, which I'm not sure I can quote you a good number on that. All totalled it probably is in this order of magnitude across the four.

MR. WARD: So this is about doubling the design development costs.

MR. RASIN: This would be a doubling of the design development costs at first approximation.

MR. WARD: All right.

MR. RASIN: Mention was made of a first of a kind engineering and if you're familiar with the NPOC plan, you know there was a block on first of a kind engineering that we were looking at getting the funding for from industry and some from the Department of Energy. We see the tables in the SECY as bringing most of that first of a kind engineering work up now into the certification process and we think that there will be extremely low probability of

being able to finance this additional work absent an order, and as the industry has clearly maintained that without certification, there's not going to be an order.

So we find ourselves in a little bit of a Catch-22 right now trying to understand this better, with the Commission beginning to acknowledge the kind of costs that will be imposed by this feasible and practical standard. We really wonder what the viability of this process has become.

Schedule extensions, preliminary estimates, again, are for the evolutionary designs to comply with this, if the money were available in a very short period of time, on an extension of three to five years and the completion of the certification of those plants. The passive is a little bit less certain now. Again, it's in an earlier stage of design and you can always do some efficiency things, but clearly the schedule there and the funds available will be impacted by the delays in the evolutionary plant.

MR. MICHELSON: Before you leave this slide, let me ask a question. You seem to be concerned about the -- this is a question of how far the design goes in the practical sense as opposed to what's required for meeting the requirements of the standard review plan, which I think you said clearly you're in agreement with.

This estimate of doubling the costs, was that on the assumption that for $250 million you would have been

able to meet all the requirements of the standard review plan?

MR. RASIN: Somewhere on that order. Well, no. Over all four designs I think we're probably talking more than $250 million. Again, I don't know the exact number there, but it's somewhere, for all four, on the order of $500 million.

MR. MICHELSON: But you thought you had already estimated everything it took to meet the standard review plan.

MR. RASIN: That's correct.

MR. MICHELSON: And that this question of -- what do they call it -- practical and feasible or something? That was adding another $250 million to the level of effort required before certification. That was a thought you seem to be --

MR. RASIN: It's $500 million across the four designs.

MR. MICHELSON: Yes. For four designs, yes.

MR. RASIN: Right.

MR. MICHELSON: It comes from the first bullet where we asked them about what that $500 million meant, and I gathered that half of that roughly was contributed because of this additional thought of --

MR. RASIN: No. The whole $500 million is because

of the practical and feasible.

MR. MICHELSON: All $500 million is to make this thing practical and feasible.

MR. RASIN: Yes.

MR. MICHELSON: Whatever that means. I find your argument escapes me a little bit, but I guess you'd have to spend a lot of time explaining what -- if you already meet the standard review plan in all respects, then these niceties you're saying still cost $500 million to get it up to what the certification seems to require.

MR. RASIN: If you accept the staff's -- not for certification, but if you accept that between the submission and the available-for-audit category done to the detail specified in those tables, you are taking almost all of the balance-of-plant and Turbine Island systems to a Level 2 of design detail, which is well beyond where we are.

MR. MICHELSON: I thought the argument given was that we would only go in to audit those things required to determine the safety and acceptability of the plant. Are we going in and auditing things that are beyond determining safety and acceptability? I thought the intent was we go into the details to determine whether something is safe; for instance, on environmental qualification, if you need to know more of the details, you go into this material that's for audit.

But that was for the purpose of making a safety determination and not because it was nice or feasible or whatever.

R. RASIN: I think that's a fair statement with regard to the audit, but if you read the SECY, that material is to be developed and available for audit at the front end of the process.

MR. MICHELSON: To the extent needed to make safety determinations.

MR. RASIN: Yes, and maybe that's where we need --

MR. MICHELSON: Those are the Part 52 words.

MR. RASIN: We agree that's Part 52 words. The SECY does not say that. It requires Level 2 of detail on what we would consider even minor Turbine Island systems as the available-for-audit category up front.

MR. MICHELSON: Maybe that's just a need for clarification of what the staff intended for this material available for audit. Was it to assure standardization or was it to make your safety determinations or both?

MR. IMBRO: Both.

MR. VIRGILIO: The reg guide is going to foster development of more information than we've had in the past, and what we audit and what we include in Tier 2 is what we needed to make our safety judgment. The remainder is there and it fosters standardization. The alternate is to do this

on an ad hoc basis, to go back and, on a system-by-system basis, reviewer-by-reviewer, go back and decide what additional information we need in order to support the safety judgment, what additional information beyond what's currently included in the application.

So this is a process where up front we make some judgments using a graded approach to safety and say for each of these safety-significant systems, this is the level of detail that we want developed, commensurate with its safety significance.

MR. MICHELSON: Whether or not it was needed to make your safety determination, is that right?

MR. VIRGILIO: That we look at and audit. That piece that we audit, if we need it to make our safety judgment, it will be folded back up in the application, but we're not beforehand capable of saying that we're going to need to audit this piece in order to make our safety judgment.

MR. MICHELSON: It still escapes me that that's another $500 million worth of effort, but perhaps it is.

MR. RASIN: Well, we believe it is, and I would point out that in the Appendix F or whatever it is to the SECY on the impact on ABWR, the staff's estimate is not very far from the industry's. We're looking at $200 million from where we are now in the ABWR, which we had hoped in the

course of the next year would have received certification.

MR. MICHELSON: Well, wherever you are on the ABWR and the small pieces I've looked at on a spotcheck basis, you're far from meeting even the standard review plan. So let's make sure we're together saying the same things.

I think if you'd gone through the ABWR and you said, yes, this is the information needed and you've gone through the standard review plan to see what's asked for and it's all there, then, fine, I would agree with you, but it is not there. We pointed this out in just a few cases on the one module we did look at.

MR. RASIN: I can't comment on that and I'm not going to speak for General Electric. The interactions between GE and the staff are continuing, albeit on a very slow level right now, and I'm sure that if more is necessary for the staff's safety determination, it will be supplied.

MR. CARROLL: But on this subject, I guess earlier I brought up the example of the main feed water system. It was a slightly different context, but I guess my understanding is the staff would want Level 2 for the entire main feed water system. Are you saying, hey, they don't really need that to make a safety determination; they need to know some characteristics of it perhaps, but not where every instrument line runs.

MR. RASIN: That's exactly what we're saying and,

moreover, by this plan, even the Level 2 detail in the turbine drains would be necessary and it's hard for us to understand how that plays heavily in the safety decision.

MR. CARROLL: But the staff agrees with his characterization of it. You would require that.

MR. IMBRO: I think on the Turbine Island what we said was we were asking for a Level 2. I think what we mean is that that kind of defines an outer box of what the staff would consider as necessary to be able to make safety judgments. I will add now that we feel that there's a lot of safety benefits that can be gained from standardization, particularly in the Turbine Island since that the initiator of most of the plant transients to start with.

MR. CARROLL: Yes, but plant transients aren't important to safety.

MR. IMBRO: Certainly. They're challenges to the safety system.

MR. CARROLL: Yes, but I think all the PRA stuff suggests that that isn't really a major safety issue.

MR. IMBRO: Feedwater transients initiated TMI and they initiated the Davis-Besse event and initiated several others. I think from the staff's perception that we feel that there's a lot of benefit that can be gained from standardization itself. Particularly in the Turbine Island we recognize that Level 2 is way beyond what people have

ever asked for to do safety reviews, but we're not really suggesting that the whole Turbine Island need to be generated to a Level 2.

I think where the secondary plant can present challenges to the primary system, then maybe Level 2 detail is appropriate, and where other aspects of the turbine building, like the turbine drains -- that can cause a turbine upset, too -- don't really impact or present a challenge to the reactor system, then maybe they don't need to be Level 2. But we didn't really cut it that fine as a first cut and we said, hey, we might require as much as Level 2 for the turbine building and I think we were saying that for certain aspects we would and certain aspects maybe we wouldn't, and we haven't really parsed it that fine right now.

MR. CARROLL: Back to my main feed water example. You're saying you may not require a lot of very detailed stuff, like where vents and drains are on the system.

MR. IMBRO: Probably not. Offhand, I would say, no. We don't really care about that.

MR. CARROLL: How about feed pump lubrication systems?

MR. IMBRO: I think, though, that the information that's available to audit, what it kind of forces people to -- is it drives the design to kind of a higher degree of

standardization, and from that standardization you have the benefits of shared operating experience, shared insights from the PRAs. A lot of benefits can be accrued just from a human factors.

So just by making the design standard, even though we may -- I guess what I'm saying is we may go in and we may not audit the systems in the turbine building, even though we may have required them to be to a higher level than would normally be reviewed to the standard review plan, strictly to get a higher degree of standardization and take advantage or capture those unquantifiable benefits that are gained by standardization.

So the fact that we drive the design higher, I think, to us, improves the reliability of the turbine plant. But we may not necessarily go in and -- because there's really no criteria in the standard review plan that exists to audit secondary systems.

MR. MICHELSON: It's not clear to me at least how far apart 52 really was asking you to go beyond assuring that whatever was proposed was safe. In some areas you're clearly asking for quite a bit more to be developed up front. Do you have a basis to believe that Part 52 justifies this?

MR. IMBRO: In answer to that, I would say that since -- the way Part 52 is written, it really includes the

Turbine Island in there. The reason that was done, I'm told by the people who crafted the rule, was that, again, the fact that Turbine Island secondary plant has presented a lot of challenges to the safety systems and it was felt that we needed to take advantage somehow of the benefits from standardizing that, and we wanted to know some of those design details up front because they were important.

MR. MICHELSON: If they were important to safety, you did -- there's no question of justifying them up front if they're important to safety.

MR. IMBRO: Right.

MR. MICHELSON: It's the ones that aren't important to safety that I'm really questioning. To what extent does Part 52 allow you to go in and ask for more design on the basis that you get better standardization that way?

MR. IMBRO: None. There has to be a connection to safety clearly. We can't just go in and require standardization just because it's nice.

MR. MICHELSON: Those are judgmental areas then as to whether improving standardization is improving safety, where you can't pinpoint a particular safety concern about it.

MR. IMBRO: That's right.

MR. RASIN: We believe that that is correct, that

that is the reason that the tables are presented the way they are, and we believe the staff is trying to respond to the views of certainly at least one Commissioner that this exercise should promote the highest degree of standardization for whatever reason.

We are concerned, however, that -- I mean, it's easy to say, well, more standardization is more safety; that's a belief; that's a judgment; but there's not a quantification that goes with it and we really don't understand the connection there, when the determination has been made through Commission policy that the overall level of future reactors does not need to be, by regulation, safer than the existing generation of reactors.

Now, the policy statement encourages industry to do so. We've taken up that challenge in the EPRI requirements document. Furthermore, we've taken up the challenge of standardization and high degree of design completion to make an efficient construction process, and that's all called out in the EPRI requirements document.

We believe that the maximum benefit of standardization is really an economic one that accrues to the industry, and, as such, should be left to the industry. So we're not necessarily in opposition to a lot of the same goals. However, we're strongly in opposition to including all those goals under the regulator and having them posed

and enforced by the regulator for what we think are rather tenuous connections to safety.

[Slide.]

MR. RASIN: Let me tell you what our conclusions are at this point in time. I'd say we have an awful lot of work to do ahead of us. We believe that the Commission should not approve SECY-90-377 as currently written, particularly because of the concept of feasible and practical, and we see that as a new regulatory requirement clearly beyond 52 or anything else that we have dealt with and we see no substantial tie to safety for very substantial additional costs.

We believe that if this SECY is endorsed in its present form, as we understand it, that clearly the NPOC strategy plan is in jeopardy and we're very concerned about the progress we've made in the renewal of the nuclear option.

We do intend to provide detailed comments to the staff and the Commission just as soon as possible on the SECY and we certainly think that this document is a major piece of work by the staff and a major step forward, and we think it probably can form a pretty good basis for our discussions and interactions to conclude this issue.

We realized that this position will cause somewhat further delay in the final decision and that concerns us.

However, we believe that if the ECY is implemented as written now and as we understand it, that, as a minimum, we're going to have delays of many years, if not a real reduction in the whole program and the whole effort.

I believe that's where we are right now. We're working hard. I'm sorry we don't have the greater detail available to go through the charts and discuss it at that point. I'd say that the vendors in particular are back working very hard on trying to understand that and trying to come up with what we hope will be constructive comments and input.

MR. CARROLL: When do you think that information will be available?

MR. RASIN: That's a source of discussion between the vendors and I. They're hoping to have a Christmas vacation. I'm not so sure that's warranted. We believe that we cannot ask for a substantial delay. We've got to do this as quickly as we can and we will proceed to do that.

MR. CARROLL: So you're hoping they'll be complete by the end of the year?

MR. RASIN: Yes. That's my hope. I don't have complete commitments yet, but we're pretty close.

MR. MICHELSON: I thought the Commission decision was scheduled for next week. Do we have any new information on when it's going to reach a conclusion?

MR. VIRGILIO: We're meeting with the Commission this Friday, but I would envision that we would not have a conclusion at that meeting. It would be sometime thereafter and I have no way to judge when that would be.

MR. MICHELSON: I'm just trying to guesstimate whether the Committee has to write their letter in December or whether we can wait for NUMARC comments or how we do our schedule. It's not clear, because we were originally told that the Commission was going to vote on this thing, I thought, next week.

MR. WYLIE: It sounds like to me that a lot of dialogue does need to be done.

MR. RASIN: Obviously we will ask that they not. That decision is the Commission's to make based on whether they feel they have enough information or not.

MR. MICHELSON: Are you suggesting that maybe you would be interested in coming back to tell us more in January?

MR. RASIN: If you invite us back, we will come back when we have our more detailed comments, whether that's before or after the Commission decision. If it's after the Commission decision, I don't know.

MR. MICHELSON: I'm assuming it's probably delayed, but I was just wondering.

MR. WYLIE: It would seem to me that there's a lot

yet to be exchanged. If we wrote a letter, it seems like to me what we'd do is write a letter and say we think you're on the right approach, but we don't think you ought to conclude this until you've reached some exchange between industry and the staff.

MR. MICHELSON: We could write two letters.

MR. WYLIE: Then you could write another letter. I guess the question is whether we're going to write one or two.

MR. MICHELSON: The Committee doesn't like to write interim letters, but they can.

MR. WILKINS: Of course, we promised the Commission that we were going to write them a letter.

MR. MICHELSON: Because they said they were going to vote on it.

MR. WILKINS: Exactly.

MR. MICHELSON: I understood they delayed their vote till they got our letter.

MR. WARD: But if we think that the decisional information from NUMARC or the vendors is important to the Commission's decision, we ought to advise them of that.

MR. MICHELSON: We can put it in our letter. We will decide that later.

MR. WYLIE: It would also give us the opportunity to hear the detail after the industry has studied this.

MR. WILKINS: That's a procedural matter and I'm going to end up getting the staff and industry mad at me. Why haven't you guys talked about all this earlier, and have you, and does 90-377 represent the best position that the staff can come up with in light of what NUMARC has already told them, and that the staff is well aware of these concerns of NUMARC and, nevertheless, has prepared 90-377 the way they wanted.

MR. MICHELSON: You don't understand the process.

MR. WILKINS: That's clear.

MR. MICHELSON: But the staff will tell you what it is.

MR. WARD: That's probably a great strength. So go ahead.

MR. MICHELSON: It might be.

MR. WILKINS: I think I've formulated my question reasonably well.

MR. VIRGILIO: I would like to say we have been working with industry. We raised this as a policy issue to the Commission in the spring and we've offered up a couple of options and now a proposed solution. That's where we are right now. The proposed solution would foster additional interaction between us and the industry. So I would say if the Commission would endorse the reg guide, we would then again open up lines of communication and sit down in

developing the reg guide, if not through the public comment process, which the reg guide will receive, and get industry insights.

MR. MICHELSON: But the process that I think you didn't indicate is that when these SECYs are produced, they don't go to NUMARC. In our last meeting, NUMARC had not seen it yet.

MR. CARROLL: They have this one.

MR. WILKINS: This one is in the public domain.

MR. MICHELSON: I haven't quite finished. On this one here, you got it in a little sooner. However, NUMARC has got to have a finite time to digest it. How much time has NUMARC had since they received this?

MR. VIRGILIO: The paper was released, I believe, on the day that it was sent up to the Commission, and that's not a staff decision.

MR. MICHELSON: Ninth of November. So NUMARC has had some time to look at it, then. Nearly a month.

MR. RASIN: We've had meetings of our appropriate group to try to understand it and then sent the vendors back to do some homework. Let me say that we certainly have had interactions with the staff and we think very good interactions. I have a little bit of egg on my face in that after 241 and the staff went off to do some more work, and I made the recommendation that we not ask for a formal comment

period on the next SECY because we thought we had a pretty good understanding of where we were going and we thought we were still operating under the reasonable assurance of public health and safety.

The problem with this SECY is that it really blew us out of the water because we're now talking about a whole new standard of regulatory requirements and interactions and we are a little taken aback by that. Our concern with the process is we've been proceeding now for a couple years working and interacting, thinking we understood Part 52, and now all of a sudden Part 52 and the aims that people have for it are taking on a whole new light, and I guess that concerns us greatly from a regulatory stability standpoint.

We don't seem to be in a very stable environment and one questions whether the whole process can work anymore.

MR. WARD: What are you going to learn from the vendors that's different, that could alter a position that's taken now? The lines are pretty well formed, I think. You're claiming that this new standard is going to push the cost of design certification, is going to double the cost of the design certification for these four projects. You've made some judgment or somebody has that that may very well mean the whole program is no longer feasible.

What is more detail going to do? Is it going to

tell you -- just confirm that or feed back something to the staff that says, look, you can get a lot of what you want for only a tenth that cost, maybe we can work out a compromise?

MR. RASIN: I think it will be that kind of a approach. First of all, we need to look at two things; one, the extent of the table; do we agree with the feasible part of it. The practical is probably tied in as much with money as anything else, but the feasible, can we go that far. There are some questions as to can you go that far without nameplate data, which is excluded, and we've asked the vendors to take an honest look at that.

From the cost standpoint, as we get a better breakdown on that, sure, we should get a little better feel for what each particular page costs. The other column that we're taking a look at is the Tier 1 column to see whether that's in about the right ballpark from, again, a feasibility point of view. Then finally what the whole job is going to take given the definition given in those tables.

We'll also try to take a closer look at correlating those tables in our own mind with the standard review plan sections to see where that ends and how far beyond that we're going and what tie to safety there might be in that delta.

MR. WARD: If we go back to this curve that Gene

Imbro showed earlier for the percent of engineering hours or the percent design finality versus engineering hours, where is the disagreement? Do you disagree on that curve or is the problem that you see the staff as now requiring you to go farther up that curve to satisfy the design certification requirements?

MR. RASIN: I think it's the latter. We agree that the curve is shaped about as it is. We agree without specificity that the costs are in the ballpark. What we don't agree with is the distance up the curve that's being required for what purposes.

MR. CARROLL: Are you saying that quite right? Don't you mean -- you'll probably agree with them you should go up the curve this far for some systems. Where you disagree is you don't think you should go that far for other systems and components.

MR. RASIN: Sure. I think the curve he was looking at is total design for the plant. We very much agree with the graded approach. Clearly some systems require a very high degree for the staff to make their findings.

MR. CARROLL: Is the NPOC strategic plan a public document? Is it available?

MR. RASIN: It is a public document. It's available. There was a press release in conjunction with

the Nuclear Energy Forum in November.

MR. WARD: We were sent every other page of the summary in the mail.

MR. CARROLL: That's the one.

MR. WARD: We just had to figure out what it was.

MR. RASIN: We thought such an astute body could fill in the in between material. However, we'll be happy to give you your own bound volume.

MR. MICHELSON: I haven't seen the corrected copy.

MR. CARROLL: Can we get that after this meeting?

MR. MICHELSON: I suspect it wouldn't be an unreasonable request?

MR. WARD: That was just the summary.

MR. MICHELSON: Yes. I think that's the question, is where is the basic document, the fully-worded. I'd like to get a copy of the fully-worded one.

MR. WARD: I think you're about to.

MR. RASIN: We have some bound volumes of that here we'd be happy to leave with you and we'll send you some more for the rest of the members.

MR. CARROLL: You thought somebody might ask that question.

MR. RASIN: Well, Adrian thinks of these. I don't think of these things, but fortunately I have people that do.

MR. MICHELSON: I'd like mine bound already.

MR. CARROLL: You mean we're getting one with all pages?

MR. RASIN: I hope so.

MR. CARROLL: So what does it say? It says basically that we need some form of standardization and licensing stability in order to keep the nuclear option viable, is that what the thrust of it is?

MR. RASIN: Well, it does. Perhaps I'm not prepared now, but I could give you a very quick presentation on the contents at some time if you'd like. Basically, there's a figure in there that gives a pretty good summary. There are a number of building blocks that we see as the specific programs and tasks that need to go on.

If you turn to Page 1.3 in the summary and look at that building block summary figure, Figure 1-1, you'll see that's a basic overview of the program. You'll notice that the title of the document is "Strategic Plan for Building New Nuclear Power Plants in the U.S.," and the goal is to have a new plant ordered and in operation by the end of the century.

NPOC has challenged the industry and all the various organizations that serve the industry to accomplish that and each has been given specific responsibilities in the different areas. These building blocks show the area of

concern and the assignment of responsibility made to each group. You can NUMARC is assigned predictable licensing and stable regulation. We are assigned a project on defining enhanced standardization beyond the design; to determine the extent and the policies the industry should follow to attain and maintain standardization.

You can see the box of the ALWR utility requirements document assigned to the EPRI Utility Steering Committee. And each one of these blocks then has a section in here which defines the mission, the milestones and the schedule dates that NPOC set for the industry.

It's because of these detailed milestones and schedules that you can see that we believe that this plan is totally off track if, in fact, the feasible and practical standard stands up. You can also see a block down there that says first of a kind engineering, and that was the follow-on work that the industry intended to do beyond the design certification where we were trying to put in place the money and the resources to go from the design standardization to the first of a kind engineering which would make an order with a pretty fixed price and construction schedule feasible.

We believe it's much of that work now that's been drawn up into the design certification block by the detailed requirements in the SECY. But if you look at the plan, it

pretty well assumes that the certification is going to be one of the activities that's going to allow us to confidently go on with the first of a kind engineering.

So we're kind of concerned reassessing the whole lay of the land right now as we try to get our comments together on the SECY.

MR. CARROLL: What is USC?

MR. RASIN: USC is the Utility Steering Committee chaired by Ed Kintner. The group has been in existence since about 1985 overseeing the whole ALWR project.

MR. CARROLL: And EEI Accord?

MR. RASIN: EEI Accord is the industry organization of senior executives; in fact, it's all CEOs; that has been assigned the task of interfacing with government and all branches on behalf of the industry on the low and high level waste issues.

MR. MICHELSON: Are we finished with this subject? I have a couple of more detailed questions on NUMARC work. One of the questions I have is what was your interpretation of what site-specific design might have meant?

MR. RASIN: My own impression from reading that document is that I believe that site-specific and plant-specific has been confused somewhat in those tables. Site-specific I really see as those details relating to the site, the ultimate heat sink and such things that need to be

brought back into the standard design.

I interpret some of the details in the staff tables; again, this is my impression; as being more appropriately titled plant-specific than site-specific, and that, again, will be part of our comments.

MR. MICHELSON: Well, perhaps it's premature then to ask, but I will anyway. For instance, like the emergency cooling water systems are clearly part of that site-specific. It depends on where your cooling water is coming from. Parts of it, though, appear to be non-site-specific because they're the routings within buildings and the devices to which they are piped to serve and so forth. They are part of the design basis.

Is that kind of your impression, too; that site-specific really meant from the building boundary on out to where you're getting your water clearly depends on the site?

MR. RASIN: Yes. I think I would generally agree with that, and within the building to defining more detail at later stages seems to be more of a plant-specific question than a site-specific.

MR. MICHELSON: Another problem that comes up is how much of the so-called non-safety-related equipment does one have to detail for certification purposes, keeping in mind that this is equipment that might be located in the reactor building or in the control building or other

buildings which are part of your Nuclear Island or Turbine Island complex. Did you have any thoughts about that?

MR. RASIN: I'm not sure I can comment on that offhand. We can probably give you a better answer to that after the vendors finish their review and we come and talk to you again.

MR. MICHELSON: When you do your preparation of responses, one of the things I would like to see discussed a little bit is this question of what amount of information does it take to determine the environmental qualification requirements for equipment, because these environments are influenced by non-safety-related equipment, as well as safety-related.

You have to know where big water pipes are running, even though they aren't safety-related water pipes. You have to know a number of things. You have to know about ventilation arrangements, fire protection arrangements, a number of things, and to what extent does this have to be detailed so that one can do a determination of the environment so he can appropriately specify the equipment.

MR. RASIN: Yes. I will make one comment in that regard. In a number of areas like that, and you're probably familiar with this from your review of the EPRI requirements document, in that there's been some approaches taken there clearly in the realm of over-design to promote

standardization so that everyone doing a new analysis type of thing does not have to be done.

For instance, in the fire, we're not taking an Appendix R approach, we will sacrifice one whole fire area. That makes it a lot less important where the fire starts in the area, whether the cable trays are five feet up the wall or six feet up the wall, because you're assuming everything there is gone.

I think EQ certainly what you said is correct. You need the heat loads and the inputs into the building, but, again, I think we'll be able to do that a little better in a bounding sense than we have been able to do in the past. Even the site supported systems are being designed in an enveloping sense. The seismic design is being overdone. The site cooling water is overdone, done to a table which we feel will make such a plant suitable for -- I forget what the number is -- something like 85 percent of the sites in the country type of thing, realizing that given that most plants will be over-designed.

However, we believe that if some money and steel and concrete is well spent as opposed to millions of dollars in regulation and lawyers fees and hearings.

MR. MICHELSON: So the way you bound some of the events is to try to put a box around them and then one is careful about the prescriptions for the box, requirements

and so forth. Some types of events, though, are not as easily boxed in, such as flooding events or water pipe breaks. You can't box t[illegible]r into the room. It will burst its way out in most cases if you tried to box it.

So you have to have quite a bit of understanding of what all might become involved in the event and to do that you have to know where safety and non-safety equipment is and determine that it's jeopardy from the flood is not going to prevent safe shutdown of the plant.

This requires a lot of detail.

MR. RASIN: It requires some detail, and I'm not sure -- it's difficult just from listening to the discussions whether we're on the same wavelength all the time or not.

MR. MICHELSON: Well, the standard review plan, of course, is what I fall back to and I look to say, well, what does the standard review plan require you do. Clearly we have to have enough information to perform it.

Now, as you are well aware, this is still a problem in existing operating plants. We're going back and patching it with the IPEEE program, for instance. But we've got to walk through these designs on paper. We can't go into the plant and walk through the design. So it requires that that information that we now get from a physical walk-through be available for a paper walk-through. That's a lot

of detail.

MR. RASIN: Perhaps so, but I think that's got to be moderated by certain of the design principals in the plants. As I said before on the fire, if you're willing to take a loss of a complete fire area, then I think you could make your analysis based on a general arrangement diagram, knowing what is in the room without having it specified down to where you've designed the pipe hangers.

MR. MICHELSON: But you need to know both safety and non-safety equipment in the room to the extent of what effect it has on non-safety equipment that might, in turn, reflect back into other portions.

MR. RASIN: That's correct.

MR. MICHELSON: You can do it, there's no doubt.

MR. RASIN: That's correct.

MR. MICHELSON: We already have all the rules to do it with. We have them on existing plants. But we find out we didn't really carry out the rules too well, and that's what the purpose of walkdowns are; yet another check ot see if we really caught it.

MR. RASIN: That's correct, but I would point out --

MR. MICHELSON: These walkdowns have to be done on paper now instead of in physical plants, and that's the level of detail we have to have to satisfy the standard

review plan, I think. You need to give some thought as to how that would be handled. I realize it probably is not possible to have that amount of detail. So how do we approach this question? How do we satisfy it? What part do we leave for some other program later to finish up? I just don't see it articulated anywhere.

MR. RASIN: Those are all good questions. Again, I would say that those are many of the same reasons that the industry undertook the EPRI requirements document program, because we wanted to make sure we took into account all we learned and did it in a way that satisfied taking care of the problems and didn't get us into the one-by-one licensing morass that we've experienced.

MR. WYLIE: Any other comments or questions?

MR. CARROLL: Are you happy, Bill, with the situation with respect to how all this would be reviewed, the emphasis on the standard review plan, or do you agree that you need more guidance, that the standard review plan ought to be updated to reflect 1990?

MR. RASIN: That is an interesting question. I would say basically we are satisfied that the industry has the experience to respond to the standard review plan. As to whether the standard review plan needs to be updated to add some of the things that the staff mentioned in their presentation, I think is mostly up to the staff.

Obviously if they propose modifying it, we will comment on it. If they put it in place, we will comply with it.

MR. CARROLL: For example, severe accident issues. Would you feel better if they were dealt with in some fashion or other in the standard review plan?

MR. RASIN: Again, to the extent that they're dealt with in the regulations, if the staff feels that that would facilitate the licensing process, then that might be beneficial for all of us. We'd have to look at the specifics. I would not suggest that we put an entire section in the standard review plan dealing with severe accidents beyond what's given in the regulations since the standard review plan is supposed to be the mechanism for the staff to make a judgment whether or not the regulations have been met.

So I would not suggest we expand the role of the standard review plan.

MR. MICHELSON: There are problems in that some things aren't even covered by the standard review plan that are now becoming quite important. For instance, the chilled water systems control the environment in much of the plant. Most of these improved light water reactors are not even covered by a standard review plan.

We had many Subcommittee meetings with the staff

over the years about chilled water systems and this was one of the revelations, that there isn't even a plan on how you review a chilled water system. The only plan was, well, you'd use a service water system. That's the closest we've got.

There are many unique control problems with chilled water systems that are just not covered adequately by looking at a service water system standard review plan. I think in electronics we get into the same problem, that these are old standard review plans for relay type logics and so forth and not for solid-state fiber optic control systems.

MR. RASIN: I'm sure that there are examples like that. I guess the only thing I won't subscribe to is the general philosophy that we should make sure everything we can ever think of is covered by the standard review plan. Aside from that, I guess, we're willing to comment on whatever the staff proposes.

MR. WYLIE: Any further comments?

[No response.]

MR. WYLIE: Thank you, Mr. Rasin. You will be available Thursday?

MR. RASIN: If you would like, yes, I will.

MR. WYLIE: We would like that. I guess we could go off the record.

[Discussion off the record.]

MR. WYLIE: Back on the record.

MR. VIRGILIO: What I wanted to go back and make sure was clear is if you go back to Page 2 of the Commission paper, 90-377, you will see what we've done is we've dissected the SRM and from that process, we found seven questions. The SECY paper proceeds section-by-section, question-by-question to answer these.

Now, the first question asked us to tell us about what's feasible and practical to achieve. In a way, so does the second question. If you go to the staff's response, the response to Question 1, which starts on Page 3, talks about what is feasible and practical to achieve. That flavor carries over into the response to Question 2.

The response to Question 3, and Question 3 asked us what is the approach, this is where we get into the staff's proposal in some detail. The approach that the staff proposes is not a standard that is feasible and practical, but the level of detail be developed, a sufficient level of detail to allow us to ensure that the criteria set forth in Tiers 1 and 2 is satisfactorily implemented to the design.

In our mind, that reg guide is not feasible and practical. It is developed commensurate on the safety significance of the system. Feasible and practical is an

end point. It's a stopping point. We realize we can't go beyond that. But that is not the basis for the development of the reg guide.

That is discussed, I think, on Page 6 in some detail, toward the bottom of the second paragraph, and I think that's called out again on Page 8. Let me read a section of that. "Using insights from Attachments B and C of Appendix A," and this is on Page 8 in that paragraph entitled "Available for Audit." "If, during the audit, the staff finds that part of the material is necessary to make its safety determination, then that information will be docketed and made part of the application."

If you step up two or three sentences, you see that the basis for the reg guide is to ensure that the Tier 1 and Tier 2 criteria have been properly translated into the design products. The staff proposes allowing applicants for design certification and COL to develop and finalize the design in a graded approach and have this material available for audit.

There is a strong safety nexus to what we're going to be asking for in the reg guide. It's different than this standard of feasible and practical and I want to make sure that's clear because that's come across in a number of letters we've gotten from industry and it's come across clearly in the industry presentation we heard today, and

it's a misconception.

MR. MICHELSON: Could you relate that to the maximum technically achievable that you use in Appendix B?

MR. VIRGILIO: That's the end point. What we wanted to do is make sure that we didn't ask people to develop more than what was feasible and practically achievable, but that's not --

MR. MICHELSON: You're just saying that an X there means that what you expect to be completed at design certification is practical and feasible to complete.

MR. VIRGILIO: Yes.

MR. IMBRO: Yes.

MR. MICHELSON: It could be viewed other ways.

MR. VIRGILIO: It's been misinterpreted by a number of people.

MR. WARD: He seems to be saying that you've insisted on bringing everything up to a level, a standard of reasonable and practical. Your point is that you're not doing that, but instead you're not going to permit anything to go beyond that.

MR. VIRGILIO: That's correct. Our point is we're going to look at the safety significance and we're going to foster a design developed based on the safety significance of the system to a level commensurate with the safety of the issues involved, and not to a point that's feasible and

practical.

MR. MICHELSON: In Appendix B, you're just trying to tell me that you think that is achievable, that level of inform on that you needed for safety.

MR. VIRGILIO: Yes. We'll try to highlight this again in our meeting.

MR. MICHELSON: That would be very important to highlight to the Committee so we don't get crossed up on it.

MR. CARROLL: I guess I'd also like to hear some more discussion about what you envision the independent design verification process is all about and what it applies to.

MR. VIRGILIO: Again, that helps get to the second reason why we're fostering that material to be available for audit. The first reason is being that we want to -- it will allow us to examine in detail specific features of the design, but the IDIs and the IDVPs help this second reason, and that is to ensure that the Tier 1 and Tier 2 criteria have been properly translated into the design details. It's a check on the process.

MR. WARD: I heard what you just said and I understand the distinction. However, if I go back and listen and remember what Gene was saying when he was going through the table, and he said something to the effect that when you made decisions about whether to put an X in the

box, in the column under Tier 1, that you were influenced in doing that by trying to encourage standardization, even when there wasn't obvious or clear safety benefit.

MR. VIRGILIO: No. There has to be the clear safety benefit for that to be a Tier 1.

MR. WARD: I thought he said something different.

MR. IMBRO: No. I think the rule is clear that there has to be a safety benefit. I think what we're doing is we're redefining safety from strict Chapter 15 design basis accident approach to include safety as viewed by the -- in addition to design basis accident philosophy is to get safety benefits from standardization.

So to the extent that the standardization drives your safety benefits, then it's within the context of the rule.

MR. WARD: It sounds like the same thing, to me. You're assuming that standardization has a safety benefit and that's just intuitive. There really isn't any basis for that. So you're pushing toward standardization not to be capricious, but because you think it has a safety benefit.

MR. VIRGILIO: Exactly, yes.

MR. IMBRO: I don't know how to quantify it. I'm not sure.

MR. MICHELSON: That's not quite what I thought I heard a little bit ago. Maybe you think it's the same, but

let me indicate what I thought I had heard. That is that there is a certain level of information needed to make a safety determination on a particular item, maybe whatever that item was in the listing, and that that level of information that you think you need also can be achieved under this process.

You're not asking for information that can't be available at the time of certification. It is achievable at the time of certification. That's all I thought the X meant. But it only related to information you needed to make your safety determination, not other things that might even make it safer yet or something.

MR. VIRGILIO: That's correct. m

MR. MICHELSON: That message doesn't come through very clearly and I thought those two answers --

MR. WYLIE: I think you could argue, though, as to whether a lot of these Tier 1 items are necessary to make a safety determination if they are available as Tier 2 items.

MR. MICHELSON: This wasn't related just to Tier 1, anyway.

MR. VIRGILIO: The reg guide is going to foster a body of information that would support audits in any area we wanted to do an audit to a level commensurate with the safety significance. We're only going to audit a part of all of that design information. And then there's a subset

of what we audit that might be needed to support our safety judgments. So it's cascades, if you will.

Not all the information that we're going to ask be developed will, in fact, be necessary to support our safety judgments.

MR. WYLIE: But why do you need Tier 1 at all?

MR. VIRGILIO: Tier 1 is what solidifies the design details.

MR. WYLIE: That's your standardization.

MR. VIRGILIO: By rulemaking. It will be the guarantee of standardization.

MR. WYLIE: That's just standardization.

MR. VIRGILIO: It is the guarantee, and the rest of it is --

MR. WYLIE: But as far as doing your safety analysis, all your Tier 2 and audit information is all you need. Sure it is.

MR. MICHELSON: Well, Tier 1 gives you the criteria that you're now determining.

MR. VIRGILIO: I'd go back to the definition that I tried to use earlier.

MR. WYLIE: You could write criteria in Tier 2 as far as that goes.

MR. VIRGILIO: Tier 1 in my mind is the principal design criterion basis and it's the principal design

features and we've also pushed additional information into Tier 1 just for the reason you cited. In order to foster standardization.

MR. WYLIE: That's the only reason, yes.

MR. VIRGILIO: But it's necessary for our safety judgments.

MR. WYLIE: Well, a list of major components, for example, is in Tier 1 now.

MR. VIRGILIO: We're not going to put things in Tier 1 that are not directly tied to our safety judgments.

MR. WYLIE: I have a hard time figuring a list of major components is necessary for a safety evaluation. They can be in Tier 2.

MR. VIRGILIO: In some cases, they might be. But I think we're talking about principal design features.

MR. WYLIE: And if you add to that list, then you've got a problem.

MR. MICHELSON: Your answer prompted another question, I guess, which they always do. It's not clear to me whether you prescribed to the applicant all the things you'd like him to do and then you go in and audit a portion of those, or whether you go in and tell him here is an area I want to see your calculations on, then he sits down and does them and you look at them. Which way is it?

MR. VIRGILIO: We're proposing the former. But

the second is an option that we proposed early on which was rejected. We could go on an ad hoc basis and on a system-by-system basis make judgments about what do we need, and then foster the development of that information.

MR. MICHELSON: Where does it say or specify that you are, indeed, going to ask them to complete details in a number of areas? Is that what this table was meant to do, to say that these are the areas we expect you to do your detailed work in and then we'll selectively audit?

MR. VIRGILIO: It's the first cut and the reg guide will finalize that.

MR. MICHELSON: I wasn't quite sure that was how it was being used, but that indeed means he's got to do all the work because he doesn't know which ones you're going to audit. Okay.

MR. WYLIE: Let's now go off the record.

[Whereupon, at 12:23 p.m., the Subcommittee was adjourned.]

REPORTER'S CERTIFICATE

This is to certify that the attached proceedings before the United States Nuclear Regulatory Commission

in the matter of:

NAME OF PROCEEDING: ACRS Improved Light Water Reactors

DOCKET NUMBER:

PLACE OF PROCEEDING: Bethesda, Maryland

were held as herein appears, and that this is the original transcript thereof for the file of the United States Nuclear Regulatory Commission taken by me and thereafter reduced to typewriting by me or under the direction of the court reporting company, and that the transcript is a true and accurate record of the foregoing proceedings.

Lynn Estep

Official Reporter
Ann Riley & Associates, Ltd.

NRR STAFF PRESENTATION TO THE ACRS STANDARDIZATION AND PART 52 LICENSING

DECEMBER 4, 1990

M. VIRGILIO, ASSISTANT DIRECTOR

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301-492-1353

G. IMBRO, SECTION CHIEF

SPECIAL PROJECTS BRANCH, NRR

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SUBCOMMITTEE ON IMPROVED LIGHT WATER REACTORS

OVERVIEW

- GRADED APPROACH TO DESIGN FINALITY
- CONTENT OF THE APPLICATION AND CERTIFICATION
- CHANGE PROCESS FOR MATERIAL IN APPLICATION, CERTIFICATION AND HELD FOR AUDIT

SECY 90-241

- CONTENTS OF THE APPLICATION
  TIER 1 & TIER 2
- CERTIFICATION - TIER 1
- MATERIAL AVAILABLE FOR AUDIT
- LEVELS 1, 2, 3, & 4

FOUR LEVELS FROM SECY 90-241

- 1. IDENTICAL PHYSICAL, FUNCTIONAL & PERFORMANCE CHARACTERISTICS
- 2. PHYSICALLY SIMILAR / IDENTICAL FUNCTIONAL & PERFORMANCE CHARACTERISTICS
- 3. IDENTICAL FUNCTIONAL & PERFORMANCE CHARACTERISTICS
- 4. FUNCTIONALLY IDENTICAL / SIMILAR PRINCIPAL FEATURES

STAFF PROPOSAL - DETAIL

- LEVEL OF DESIGN DETAIL
  - * GRADED APPROACH BASED ON SAFETY
- APPLICATION
  - * FSAR MINUS AS-BUILT & SITE INFORMATION
  - * ORGANIZED INTO TWO PARTS/TIERS
  - * SUPPORTS SAFETY DETERMINATION
- AVAILABLE FOR AUDIT
  - * FROM PROCUREMENT & C&I SPECS
  - * CONFIRM TRANSLATION OF SAFETY CRITERIA INTO DESIGN

STAFF PROPOSAL - DETAIL

- GRADED APPROACH BASED ON SAFETY
  - * > LEVEL 2 FOR CERTAIN NUCLEAR ISLAND FEATURES
  - * LEVEL 2 FOR KEY NUCLEAR ISLAND FEATURES
  - * LEVEL 2 FOR KEY TURBINE ISLAND FEATURES
  - * LEVEL 4 AT CERTIFICATION AND LEVEL 2 AT COL FOR SITE SPECIFIC FEATURES

STAFF PROPOSAL - FLEXIBILITY

- CERTIFIED PORTION OF THE DESIGN/TIER 1
  - * RULEMAKING TO AMEND CERTIFICATION
  - * EXEMPTION PER SECTION 52.63
  - * WAIVER PER SECTION 2.758

STAFF PROPOSAL - FLEXIBILITY

- IN APPLICATION BUT NOT CERTIFIED/TIER 2

  * BETWEEN DESIGN CERTIFICATION AND COL AMENDMENT RULEMAKING, EXEMPTION, WAIVER
  * BETWEEN COL AND AUTHORIZATION TO OPERATE PROVISIONS PARALLELING SECTION 50.59
  * FOLLOWING AUTHORIZATION TO OPERATE SECTION 50.59

STAFF PROPOSAL - FLEXIBILITY

- INFORMATION AVAILABLE FOR AUDIT
  - * 10 CFR PART 50, APPENDIX B
  - * TIER 1 & 2
  - * COST OF REDESIGN

RECOMMENDATIONS

- AGREE WITH THE GENERAL APPROACH ON:
  - * GRADED APPROACH TO DESIGN FINALITY
  - * CONTENT OF THE APPLICATION AND CERTIFICATION
  - * CHANGE PROCESS FOR MATERIAL IN APPLICATION, CERTIFICATION AND HELD FOR AUDIT
- AUTHORIZE DEVELOPMENT OF REG. GUIDE

NUCLEAR INDUSTRY'S PRESENTATION TO THE ADVISORY COMMITTFE ON REACTOR SAFEGUARDS ON LEVEL OF DETAIL & COMMENTS ON SECY-90-377 REQUIREMENTS FOR DESIGN CERTIFICATION UNDER PART 52

BILL RASIN, DIRECTOR, TECHNICAL DIVISION, NUMARC

NUMARC PRESENTATION TO ACRS ON SECY-90-377

1. Introduction

2. Industry position on Level of Detail

3. Comments on SECY-90-377

4. Conclusions

INDUSTRY POSITION ON LEVEL OF DETAIL

- TIER 1, FSAR SECTION 1.2, AMPLIFIED TO A LEVEL EQUATING TO A CURRENT SER

- LEVEL OF DETAIL WILL VARY DEPENDENT UPON SAFETY SIGNIFICANCE OF SYSTEM

- DESIGN MUST BE SUFFICIENTLY DETAILED TO ENABLE NRC TO:
  - COMPLETE SAFETY EVALUATIONS
  - ASSURE CONSTRUCTION CONFORMANCE
  - PREPARE INSPECTION PLANS AND SCHEDULES

- LEVEL OF DETAIL IN A DESIGN CERTIFICATION FROM PART 52:

  "AN ISSUE THAT WILL HAVE TO BE RESOLVED IN EACH CERTIFICATION RULEMAKING"

COMMENTS ON SECY-90-377

GENERAL COMMENTS

- o INDUSTRY RECOGNIZES AND APPRECIATES THE EFFORT STAFF HAS MADE IN DRAFTING THE DOCUMENT.
- o INDUSTRY NOTES NRC ACCEPTANCE OF:
  - TWO TIER APPROACH.
  - FLEXIBILITY PROVISION, THE USE OF 50.59 DURING CONSTRUCTION FOR TIER 2 ITEMS.
  - PHILOSOPHY OF A GRADED APPROACH TO LEVEL OF DETAIL.
  - PHILOSOPHY OF THE LEVEL OF DETAIL SHOULD EQUATE TO: FSAR MINUS AS-BUILT & AS-PROCURED INFORMATION.

GENERAL CONCERNS

- LEVEL OF DETAIL
  - "FEASIBLE AND PRACTICAL" STANDARD INTRODUCED
  - COMMENSURATE SAFETY BENEFITS FROM INCREMENTAL LEVEL OF DETAIL NOT DEMONSTRATED
- NEW AND SUBSTANTIAL REQUIREMENTS FOR DESIGN CERTIFICATION BEYOND PART 52
  - INDEPENDENT DESIGN CERTIFICATION
  - TIER 3/AVAILABLE-FOR-AUDIT
  - PROTOTYPE TESTING

CONCERNS CONT'D

- o FINALITY STATEMENTS ARE AMBIGUOUS
  - FINALITY FOR TIER 1 INFORMATION ONLY
  - LEADS TO UNPREDICTABLE LICENSING PROCESS AND SCHEDULES
- o DEVELOPMENT OF REGULATORY GUIDE ON LEVEL OF DETAIL
  - SECTION 52.47(A)(1)(I) REFERENCES PART 50 - - REFERENCE FOR APPLICATION FOR DESIGN CERTIFICATION
  - SECTION 50.34 ADDRESSES CONTENTS AND REQUIREMENTS FOR FDA/DESIGN CERTIFICATION 50.34(G)
  - SECTION 50.34(G) REFERENCES THE SRP AS THE ACCEPTANCE CRITERIA FOR REGULATIONS

CONCERNS CONT'D

- ADDITIONAL COSTS TO MEET THE LEVEL OF DETAIL REQUIRED BY THE SECY:
  - INDUSTRY ESTIMATES IN EXCESS OF $500 MILLION (4 ALWR PROJECTS IN PROGRESS)
  - EXTREMELY LOW PROBABILITY OF FINANCING THE ADDITIONAL WORK WITHOUT AN ORDER
  - NO POSSIBILITY OF AN ORDER UNTIL DESIGNS ARE CERTIFIED.
- SCHEDULE EXTENSIONS:
  - EVOLUTIONARY 3 TO 5 YRS
  - PASSIVE UNCERTAIN BUT WILL BE IMPACTED BY DELAYS IN EVOLUTIONARY SCHEDULES

CONCLUSIONS

1. COMMISSION SHOULD NOT APPROVE SECY-90-377 AS WRITTEN.
   - o CONCEPT OF FEASIBLE AND PRACTICAL IS A NEW REQUIREMENT BEYOND PART 52
     - REQUIRES SUBSTANTIAL ADDITIONAL COST WITH NO TIE TO SAFETY
   - o IF SECY-90-377 IS ENDORSED NPOC STRATEGIC PLAN AND NUCLEAR OPTION JEOPARDIZED

2. INDUSTRY INTENDS TO PROVIDE DETAILED COMMENTS ON SECY-90-377 TO NRC STAFF AND COMMISSIONERS AS SOON AS POSSIBLE