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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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BRIEFING ON LEVEL OF DESIGN DETAIL FOR PART 52

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PUBLIC MEETING

Nuclear Regulatory Commission
One White Flint North
Rockville, Maryland

Friday, December 7, 1990

The Commission met in open session, pursuant to notice, at 10:00 a.m., Kenneth M. Carr, Chairman, presiding.

COMMISSIONERS PRESENT:

KENNETH M. CARR, Chairman of the Commission
KENNETH C. ROGERS, Commissioner
JAMES R. CURTISS, Commissioner
FORREST J. REMICK, Commissioner

STAFF SEATED AT THE COMMISSION TABLE:

SAMUEL J. CHILK, Secretary

WILLIAM C. PARLER, General Counsel

JAMES TAYLOR, Executive Director for Operations

DR. THOMAS MURLEY, Director, NRR

MARTIN VIRGILIO, Chief, PTSB, NRR

REBECCA NEASE, Technical Assistant, NRR

BRIAN GRIMES, Director, DRIS, NRR

EUGENE IMBRO, Section Chief, DRIS, NRR

CHARLES MILLER, Director, Standardization and Life Extension Project

P-R-O-C-E-E-D-I-N-G-S

10:03 a.m.

CHAIRMAN CARR: Good morning, ladies and gentlemen.

The staff is here to brief the Commission on its recommendation for the level of detail required for an essentially complete nuclear power plant design that must be submitted in an application and that must be available for audit for design certification and for a combined license under 10 CFR Part 52.

In addition, the staff will discuss staff review plans, issue finality, flexibility to incorporate changes while preserving standardization, and applicability of the industry's proposed two tier approach to design certification.

The Commission also requested the staff to be prepared to discuss briefly the proposed decision process by which it intends to determine the design documentation and the material retained for audit is both necessary and sufficient to make its safety determination. Such material from the documentation retained for audit would become part of the design as certified by rulemaking.

In January of this year, the staff issued for Commission consideration SECY-90-016 concerning

proposed departures from current regulations for evolutionary designs. In that paper, the staff recommended that resolution of 15 specific issues be required for each evolutionary design submitted for certification in addition to the requirement for resolution of unresolved safety issues and medium and high priority generic safety issues. The 15 issues had been identified by examining operating experience and existing probabilistic risk assessments.

The Commission, in an SRM, gave guidance to the staff for consideration of these 15 issues in the certification process, approving 13 of the staff positions and modifying those dealing with core melt frequency and containment performance.

In July of this year, the staff issued for Commission consideration SECY-90-241, which described four options regarding the level of detail to be required of an applicant for design certification. As a result of this paper and the associated Commission briefing, the Commission requested additional information about seven specific subjects and recommendations for implementing the provisions of 10 CFR Part 52.

At the outset, I would comment that we must keep in mind that what we are addressing is very

important to the successful implementation of the 10 CFR Part 52 rulemaking. The staff and the Commission are required to certify the safety of a design, not a power plant constructed and ready to operate. And, as numerous design reviews and design basis reconstruction efforts have shown us our way, even with as-built plants to look at, this task is very difficult. It will be even more so with a design only on paper. However, we should not lose sight of the objective, to settle the problems up front before huge sums of money are invested, so that there will be assurance that once a combined license is issued the plant can be built on time at a predictable cost and capable of operating safely. As I've said many times, we can't afford to build the next 100 like the last 100.

I understand that copies of the slides for the staff's presentation are available to the entrances to the meeting room. The SECY paper was released to the public last month.

Any of my fellow Commissioners have opening remarks they wish to make?

Commissioner Rogers?

COMMISSIONER ROGERS: Yes. I'd just like to say that the staff has done a very outstanding

piece of work in SECY-90-377 in a very short time, and I want to acknowledge and commend the staff's professionalism in preparing this paper and developing a staff position as to the required level of design detail required for safety and standardization purposes.

However, in my opinion, it does not clearly reveal the process and the criteria and the reasoning behind them by which the staff has laid down the information that it believes to be both necessary and sufficient to make its safety determinations. I realize that these may be difficult to articulate if one approaches this task by attempting to draw a distinction between levels of design detail information absolutely required for safety analysis and level of design details which contribute to safety in a general way through standardization.

In my view, standardization does contribute to safety and I reject the phrase "standardization for standardization's sake" that has crept into the debate and suggest that it is unhelpful. I really don't believe that any Commissioners or staff are approaching the standardization issue from such a simplistic point of view.

However, I do believe that it may be possible to draw a distinction between level of design detail that is absolutely necessary to safety analyses that take into account all of the lessons we've learned from the more than 30 years of nuclear power plant operations in this country and what is useful to specify in addition to those levels of design detail to give additional safety benefits through standardization. If we can draw that distinction, then it should be possible to endorse without any question those levels of design detail necessary for safety analyses and then to review separately those matters which, if specified in the certified designs, would significantly contribute to safety to greater or lesser degrees and decide to admit or reject them as requirements in the certified designs. I hope that in addressing the recommendations in SECY-90-377 the Commission will be able to approach them from this point of view.

Thank you.

CHAIRMAN CARR: Any other comments?

If not, Mr. Taylor, please proceed.

MR. TAYLOR: Good morning.

With me at the table today, starting on the right, are Rebecca Nease, Marty Virgilio, Tom

Murley, Brian Grimes, Gene Imbro, and Charles Miller, all from the Office of NRR. There are others here who also worked on the proposal that the Commission is currently reviewing and considering and I, on behalf of the staff, thank you, Commissioner Rogers. I also believe the staff worked very hard to at least lay this apprcach or blueprint, so to speak, together for the Commission and got down to the specific levels of systems as examples in the draft enclosure which may potentially be a reg. guide.

With those thoughts, I'll ask Doctor Murley to commence the briefing.

DOCTOR MURLEY: Thank you.

Mr. Chairman, Commissioners, this topic of level of design detail is one of a series of policy issues concerning design certification and implementation of the new licensing process that's outlined in Part 52. There will be several other issues like this that come along as we implement this new process. We're trying to compress into a period of a few years the development of a process that evolved over 30 years in Part 50, as you know, and it's new to us, the staff, as well.

Last year, our focus was on the staff's own review process and the Commission's approval of

policy issues concerning design certification. Early this year our focus was on some 15 specific safety issues largely concerning severe accident requirements for advanced light water reactors.

In April, we briefed the Commission on the resources and the schedules for our safety reviews. At that briefing the subject of level of design detail came up, and from the discussion at the meeting the staff sensed that the Commission was looking for a greater degree of standardization and therefore more design detail than the path we were on at the time, which we said at the time would be a revealed standard -- namely, we would do the reviews, our safety reviews, asking the sorts of questions and coming to safety judgments and then when we were done and ready to issue a safety evaluation report we would look backwards and say, well, this was the level of detail that we needed. We couldn't have predicted it ahead of time, because this is such a new process to us. I'll talk a bit about that in a minute. We estimated that it would lead to a level of standardization somewhat greater than that which is in the FSARs in the past under Part 50.

In July, we issued SECY-90-241 where we described four options for levels of standardization

and the corresponding design detail. The Commission asked a series of questions and further directed the staff to seek public comments. This paper, SECY-90-377 answers those Commission questions and provides a recommendation on an approach to design certification.

The paper has been made public and, as you know, has generated a good deal of interest. A number of the vendors have expressed concerns. They appear to be based on a reading of the recommendations of the staff which we think is not quite correct, although I have to acknowledge that there are some sentences in the paper which could have led to that misunderstanding.

Specifically, staff is recommending three things, and Mary Virgilio will go into detail on these recommendations. First is a graded approach to level of design detail. Second is a two-tiered approach to certification. And the third is an approach to flexibility in allowing changes to the design once certified. Staff is not recommending that we use what's quoted as being a maximum feasible and practical standard, as some have inferred.

The detail that's outlined in Appendix A to the paper is an example on the high side of the level of design detail that could be developed to

maximize the safety benefits of standardization. Of course, the Commission may want that level of detail as a matter of policy. Our proposal is that the precise details on the level of detail be worked out in preparing a reg. guide with guidance from the Commission, of course The reg. guide, we estimate, would take about a year to complete.

There are two basic choices in choosing level of design detail. The first is the one that I mentioned, the path we were on, say, a year ago, and that is the staff continue the review process for each design. We ask for the level of detail in our questions that we believe is needed to make our safety judgments, and then we write a safety evaluation report. We look backwards and say that that is a revealed standard. We estimate it would be somewhat greater than the FSAR level of detail.

The second choice is the one that we understood in April the Commission was interested in, and that is to develop the design detail up front. That is the recommendation the staff made in this paper, and Appendix A is an example of a quite high level of detail that could be asked up front.

There is a variation on this second choice that the Commission may want to consider. We have not

developed it in detail and certainly not in the paper, but it's been alluded to in some of the industry correspondence on this subject. That would be a two-step certification process where the Commission would get the level of detail that we needed, but we'd do it in two steps.

The first step would be that the staff go through its review process and issue what I would call here today a preliminary safety evaluation report which would indicate licensability, our belief that the plant is safe and is licensable. It would not give the industry the level of issue exclusion that they would like under, say, a certification. But with that preliminary safety evaluation report, then vendors could take that and perhaps find a customer who could provide the resources to complete the design.

With the complete design, then, the staff would review the details. It would be, I would suspect, comparable to the level of detail that we've outlined in Appendix A. And then we would issue a final design approval and we would go into the certification proceeding and their certification would flow from that second step. We have not, of course, developed all the details and we can come back to this

at the end of the discussion if the Commission would like, but we see it as a variation on this second choice which is that we do have the full high level of detail up front before we issue the certification.

A question that's been asked, and Commissioner Rogers got at it this morning in his remarks, is have we asked for more detail in this paper than the staff needs strictly to make our safety judgement. And the answer is yes. In the past, the staff has not required the proposed level of detail to make its safety finding for one of a kind plants.

Clearly, there are some safety benefits, although unquantifiable, to having standard designs. We understood that the realization of the safety benefits of standardization was a principal goal of Part 52 and that it was important to the Commission. The level of detail shown in Appendix A to this paper, therefore, reflects this desire to maximize the safety benefits of standardization.

We are not able to separate that detail requested solely for the safety benefits of standardization from the detail needed otherwise to make our safety judgement. If the Commission asked us to, of course, we would try to do it, but we really don't think that it's possible to make a clean

distinction at this stage, and the reason largely is that under Part 52 the staff must make its basic safety determination absent a completed plant.

Therefore, the staff is proposing to require more detailed design information to be available for audit during our review -- that is, more relative to the old two-step licensing process -- be available for audit in order to validate the key design principles in the proposed certified design to make sure that they've been translated into design details. And it's this newness of the process and the fact that the staff under Part 52 will not have a completed plant to look at -- we will not have the second step, that is the operating license proceeding and hearing in order to complete our safety judgement. We have to make it completely up front, based strictly on paper designs, and it's for that reason that we feel that we're not able to accurately break-out the amount of information we need strictly to make safety judgments, because we've just never done this process before.

With that introduction, then, we'll get into what the paper does recommend, and Marty Virgilio is going to give those recommendations.

MR. VIRGILIO: Thank you, Doctor Murley.

(Slide) Mr. Chairman, Commissioners, if you'd turn to slide number 1, as Doctor Murley said, the staff is proposing the design to be developed to a level of maturity that will support decisions on safety matters and systematically achieve a substantial degree of standardization. In addition, the staff is proposing reasonable controls that permit changes needed to construct the facility and to operate the facility without compromising the regulatory reforms of Part 52.

In today's presentation, we're going to talk about the three bullets I've outlined here: the graded approach, the contents of the application, and the change process.

(Slide) If you turn to slide number 2, by way of background, in its paper on options available under part 52, SECY-90-241, the staff discussed several features of the rule and our discussion and our thoughts on these matters haven't changed. I just wanted to go back and make sure we clarify.

The contents of the application have to be sufficient to support the staff's safety judgments. They have to allow the preparation of construction and installation specifications and procurement specifications by the applicant without recourse to a

lot of additional engineering. And it has to be sufficient to allow the staff to judge the acceptability of the ITAACs.

Tier 1 and Tier 2 were introduced in that first SECY paper, and it is a formatting of the application into two parts, the part that is certified Tier 1 and the part that is not certified, Tier 2. The certification process, Tier 1, is the solidification of key features of the design and the design bases by rulemaking.

Material available for audit is material normally contained in procurement specifications and construction and installation specifications, and in SECY-90-241 we outline four different levels of detail by varying the content of the application. By varying the content of the certification and the material available for audit, we by example showed four different levels of standardization that one could achieve.

(Slide) If you'd turn to the next slide, what I've done is provided the definitions associated with those four different levels. Using the HVAC system for an example in SECY-241, we demonstrated four different levels of detail. In general, following the proposal contained in this new SECY

paper, 90-377, for a graded approach based on safety will result in a level 2 or greater standardization for the more safety significant design features and lesser degrees of standardization for other design features commensurate with their safety significance.

(Slide) If we turn to the next slide, we'll talk a little bit more about the level of detail. What the staff is proposing is that the design details will reside in three different bodies: first, the information that's submitted in the application and certified; the information that's submitted in the application and not certified; and the third body of information that's available for audit.

We believe that the application itself will roughly follow an FSAR, as Doctor Murley pointed out. It will be minus the as-built features and site information and probably include a little bit more detail than we had in the past, but roughly follow the FSAR as we saw for the 1985 to 1990 vintage licensed plants.

In the next bullet, material available for audit, it's material normally contained in procurement specs and construction and installation specifications. With regard to this material

available for audit, as Doctor Murley said, in order to validate that the key design features have been properly translated into the design details we're going to need to examine more information than we have in the past.

In SECY-90-377, we're proposing that applicants develop this third body of information and have it available for audit in sufficient detail to support audits of safety significant features of the design to a depth commensurate with their safety significance. The staff is only going to audit a portion of that information that's developed. We will audit what we need in order to make our safety decisions. What we don't audit and what we don't use to support our safety decisions will be the remainder, and that remainder will be there to support standardization.

Audits will supplement the staff's review of the application in two ways. First, audits will provide additional information to help us understand the details of specific features of the design. Second, audits will help us provide an understanding of how the design criteria of Tier 1 and Tier 2 have been translated into the design. These are two separate findings that we're doing. One is an

understanding of the design feature itself, and second is an understanding of the process and how well the Tier 1 and Tier 2 information has been translated into the more detailed design products. Information that we obtain through these audits that we need to form our basic safety findings will be brought back forward into the application, and the application will stand as the body of information that supports the staff's safety finding.

(Slide) If we turn to slide 5, the graded approach based on safety, when you view the three bodies of information collectively, this is what we propose in terms of the graded approach.

You're going to see greater, more standard in certain nuclear island features: for example, the reactor vessel and major components in the primary cooling system. And you'll see level two for key nuclear island features: for example, the ECCS systems in the central support systems; for level 2 for key turbine island features, for example the turbine control systems. And at the time of certification, you'll see level 4 for the site features, but we anticipate and require that this level of detail be brought up at the time of the COL for the site-specific features.

It's a graded approach. What I've pointed out here is the maximum level of details we expect commensurate with the safety significance. In particular, through the turbine island we would expect to see different levels of detail, not all of level 2, for all of the turbine island.

COMMISSIONER REMICK: Let me just ask you a question. I was surprised, I guess, that there was no level 3 mentioned at all. Isn't it possible there'd be some systems --

MR. VIRGILIO: Yes.

COMMISSIONER REMICK: -- at level 3 that would be suitable for --

MR. VIRGILIO: I'm sorry if I didn't make that clear. That's the graded approach. You're going to see level 3 in the turbine island, and you'll see less than level 3 where we don't need that information at all to support any safety decisions with regard to the translation of the tier 1 and tier 2 information and with regard to the specific features of that individual component.

COMMISSIONER REMICK: That had been my guess, but it was not in the document which I found a little surprising.

MR. VIRGILIO: (Slide) If we turn to

slide number 6, I'm going to shift the focus now from design detail to flexibility.

Key elements of the design will be certified through the rulemaking process and not be changed without prior NRC approval. Those are the Tier 1 elements of the design. The key features of the design and the key features of the design basis and principal design criteria will not be changed without prior NRC approval, and I've outlined in these three bullets the process by which that Tier 1 information can be changed.

(Slide) If we turn to the next slide, slide number 7, I'll discuss the flexibility associated with the material in the application but not certified. This is the Tier 2 information.

Because Tier 2 forms the basis for the findings that the more general features of Tier 1 provide adequate safety, the staff is proposing that more stringent requirements apply and that these requirements change at different milestones in the process. This is also in order to ensure that the bases that we used in the certification process to provide issue resolution is maintained at different phases of the facility license where it's most important. These controls will change with time.

If we focus on the first bullet, between design certification and COL, the staff is proposing that the same requirements as I've shown on the last slide associated with changes for Tier 1 be applied to this Tier 2 information.

Following issuance of the COL, the proposal in the next two bullets provides the ease and flexibility necessary to construct the facility and accommodate technological advances while still preserving safety and the licensing reforms envisioned in Part 52. This approach does allow an opportunity for an erosion of standardization, but be believe this is mitigated by four factors.

First, you have to comply with Tier 1, and so whatever changes that you're making to the Tier 2 material you have to keep an eye on the Tier 1 material, and if it impacts any of the Tier 1 material you have to go back to that more stringent change process.

The second is, changes to the Tier 2 material will introduce at certain points in the process vulnerability for relitigation of issues that we hope to have resolved.

The third reason is the cost of redesign. Once the design is developed and details are

established, there will be tremendous disincentive early on in the process. We recognize that these disincentives will diminish with time as technology advances.

And the fourth reason is industry's own initiatives designed to advance standardization. These have not been provided to us in detail, but they're outlined in the NPOC strategic plan that has been presented to us. It now includes schedules, and we hope to hear more from the industry with regard to their proposals for preserving standardization.

(Slide) In the next slide, slide number 8, we'll focus on the material available for audit.

Appendix B to Part 50 will ensure that changes are done in a manner that both preserves quality and ensures that safety is preserved for the structure systems and components that are designed to mitigate the consequences of potential accidents.

Changing Tier 2 to Tier 3, the material available for audit, the applicant will have to comply with the change provisions associated with both Tiers 1 and Tier 2. And again, just as with Tier 2, the cost of redesign will provide some incentive to ensure standardization. And, in addition to the cost of redesign, the industry's own initiatives again in this

area will foster standardization.

That pretty much completes this portion of the presentation. What I'd like to do now is return this to Doctor Murley to review our recommendations.

DOCTOR MURLEY: What we're proposing in the paper an proposing that the Commission agree with is the general approach that the staff has outlined, namely a graded approach to design finality, and that would be that the staff undertake to prepare a regulatory guide that provides in a little more detail, let's say, the kinds of material that's in Appendix A, not necessarily Appendix A itself. Here, we of course would welcome any guidance that the Commission would give us on whether the material in Appendix A is about the right level, too much, too little, whatever.

I must say, frankly, I don't think at this stage trying to provide a revised Appendix A would be very fruitful. It's, as I said, on the high side of what we think is the level of detail that's achievable, but I don't know to what standard we would use to fall back to something less than that.

To get back to the point where the staff when asked how much detail do you need to make your safety judgement, at this stage they're always going

to overestimate it because they don't want to underestimate it. And so, we're going to get back to something that's very close to Appendix A again. That's how we got there in the first place.

So, the graded approach, with ultimately being developed in a reg. guide, we will of course plan to work with industry and NUMARC in preparing that.

The second recommendation is the approach on the content of the application, namely the Tier 1 and Tier 2 material and also the material available for audit that would be part of the background to the certification process.

And the third element is the general approach on the change process that Marty Virgilio outlined for the material in the application itself, the Tier 1 and Tier 2 material and the change processes for that and, as I mentioned, finally to authorize the staff to develop a reg. guide.

We have not, as I said, developed in detail the possible alternative for getting the high level of detail that we are suggesting for enhanced standardization, namely the two step process. We've not developed that. If the Commission would like us to do that, of course we could do that as well.

That concludes our recommendations.

CHAIRMAN CARR: Questions, comments, Commissioner Remick?

COMMISSIONER REMICK: Some comments and then some questions. My understanding of Part 52 as it was intended was to advance standardization by the design certification process, and it was to increase regulatory stability by making it difficult for anybody, including us, from changing a certified design, and it restricted the necessity of rereviews and relitigation of issues that had already been decided, what we call finality. And I think there were no special conditions placed on the information not certified beyond what we did with our past traditional practice.

Now, as we began to put rubber to the road, there were concerns that arose about the need for some kind of flexibility to account for the unforseen in design and construction and so forth, and the price of flexibility is the loss of some of the stability that people were seeking and loss of some of the finality.

Now, I agree with what has been stated by the Chairman and Commissioner Rogers. I think the staff has done a real yeoman's job, and that's not

only my view but the views of a number of people. I th your response was in response to what you perceived was the Commission wishes and you worked hard on a very difficult and complex matter. No question about it.

What you've said today was enlightening to me. It's not what I read in the document. It's what I got out of the document when I read it the first time and did not read the appendices. When I came back a second time, read the appendices in, it was a different document than what I heard you describe today.

But, what you said is very helpful. It reminds me a little bit of a Bol and Ray show that I heard a number of years ago in which they were talking about having an anchor, buoy factory in which they had a production line on which these products w made. At the end of the production line it had a huge tank of water and as the products rolled off the assembly line they went into this tank of water. If they floated, they marked them and sold them as buoys, and if they sank, why, they marked them and sold them as anchors.

I do have a lot of questions, some of which I submitted to the staff in writing. Tom, I

appreciate I think many of the things I detected in your remarks responded to some of those questions. I probably will have a couple additional written questions and some this morning, all of which to help me better understand why I think 90-377 is going to be marked as a buoy or an anchor.

The first one that I have is in Section 52.47(a)(2). It says that what we are loosely calling the third body or Tier 3 of information that you refer to being audited, it says that it must be developed, quote, "if such information is necessary for the Commission to make its safety determination."

Now, as I read your proposal, it seems to me that you've read the "if" out of that by requiring that such information be developed and available for audit to confirm the implementation of Tiers 1 and 2. So, to me, it seems to me you've read out the "if" in that -- "if it's necessary."

Do you have any comment on that?

MR. VIRGILIO: I think we've read the "if" now to be "because." And in order to ensure that this additional information provides the translation of the design, the Tier 1 and Tier 2 information down into the design details, what we're trying to do is validate the key design criteria in Tier and Tier 2

have been properly translated into the design. And the proposal, you're right, is on that statement and our basis for requiring this information is that translation number and number 2 in order to provide additional insights with regard to specific features of the design.

In the end, we're only going to audit a part of the information, as I said earlier. And in the end, the information that we have not audited, although we required it to be developed on a systematic basis, that remainder will serve to further standardization.

COMMISSIONER REMICK: But if you've read out "if" and made it "because," have we changed the regulations?

MR. VIRGILIO: We don't see it that way, and the analysis provided by OGC that supports this paper, their independent analysis, I think supports the way we've proposed to proceed in this matter.

COMMISSIONER REMICK: Yes, certainly. Go ahead, Ken.

COMMISSIONER ROGERS: It seems to me this is one of the big sticking points on this whole thing and a very important point. Is it possible for you to think of accepting an application which contains the

information in the audit area that the vendor believes is adequate to do a safety analysis and if it is later found to be inadequate would then have to be developed by the vendor?

In other words, does this -- the problem, it seems to me, is that if you require everything in the material available for audit that you're asking for with the point of view that you're just going to reach into that big barrel of material whenever you feel you need it, but that to some extent it's just there. It's ultimately going to be needed. We all know that ultimately that detail will have to be developed. The question is whether it's necessary right up front.

What it seems to me your saying is that you want to have it all there, even though you know there will only be a small amount of it that you need. You don't know what that amount is. You don't know what that is, so let's ask for it all. And that is a very open-ended situation and that's, it seems to me, where one of the big problems is.

Is it possible to consider the material available in the audit to be what the vendor believes should be totally all you need to do the safety analysis and then they take their chances? If, in

your doing the safety analysis, you find you need more material, it's not there, the process stops until it's supplied. Is that a conceivable way of going?

DOCTOR MURLEY: The answer is yes, and this is the path we were on and it's generally, although I didn't articulate it that way, it's generally the revealed standard process where --

COMMISSIONER ROGERS: You could say what you felt you needed, you know, and they would say, "Well, we don't think you need that, but we'll give you what we think you need and if you really do later on need more, we'll just have to develop it." Is that, you know --

DOCTOR MURLEY: We'll ask questions and get answers and if we're not satisfied we'll ask more questions and we'll go through that process and ultimately we'll develop a certain level of detail that's there and a certain back-up amount of design information that, although it doesn't have to come into our Headquarters here, it's available for audit out there. That will lead to somewhat of an uneven level of standardization throughout the plant, probably, because some people, let's say in the I&C area, will ask for a lot of questions, a great deal of detail, and perhaps in some of the structural areas

the staff may not ask for a lot of detail. But, in any case, it's a way that we could go, yes.

CHAIRMAN CARR: Let me step into this while we're talking about it. In that same paragraph, it says "the application must contain a level of design information sufficient to enable the Commission to judge the applicant's proposed means of assuring the construction conforms to the design," and I'll emphasize this, "and to reach a final conclusion on all safety questions associated with the design before the certification is granted."

Now, "final conclusion" is what concerns me. Going along in steps, I'm trying to get the final conclusion and it's obvious, to skip a little bit, but it says "the Commission will require prior to design certification that information normally contained in certain procurement specifications and construction and installation specifications be completed and available for audit if," as you say, "if such information is necessary for the Commission to make a safety determination."

So, as you say, if you don't have it it's going to stop until they produce it, but it won't be a certified design and so nobody's going to use it until it is certified.

COMMISSIONER ROGERS: Well, but then when that is supplied then the process can start again.

CHAIRMAN CARR: That's fine with me.

COMMISSIONER ROGERS: It may go in fits and starts, but -- or it might go smoothly if the --

CHAIRMAN CARR: The more he's got available, the less likely it is to hold up progress.

COMMISSIONER ROGERS: Right. But, the problem seems to be that it's so open-ended. Give us everything, but we don't know what we'll need.

CHAIRMAN CARR: Well, but the problem we've had before is we designed it as we went along, and we're trying to do as little of that as possible now. And so, I think the guidance that they're trying to say, "Here's what we think we need at the front end," that may not be all inclusive and so we're arguing about how much is in that box. The vendors say it's too much. We say it may be too much, but we think we need it.

COMMISSIONER ROGERS: But then when you need it, you have to have it. And it seems to me that that goes without any question. The staff needs --

CHAIRMAN CARR: We're trying to keep from designing it as we go along.

COMMISSIONER ROGERS: Well, I understand,

but I'm wondering if we can't find some middle ground here where an adequate assessment, professional assessment that calls upon the experience of the vendors -- I mean, these people have been in the business a long time, so they're not neophytes in this and they claim that they are going to give us everything that we need. Well, then, they take their chances if they haven't given us everything.

CHAIRMAN CARR: And I think that's proper, what you say, and that was my impression that that was what was going to be worked out in the reg. guide.

DOCTOR MURLEY: Yes, and what we can't tell you is the level of standardization that that approach is going to yield in the end. My guess is it's going to be uneven, but when we discussed it --

CHAIRMAN CARR: Well, it's going to be settled before the design is certified.

DOCTOR MURLEY: Well, not necessarily.

CHAIRMAN CARR: If you need it to make the final conclusion, then it's going to have to be available.

COMMISSIONER ROGERS: Got to do that.

DOCTOR MURLEY: Yes.

MR. VIRGILIO: And that's the revealed standard.

DOCTOR MURLEY: That's true, but I guess what I'm trying to say is that in the course of its review -- let's say that the staff that's reviewing some of the systems out in the balance of plant in the turbine building. They may not care whether there's two or three unsafe booster pumps, something like that, and therefore that may not be part of the detail that we ask for in the normal course of review and in the past we haven't. And we used as an example the BWR-6, Mark 3s as the level 4, I believe it was, product line degree of standardization. And when one gets out into the balance of plant area, it just varies all over the place. Our impression was that the Commission wanted a degree of standardization higher than that.

My point is, if we use this approach of kind of asking what we need for safety information, we're likely not to ask the kinds of questions that get out into the balance of plant and therefore when we issue a certification it may be silent with regard to condensate pumps and numbers and types and even locations. So, what you can get -- it's not a trivial cost item in the plant. What you could get then is quite a wide variation in designs in that part of the plant.

What we tried to do in Appendix A here, then, is to list the amount of information that we thought could yield [illegible]gh degree of standardization and the safety benef[illegible] that go with that, although as I mentioned they're [illegible]uantifiable.

COMMISSIONER ROGERS: I'm a bit troubled there, because it seems to me unless we have some kind of operating experience to suggest that we really are concerned about something that we ought to look at that a little bit separately and make some decisions as a separate pure standardization issue. And it seems to me that one of the things we've learned is the balance of plant is very important for the total safety of the plant. We've seen so many things start out there. You know it much better than I do.

So, we've certainly moved way far away from the notion that it's only the nuclear island that we're concerned with when we're concerned with safety. But, when we move out into the rest of the plant, it seems to me we should be looking at the total operating experience. The Chairman has pointed out AEOD follows this and is a good repository of this kind of thing, and we should call on all of that and see what it tells us we need to look at from a safety point of view.

If there is something that doesn't arise in any of the operating experience of any kind that then would represent -- if we don't require it, it could vary, such as two or three or four pumps or something, then it seems to me we ought to look at that separately and decide do we want to impose that just to get standardization. That's what I was referring to in my opening remarks.

I think if we can draw that distinction, then, and say, "Well, we still think it's a very good thing to require," well, then let's debate that. To me, that would be debatable. But what would not be debateable was anything that you could connect with any safety issue in any part of the plant, and that's what I think the rule says.

COMMISSIONER REMICK: Commissioner Rogers touched on what was my next question.

COMMISSIONER ROGERS: Sorry.

COMMISSIONER REMICK: No, that's all right.

Why can't the question and answer process work? And you indicated there are some things the staff might not ask for. Why would we expect the vendors to have to have that at application stage? Why can't it be in response to your questions on

safety issues? I think you indicated that was the staff direction the way you were headed.

DOCTOR MURLEY: It could, yes.

COMMISSIONER REMICK: It is reasonable.

It seems to me that if you look at a standard review plan, you look at the requirement of a level 3 PRA, you look at what we've been claiming we're getting out of the EPRI requirements document, the staff's hazards analysis and going through that, it seems to me you're going to end up with a pretty standardized plant with the various requirements we already have.

I think the concern is when you say this information must be available at the certification stage for audit. I sure read into that that all of that detail has to be there whether we ask for it or not. And I agree. If it's not there and we need it, the vendor is at risk. But they do have experience, as Commissioner Rogers pointed out, in doing this. I think they can reasonably well predict the type of information and it's a question of requiring all that detail up front in case we might need it.

MR. TAYLOR: You're really talking about a potential way to structure the reg. guide which may be used and which may evolve in terms of the level of

design detail. That's what you're saying. It's behind you lesson and the staff.

I should point out one of the objectives too that, you know, material not asked for, not included and not reviewed, then it falls outside of the certification envelope. So that, then, presents the other side of the issue of it then being --

COMMISSIONER REMICK: Absolutely.

MR. TAYLOR: -- it may indeed be a source of contention later on. So, one of the objectives was to complete that.

CHAIRMAN CARR: Let me ask you to explore, on your slide 4, the second bullet under "available for audit." You need that available for audit so you can confirm translation of safety criteria into design. How about running over your thought process on what you really mean by that?

MR. VIRGILIO: Just as during the licensing under Part 50, we went out and conducted audits, IDIs, IDVPs to look at the process of ensuring that you're starting with the top level design criteria and key design features in Tier 1 and you look at how those have been implemented in order to provide adequate safety in Tier 2.

What we're looking for is how have those

details then been translated down into this ' l body of information. How have the design products been developed in a way that those top level criteria from Tier 1 and the information that supports your safety decision in Tier 2 has been translated into the design? Again, it's similar to the thought process that started us down the path in the Part 50 licensing to conduct these audits, to ensure that the details were properly translated. This is, again, one of two reasons why we're looking to conduct the audits.

Again under Part 50, we went out and conducted audits to get a better understanding of specific features of the design, additional details beyond what was provided in the application itself. And, as in Part 50, some of that information was needed to support our safety judgments and we brought it back into the application through the Q&A process.

CHAIRMAN CARR: Were those audits of as-built plants?

MR. VIRGILIO: They were audits of design drawings, of as-built plants or plants under construction at the time that we conducted the audits.

CHAIRMAN CARR: I think this is what I read as to why they need this material available. But now, as you say, if you want to wait until it becomes

available if it's not available, that's just fine.

COMMISSIONER REMICK: There's a question in my mind when the staff would do that, because if you went out and did that and found that the implementation of the design was not consistent with what was in the certified rule, they'd be in violation of it. Right? They'd be subject to --

CHAIRMAN CARR: But there's no certification at this point. You can't certify a design until you've made this audit, because he needs to define safety --

COMMISSIONER REMICK: No, I think you can certify the design. It's a question of whether you're going to certify that the implementation of that design is consistent with the certified design.

CHAIRMAN CARR: You and I have a disagreement on that point.

MR. TAYLOR: You're reducing -- the staff is going to need some assurances that the design, the data has been translated appropriately as the design process proceeds in the safety area.

CHAIRMAN CARR: Counselor, do you want to make a comment?

MR. PARLER: Well, as was said at the beginning of this meeting by someone, the fairly and

simply straightforward objectives of this Part 52 rule is to decide up front those things that needed to be decided about the design which is going to be certified. That's what's being certified, the design, so that the design will stand up with finality if somebody tries to or decides to use it in a licensing proceeding with the ultimate objective being that very few if any design certified issues would be reopened even at the combined CP and OL stage and hopefully not any before the license to authorize is issued.

If that is the objective, it seems to me you certainly cannot have a piecemeal process to arrive at the design certification. You can have questions and answers leading up to that decision. That can be a stage process. But, I think it's fundamental to the Part 52 that when the design is certified that for all of the benefits of the Part 52, particularly about finality and not reopening issues are concerned, that that has to be the real thing and not just a partial solution to the problem.

If it's something short of that, we simply have, after many rulemaking efforts and much rhetoric, the old two step licensing process labeled under the Part 52. That's not what the people that worked on this for several years had in mind.

DOCTOR MURLEY: Yes. We did not have in mind -- at least, I did not have in mind that after certification we would go and review design documents and do audits. That was not contemplated by the staff at all.

COMMISSIONER ROGERS: I'm not suggesting that. We did recognize that the level of detail or the details that would be available in the application would exceed what would be in the certified design. We've always taken that point of view, that the certified design would be a kind of nucleus, a core, whatever you want to call it. That's firm. But, there would be additional information that would support that in the application.

Now, if what we're asking available in that application is material that's available for audit that is very, very broad, it's really just a question of that process. I'm not talking about, you know, a two step process or anything like that. I'm just saying how you implement our rule, and it occurs to me that there's a debate going on here -- I seem to have noticed somewhere -- that involves how much material has to be supplied in the application to support the ultimate certification decision. And there I'm simply saying that there seems to be a

sance in judgement.

The potential applicants say, "We think we can give you everything you're going to need," and we're saying, "We don't know what we're really going to need." And so, you know, it's a little bit of a crap shoot, in a sense, if -- but why not allow them to submit an application which could be amended if you need further additional materials? You don't certify until you've got absolutely everything you need. No question about that. But, it's a question of what you bring in to begin the process.

CHAIRMAN CARR: Let me throw one more item in from the statement of consideration, and I quote, "The final rule is even more stringent about completeness of design than the proposed rule was. The final rule's provision on scope -- see paragraph 52.47 -- reflect a policy that certain designs, especially designs with are evolutions of light water designs now in operation should not be certified unless they include all of a plant which can affect safe operation of the plant, except its site-specific elements."

When you talk about all of a plant which can affect safe operation, that's a pretty complete design.

COMMISSIONER ROGERS: That includes the roof, I guess.

COMMISSIONER REMICK: That's right, the flagpole falling on it.

CHAIRMAN CARR: Trucks backing up into switch yards.

They're questions. Go ahead.

COMMISSIONER REMICK: Excuse me. I think Jim has a --

COMMISSIONER CURTISS: As I listen to this, I think I understand what the choice is. What you're suggesting is that all of this level of detail on what is now called Tier 3 which may or may not encompass everything safety related, under the staff's approach it will because it may be broader than that which is safety related. And I gather what the staff will do is whittle that down with the individual vendor, focusing on those things that are safety related and those that would kick up into Tier 2.

What you're suggesting is that sort of a "pay me now, pay me later" approach. The advantage, I guess, is that you don't have to develop that all up front, but you have the option of developing that information as the Q&As go back and forth between the vendor and the staff where it is determined that it's

necessary for safety purposes. And then I guess the down side of that is, as the Chairman has pointed out, that that may be a more hurky-jerky process with stopping and going as they develop information that they would have submitted up front and at potentially greater cost in terms of delay of the review.

What you're saying, I guess, leads to the conclusion that you wouldn't have a Tier 3 at all because Tier 2 is all the safety information.

COMMISSIONER REMICK: No, that's not-- no, I agree with what Commissioner Rogers said. Whatever we need for safety determination needs to be provided. We have to provide that. As I read the paper --

CHAIRMAN CARR: Before certification.

COMMISSIONER REMICK: Before certification, yes.

COMMISSIONER ROGERS: If I could just add to that.

COMMISSIONER REMICK: Yes, go ahead.

COMMISSIONER ROGERS: That it's got to be the staff that decides that they need for that, not somebody else, not the vendor who decides what you need for safety review, it's what the staff needs for safety review. I don't think we can accept a

statement from somebody that says, "I've given you everything you need. I'm done." No, the staff has to decide whether they've given us everything that they need, whether they've been given everything they need.

But it does seem to be reasonable that there might be, in fact, a congruence there between what the vendor thinks you need and what you find you do need. They could take their chances. If they fall short, then they'd have to supply it. I don't see it as a hurky-jerky process if they really can deliver what they claim they can deliver, namely everything you need to do a safety analysis. Then it ought to go smoothly. But that's their chance. It only stumbles if they haven't made the right choice. But ultimately, the choice has to be the staff's on what they need to do a safety analysis. If they don't have what they need, the process stops until they get it.

COMMISSIONER CURTISS: Let me sharpen my question. Is there anything left in Tier 3 if you define that information which you are going to request as that necessary to make the safety determination? As you read that, what is left in Tier 3?

COMMISSIONER REMICK: I think a considerable amount of information. The point I have is there's going to be what is referred to as a

warehouse of additional information we call Tier 3, literally a warehouse of information, some of which the staff . it goes through is going to have additional que. .ions. They're going to have them with the vendor and the vendor is going to either have it ady prepared or, as he has in the past, he's got to prepare that information for your satisfaction.

DOCTOR MURLEY: You have to keep in mind --

COMMISSIONER REMICK: But there's a large part of that warehouse out there that you're not going --

DOCTOR MURLEY: -- that the staff -- in the past, the staff has always had this warehouse available to it and it was because it didn't make its final safety judgment until they issued the operating license. So they could go in and look at the detail until it wouldn't stop.

Now, Commissioner Remick, I'm reminded of a *New Yorker* cartoon some years ago. I feel like Christopher Columbus. He's on the carpet in front of Queen Isabella and she says, "Three ships? Why can't you discover America with two ships?" We're doing something new here and when we ask the -- this is the three ship proposal that the staff has here.

COMMISSIONER ROGERS: Well, it might be the 30 ship proposal.

DOCTOR MURLEY: Let me ask Brian to respond to --

MR. GRIMES: A couple points, I guess, on the design process itself. We' found that through the Part 50 process reviews that the design process is iterative in terms of as you get more design completed, it really impacts the upper tier documents, what we are now calling Tier 1, Tier 2 documents. As you go through the design details in terms of layouts, in terms of system interactions in terms of hazards analyses, impact one thing or another. It causes a lot of changes in the FSAR level of information.

So, I think we can expect if we don't get everything completed to a generally consistent level that we will have a lot of changes later on that come back in that will have to be dealt with one way or another. That may force some compromises that we would prefer not to have made. We've made similar compromises in whether valves are on the ceiling instead of down, accessible for maintenance or whatever. Those kinds of things get forced when you allow things to go at different rates and different depths of information.

I guess a second point is that both our inspection or audit process of that information available for audit and the question and answer process on the FSAR type of information are both audit type things. We don't look at everything in the plant. We don't look at every safety question. We expect vendors to use certain codes and standards and follow certain commitments and design things will, but no means are we able to turn over every rock either in terms of the FSAR or in terms of the design information. We do go out and try to look in-depth at particular pieces that carry us sometimes horizontally into other areas, but we really rely on that audit process.

So, I would say we really need to set up a system that in the absence of an actual design that's available for audit and an actual plant that's available for walkdown. We have to have some level of general level of information developed that we can be confident provides enough discipline interaction to work out all the detailed things that really impact safety and the commitments for safety.

COMMISSIONER REMICK: I don't differ at all. It's a question of what part of the warehouse is that.

MR. TAYLOR: Well, I'd like -- we ultimately will be coming forth proposing a rule to certify and this process of how deeply we go into the detail drawings and the execution of the design is going to be a matter of great interest to the Commission I know at the time you are asked to certify a design. In fact, that whole process is one that concerns me of laying out just the resources and the ability to carry that out in designs that we work on.

So, there's a great warehouse, Brian is right. We won't have the staff or resources to look at every single aspect of the design. But we will go in, as we've developed in the past, in vertical type areas, going through systems and the processes we have used that have proven worthwhile in the past for audit of designs and see that the safety aspects have been appropriately translated into the system. I think you will expect that and say --

COMMISSIONER ROGERS: Well, I'm a little troubled here by something because it sounds to me as if you're saying you're going to do an audit on the design, safety aspects of the design itself. I don't think you're saying that, but you've got a design and you're going to have to look at that from every possible safety angle that you can look at. You've

got to have the information to do that. You're not going to do a safety audit, you're going to do a safety analysis, as far as I understand it, on that design.

MR. TAYLOR: Well, we're going to see that the safety --

COMMISSIONER ROGERS: You're not going to do some samples here and there, you're going to do as much of an analysis as one can do on a new design. Is that correct?

MR. TAYLOR: Yes, we're going to look at the design to be sure that the attributes of the system --

COMMISSIONER ROGERS: Ask the safety questions.

MR. TAYLOR: -- have been appropriately translated into the detail design. That's what we've done many, many times when we've done this process in the past and we have found problems on a case by case basis.

MR. GRIMES: But I think you're asking that the --

CHAIRMAN CARR: Yes. I don't think that they're going to look at everything. We haven't got that kind of -- I think it's going to be an audited

program. There will be a lot of analysis on those things that are critical, but I don't see how we can do it any other way.

MR. MIRAGLIA: May I try to address that?

CHAIRMAN CARR: Identify yourself for the recorder, please.

MR. MIRAGLIA: Frank Miraglia, NRR.

Our process, I think, in terms of breadth, our review process for safety is we say these are the areas that we're going to look at. The SRP gives us a breadth or scope of review. We do not do 100 percent design review in all of those areas. We look at them. We do look. That's a sampling kind of basis based on what we find. That indicates our depth. The absence of having a completed plan, what we have found in the traditional two step process when we went out and had a plant, they didn't implement the design or didn't consider something in the design. We found that out by doing a vertical slice across the kinds of system and went deeper than we would go with PSAR or even FSAR information.

So, I don't think the Commission should have a perception that we do 100 percent design review.

COMMISSIONER ROGERS: Well, it's not in

replicating design, I mean that, you know, go back and redo everything. No, I understand that.

MR. MIRAGLIA: We get the design from the vendor and the utility and then we look at the principle parts, the safety features of that design and make a determination that indeed they're following accepted practices and codes and meeting acceptable standards and if they do the totality of the design with that same degree with the QA programs being adequate and all that, that should result in an acceptable product.

MR. GRIMES: And the standard review plan also directs the reviewer to take samples. It doesn't direct him to review every aspect.

COMMISSIONER REMICK: Well, if I may proceed.

CHAIRMAN CARR: Please, go right ahead. You're taking a lot of time here.

COMMISSIONER REMICK: Yes, I am.

Jim, you introduced something that was going to be a later question. That is was have Appendix B of Part 50 which lays out certain requirements, good management requirements in design as well as operation. In that we make a finding that the licensee or applicant has a process in effect to

implement the design. We're now talking about a process where we're going to go out and do vertical slices and so forth and that's defensible. It seems to me that we're going to be making a determination, if not a finding, that the design has actually been implemented in accordance with proposed certification.

Has the staff looked at what that means from the standpoint of resources? That is, to me, a tremendous increase in activity.

MR. TAYLOR: That's of concern to me as to how -- and I think that depends upon decisions made today.

COMMISSIONER REMICK: Well, you made that point a few minutes ago and it is essential.

Going back to this material audited, as a practical matter, isn't there a high potential for that information ending up in the certification record? If not, how are you going to keep it out? This is my point. If I'm somebody that questions whether we as an agency have done a thorough job of auditing that material to glean out the information which is important to our safety determinations, I would challenge the Agency that you haven't look at all of it, you haven't thoroughly audited it and so forth and therefore it ought to be put in the record

so I can see it.

MR. TAYLOR: Well, we do almost all of our process on an audit basis. I mean that same kind of question has to be faced in even the construction of a plant such as -- and what we've done in the past.

COMMISSIONER REMICK: But we're now going to make determinations or findings that the design has been implemented based on our going out and auditing information. I might question whether we've done a thorough job. Maybe there's information we didn't look at in our audit that we should have.

DOCTOR MURLEY: Commissioner, I don't think it would wind up in Tier 1, which is the certified portion. Even if it were dragged into the application, it would certainly be no more than the Tier 2 information.

COMMISSIONER REMICK: Could be. Could Be.

DOCTOR MURLEY: I think the real concern that you're getting at is could this whole warehouse full of information be subject to litigation in the certification hearing. I think that's always a risk, yes. But I don't know how you stop it other than not have it available in the first place. That's how you stop it.

COMMISSIONER REMICK: No, but if we're

going to ask that it be all available so we can audit, that certainly increases those chances over that we as part of our process, if the information is not there, we ask for it during the normal question and answer process.

MR. TAYLOR: The audits are your assurance that that information has been appropriately developed. That's the answer. The answer is that our program for auditing that material must give you assurance that the designer, everybody having the right motives in mind, has carried out what they've committed to do. Wouldn't you say that?

DOCTOR MURLEY: Because in the past, we have audited architect/engineering offices and their processes and their drawings and things like that, material that never gets into NRC's application and it isn't drawn into the hearing process.

COMMISSIONER REMICK: But remember in the past we were finding that the process was in effect. I believe that's what we did. They had a process. I interpret what we're saying here now, and I could be wrong, that we're going to make a finding or some kind of a determination that they've actual implemented and we've looked at it. We've audited the material to come to that determination. The Commission is going

to have to make a --

DOCTOR MURLEY: But that's how we do business. Even under Part 50, we audit architect/engineering offices and come to the conclusion that the process is adequate based on what we see there, based on the drawings and the calculations.

COMMISSIONER REMICK: That's right. It's a finding on process.

CHAIRMAN CARR: I don't think we are doing anything different than putting past practice into operation.

COMMISSIONER REMICK: I would hope that's it, but that's where I'm not convinced. I think we're going beyond that. I could be wrong.

CHAIRMAN CARR: Well, I think you have to go beyond if you don't have the plant. As I say, when you're working with paper, it's tougher than when you can go out and look.

COMMISSIONER REMICK: No question about that.

CHAIRMAN CARR: This plant has not really been fabricated at the time we're supposed to certify the design.

COMMISSIONER REMICK: It's a difficult

one, no question about it.

May I go on, Mr. Chairman?

CHAIRMAN CARR: Please.

COMMISSIONER REMICK: Okay. Okay.

CHAIRMAN CARR: Hopefully you'll cover 95 percent of the problem. If you don't, we'll pick up the other five percent.

COMMISSIONER REMICK: Well, as I say, I might have a few more additional written ones.

Am I correct in interpreting the SECY document that as a bottom line you are in effect defining the required level of design detail to be "all feasible and practical design detail" in contrast to that necessary for us to make our safety determinations?

DOCTOR MURLEY: No, we're not. There are a couple of sentences we found in here that could lead to that conclusion, but the staff is not recommending that we use a feasible and practical to achieve standard.

COMMISSIONER REMICK: Okay. Well, that's --

CHAIRMAN CARR: My impression is they use those words because we asked them what was practical and feasible.

DOCTOR MURLEY: That's right.

CHAIRMAN CARR: We gave them that word and they gave it back to us.

DOCTOR MURLEY: The staff requirements memorandum was one of the questions and so it got into our dialogue and may have left the unfortunate impression that we were recommending that, but we're not.

COMMISSIONER REMICK: That's a very important point.

CHAIRMAN CARR: I was trying to find out if I could get to Level 1.

COMMISSIONER REMICK: I think you've already answered this, Tom, but is there any reason why the evolutionary designs could not serve as the template, the cases in point to develop the regulatory guides that would be used in the future? Is there any reason? Now, I think that you were saying that that would be the case, but at the same time you were recommending that you proceed with a regulatory guide which makes me feel that you'd be moving ahead and producing reg. guide before that process was complete. I'm thinking ABWR and System 80+ as two evolutionary designs in-house.

Is there any reason why -- and I thought

this was the direction you were going before, you perceived what the Commission was asking for -- why that couldn't be used as the experience to determine what is it that we need?

DOCTOR MURLEY: Well, under this proposal, we would do the regulatory guide and the ABWR review in parallel, the intent being that when we're done with the ABWR review, we would have the same amount of material available as that which we outlined and require, request in the reg. guide.

I don't know if that answers your question.

COMMISSIONER REMICK: Well, it seems, like you say, at least the ABWR, but the timing. You indicated you'd have a reg. guide out in about a year.

DOCTOR MURLEY: Yes.

COMMISSIONER REMICK: Do you feel that you're going to have the ABWR design review completed?

DOCTOR MURLEY: No, but we'll be enough in the middle of it to know where we need more information. I think that Q&A process will help us write the reg. guide actually. We're quite sure that we don't have enough information now to make our safety judgments on the ABWR. That's the one that's furthest ahead. We've been doing the review for

several years now and there's still a fair amount of detail that's not available.

COMMISSIONER REMICK: Well, my point is, isn't that going to be an excellent example, plus the System 80 as it goes along, to determine what should be in that reg. guide? Is there any reason for proceeding at a faster pace with the reg. guide using those, as I say, as a case study of what should be in a reg. guide?

DOCTOR MURLEY: I haven't thought a great deal about the timing, but I think it would be useful to proceed with the reg. guide to help other plants, like the passive plants and some of the other advanced plants in terms of guidance. They wouldn't have to wait until the full certification process is done, let's say on the ABWR before they know what kind of level to be aiming for.

COMMISSIONER REMICK: Well, it seems to me that the people best able to write that regulatory guide are the people that are actually reviewing those evolutionary plants. It seems to me that their plate is full, that we are having difficulty putting the resources to proceed with those reviews and placing -- and I don't think it would be proper to give that to another office to develop because I think

those people who are actually in the day to day design and see what the needs are, or design reviews, excuse me, are the ones who could best do that.

I'm trying to get at is there a sense of urgency on the regulatory guide and any reason why it couldn't proceed using ABWR -- I was thinking also of System 80+, but maybe that's not necessary -- as that actual case in which we could develop something that might be more meaningful than we would otherwise.

DOCTOR MURLEY: Well, in a sense it's not urgent if this path that we were on, namely -- I call it the revealed standard path of do our safety reviews and then when we're done, that's the level that we needed. If that's acceptable and that's what the Commission wants to do, then there is not any urgency

COMMISSIONER REMICK: Okay.

COMMISSIONER ROGERS: What about the standard review plan? You're going to modify that because that's very out of date. So, how do you see a change in the standard review plan schedule addressing this? What are you going to use for a standard review plan in looking at the ABWR and the 80+ applications if you haven't redone that standard review plan?

DOCTOR MURLEY: That's a good question. What role does the standard review plan play in all

this? It was developed back in the early '70s when the Atomic Energy Commission was literally receiving one application a week. The staff was growing by leaps and bounds. It was necessary that there be this standard review plan so that every application received the same review. That was the purpose. Now when we're doing the review of one design, it's less needed for standardization of review purposes. However, there are some parts of it we know are out of date. So, we'll use the standard review plan as it exists because, of course, a lot of the structural design aspects and thermal hydraulic aspects are the same. Where it's out of date, largely, I think, in instrumentation control and maybe control room errors, we'll have to supercede that with instructions to the staff on how to review it. But here again, we'll have to do this as we go along.

I don't think it would make any sense to try to revise the standard review plan now until we've completed, let's say, a design or so and we go through the ABWR. Then it might make sense to take time to update the standard review plan so that System 80+ and the passive plants receive the same kind of review that the ABWR did.

COMMISSIONER ROGERS: Yes, but shouldn't

the reg. guide, the updating of the reg. guide and the updating of the standard review plan track each other? I mean they're really different aspects of the same thing, aren't they?

DOCTOR MURLEY: No. No.

COMMISSIONER ROGERS: I mean your people are supposed to supply --

DOCTOR MURLEY: I mean they're related, but the reg. guide is really to tell the industry, "Here's what the NRC expects to have available in terms of design before you submit an application to us, or certainly before you get certified." The standard review plan is focused on how the staff is going to do its safety review. So, it's how we look at that vast bulk of material that is available. So, they're related, but they're not -- I mean, we could proceed one without the other, I think, to some extent.

COMMISSIONER ROGERS: I think so. I don't know. I would feel more comfortable if I knew that they were somehow or other looking at each other very closely. If you're saying you're going to review from a certain point of view and you're telling somebody, "Supply information that's going to be reviewed," then those two ought to be fairly tightly linked in our

minds in terms of our expectations. We're not saying, "This is how you review something and this is what you supply." They really ought to be congruent in some sense, one much bigger than we've talked about here so far.

DOCTOR MURLEY: Yes, yes. In that sense, certainly they have to be consistent.

COMMISSIONER ROGERS: Absolutely.

DOCTOR MURLEY: Right. We can't have something in the standard review plan that asks for detail that we haven't asked for in the reg. guide, in the application, sure.

COMMISSIONER REMICK: Can I make one final question?

CHAIRMAN CARR: Sure.

COMMISSIONER REMICK: Correct me if I'm wrong, Tom. I perceive that SECY-90-377 is the staff response to your perception of what the Commission asked you to do or did ask you to do in the SRM, I guess, of August. But I perceive that your preference was the path you were on until that day when we had the last Commission on the subject. I think you call it kind of an ad hoc review of these first cases to get the experience and so forth. Am I right or wrong in that --

DOCTOR MURLEY: Well, it's true that that was the path we were on. We have not, in all honesty, given a lot of thought to standardization and the benefits of standardization. The Commission -- I mean I sense -- felt at that meeting quite strongly that there was a benefit to it, that we hadn't given it proper consideration. So, yes, then we went back and developed this based on what our sense of what the Commission wanted, to enhance the safety benefits of standardization. Yes.

COMMISSIONER REMICK: Well, I want to say again the staff, I think, did an outstanding job of really digging in and trying to develop the issues and laying out the bounds and appreciate it.

CHAIRMAN CARR: I might say on that last point, in my opinion it's far easier on the staff to review a complete design than it is to review one that's incomplete. This question and answer type stuff takes a lot of time and a lot of work.

COMMISSIONER REMICK: I still have lots of questions and answers on what somebody would call a final design.

CHAIRMAN CARR: But if the answers are already there, it doesn't take so long to produce.

COMMISSIONER REMICK: No, I agree. Thank

you.

CHAIRMAN CARR: Commissioner Curtiss?

COMMISSIONER CURTISS: I don't have a lot of questions. I do want to clarify a couple of things.

The material available for audit that you propose to have under this approach, if you determine that any of the material that you examine is necessary for you to make your safety determination, that material becomes Tier 2, is that correct?

MR. VIRGILIO: That's correct.

COMMISSIONER CURTISS: Forrest, you're proposing -- I understand what you're saying. You talked about in that category of information simply asking for and reviewing in the audit fashion that we would only that information that is necessary to make our safety determination.

COMMISSIONER REMICK: Yes, I would assume that's what we do, yes.

COMMISSIONER CURTISS: Is there anything left in Tier 3? What is left in Tier 3?

MR. VIRGILIO: Just as under the Part 50 process we went out and conducts audits, there was always this Tier 3 base of material. I was doing I&C reviews, for example, and we would go out and conduct

an audit in the vendor's shop and certain portions of that information I felt I needed to make my safety judgment. That was part of the Qs and As that we asked be supplied on the docket and became part of Tier 2. There was a lot of information I did review that I didn't need to support my safety judgment and it remained out in the vendor's shop and there always was a Tier 3 under the Part 50 process.

DOCTOR MURLEY: Let me just clarify that Tier 3 you're referring to this --

MR. VIRGILIO: This material available for audit.

DOCTOR MURLEY: -- material available for audit. Okay.

COMMISSIONER CURTISS: It's actually not information that we have any regulatory interest in. We know it's out there and under the approach that Commission Remick has suggested, it would not be material that we would ask for?

MR. GRIMES: I would say there is regulatory interest in that Appendix B would require it for all safety related material, that this information must be kept in a cogent manner. It must support the design and that it forms essentially the basis for the design, the design basis, the basis for

future configuration control of the plant.

COMMISSIONER CURTISS: In other words, that presupposes the information has to be available. The category of information that Commissioner Remick talked about is that which is necessary to make the safety determination on certification.

MR. GRIMES: But that's somewhat different than the implementing information which must be controlled in a certain fashion, is different than the information that we use --

COMMISSIONER CURTISS: I understand that.

MR. GRIMES: -- to perform our FSAR or SER judgments.

COMMISSIONER CURTISS: And that information has to be available at some point, at some time albeit kept in the vendor's files? Is that right? Okay.

Let me back up and ask more of a global question. Give me a sense of perspective here. You indicated that the approach that you've proposed would lead to about 70 to 80 percent of the design and about 50 percent of the engineering being done. Put that in context for me, for a typical construction permit that we have issued in the past. Can you contrast that to what we've had in the past?

MR. GRIMES: I guess just a top of the head estimate, I would guess perhaps at the time of the construction permit there'd probably be less than 20 percent of the design engineering hours performed.

DOCTOR MURLEY: Oh, five percent. I actually looked at a plant that had been done and the total number of engineering manhours on this plant was 15.6 million, for example. At the time of the construction permit, there was only about five percent of the engineering manhours had been done.

COMMISSIONER CURTISS: Okay. Along that same line, I've taken a look at your analysis in Enclosure F on the impact on the ABWR. Can you say a word or two in terms of what you proposed here in terms of overall engineering work done, 50 percent and 70 to 80 percent of a design? Could you put that in the context of where System 80+ and the ABWR are and what areas in particular you think each of those two may come up short?

DOCTOR MURLEY: Yes. I've talked with some staff from General Electric, for example, and the major area that they don't have and that this level of detail would require would be out in the balance of plant and the turbine building. The estimate is roughly, I guess, a couple of hundred million dollars

to develop that information. I can't put that in terms of percentage. My guess is it's probably about 20 percent at the time, something like that. Perhaps Brian can --

MR. GRIMES: I think that's reasonable. I would guess, based on what we've seen, that the level of design detail is very high for certain key components in the nuclear island. It's at probably level 2. But most of the rest of the plant is much lower, including control room and --

CHAIRMAN CARR: But that just tracks what they're building in Japan. What they're building they've already designed pretty well and --

MR. GRIMES: Well, that's true for the key mechanical systems, but the rest of the systems it may turn out to be a very different design in Japan than it is in the U.S. or GE may choose to adopt some of that. I would just guess that GE is probably considering all the architect/engineering. Engineering also required probably between 20 and 30 percent of the design and we're asking them to come up to 50 percent of the design.

COMMISSIONER ROGERS: How current is your dialogue with them on that?

MR. GRIMES: That was as of last February,

but they did not have a very large ongoing engineering effort in the U.S.

COMMISSIONER ROGERS: Could you get an update on that?

MR. GRIMES: Sure, I suppose we could --

DOCTOR MURLEY: Charlie Miller had a point.

MR. MILLER: While we haven't gone out and conducted an audit like was done last February, since the time of the submittal, or the time of the audit, GE has submitted three conditional amendments to the SSAR. Included in that information is some more information on the control room. That information is currently under evaluation. I think it's a little premature to try to say that to this level or to that level. But in all fairness, the audit was fixed in time in February. It reflects the findings that the staff was able to make by going out there all the time, to give a reference point of what we saw. The application continues to grow and get more expansive.

Now, whether it gets anywhere near in some of those areas to level 2 or whatever remains to be seen. My guess is that based upon GE's reactions that they still do feel that an additional 200 million or whatever, as Doctor Murley has said, would be

necessary in order to bring the design into the conformance that they feel that was asked for in looking at the staff's SECY.

MR. GRIMES: We don't have any reason to doubt GE's estimate. It sounds in the right ball park. I'm not sure how much of that will be required anyway as we go through the iterative process.

COMMISSIONER CURTISS: Their estimate includes the time of how much they think it will take the staff to review that. Was that a pretty good estimate too?

MR. GRIMES: My reaction was that we could properly review things as they were developed, so I wouldn't see staff review on the end of the development process. I would envision the staff review --

COMMISSIONER CURTISS: As you're going along.

MR. GRIMES: -- as it's developed.

COMMISSIONER CURTISS: I have two just specific questions. The 50.59 process that you talked about between issuance of the COL and authorization to operate, is that the same 50.59 process that you would use after operation or are there differences in the standards?

MR. VIRGILIO: About the only difference that we envision would be in the reporting requirements in order to keep the staff more current on changes being made. I would envision that we would ask that the information associated with the changes that were made to the design be provided much more frequently than currently called out for in Part 59.

COMMISSIONER CURTISS: We haven't talked a lot about, I guess, the Tier 1 and Tier 2 information, but I have a question focusing on that.

Take a hypothetical case. Let's say the vendor wants to come in and on a cable tray, rather than to identify the specific location of the cable tray in the plant. And assuming there's only one factor that bears on the location of the cable tray, let's say it's fire hazard, the vendor, instead of identify the specific location says, "I'll permit a fire hazards analysis that would address all the concerns that the staff has with respect to that one factor." Let's assume it's the only one, for the sake of the question. And that ought to be sufficient in te s of giving the staff the necessary detail on how and where that cable tray will be located.

Would either approach be acceptable to the staff, either specifying the precise physical location

or an approach that would, through the example mentioned, rely on say a fire hazards analysis to scope it out?

DOCTOR MURLEY: Oh, dear. Brian?

MR. GRIMES: Yes. Gene, do you want to try that one?

MR. IMBRO Yes, let me take a shot at it. I would think the performance of the fire hazards analysis is really dependent on the location of the cable trays. The two really interact, so I think if you'd just approved based on a fire hazards analysis on a global basis, then I think you'd have to make sure then, you'd have to have some way to guarantee that when the cable tray was actually located that it would all within the balance of what you analyzed.

I mean, to me it would seem like you would -- I would prefer to see the cable tray routed and then a fire hazard analysis performed and that designed be fixed so that it wouldn't change. Then, once the analysis was completed and you were satisfied with it, then it was kind of a settled question. You wouldn't have to ever revisit that again.

MR. GRIMES: I would also add that it would avoid design compromises in other system areas if you knew physically where the cable tray was and

didn't have to reroute it later or fit it around other parts of the design.

CHAIRMAN CARR: Isn't it true that you couldn't make the final determination until the cable tray was in place?

MR. IMBRO: That's probably true, yes.

COMMISSIONER CURTISS: Hypothetical is-- I know it's simpler than the situation we actually face, that when you move the cable tray to address the fire hazards, it could impact other things as well. In the fire hazards analysis, you may put it under a pipe that might break or next to a component that might fall off the wall. I realize that in practice there are complications that make it a much more difficult question.

I guess I'm looking for the principle here that if in that case or with whatever additional considerations would bear on the location of the cable tray it were possible, then I simplified it to say there's only one factor bearing on the location of the cable tray. If the analysis were done in a manner that addressed all the staff's concerns with respect to fire hazards, would that be an acceptable alternative to actual designation of the physical location?

MR. VIRGILIO: I think the answer is yes, but as you put it --

COMMISSIONER CURTISS: But it's complex.

MR. VIRGILIO: It's much more complex.

COMMISSIONER CURTISS: I don't have any other questions. I thought the staff, for the first time that I've seen -- I don't mean the first time by the staff's part -- put together what I think is probably the most coherent and cohesive analysis of this issue. It holds together, it's internally consistent. I know there are strong feelings about the substance of what you have proposed and we've seen some of those comments from the vendors and I suspect we'll hear some additional comments from others, but I thought the analysis that the staff went through, the work that Marty and Rebecca did and the rest of the staff, Gene, really did present a very cohesive, well structured and coherent analysis of this most important issue. Thank you for that.

CHAIRMAN CARR: We'll have to wait for the ACRS comments on the coherency.

Commissioner Rogers?

COMMISSIONER ROGERS: Well, we've discussed a lot today and I think it's been a very useful meeting. I certain have got a great deal out

of it. But a couple of things that -- well, one or two, not too many, that I'd like to just go over a little bit more.

I wonder if you could say something about the concept and extent of prototype testing that you've referred to, particularly in this area of innovative systems that are a little different from what has been in place before. This would be probably instrumentation and control areas, use of microprocessors, fiber optics, things like that, multiplexors, networks. What are you talking about there in terms of prototype testing? That's been mentioned, I think, in the SECY. Would you also talk about software validation and verification plans? How do you see those as relating to design verification?

DOCTOR MURLEY: Let me -- I'll ask Bill Russell to talk about V and V in a second.

But with regard to prototype testing, it really depends on the type of reactor we're talking about. For the evolutionary plants, the vast bulk of the systems we understand, we don't think anything is needed. Perhaps some confirmatory tests on pumps, let's say, or aspects of new pump designs.

The one area in the evolutionary plant we do think will need some testing, and perhaps a

prototype, would be the new -- if they go to a new control room design that's heavily computerized. We would like to see it laid out. We would like to see how it works and that sort of thing.

With regard to the next generation of water reactors, the passive plants, my sense is that we're probably going to require quite a bit more testing because a lot of the concepts that they're proposing are new to us. So, we expect that we'll require some integral tests. We'll no doubt require some heat transfer tests to convince us that the method of cooling the containment from spraying the outside, that this will work under various conditions and atmospheric conditions and so forth.

COMMISSIONER ROGERS: I was really focusing on the current evolutionary --

DOCTOR MURLEY: Current evolutionary? Oh, okay.

COMMISSIONER ROGERS: Just what we think we need to look at. I know you've talked about the control room. Jure how do you see this kind of prototype testing --

DOCTOR MURLEY: Let me ask Bill Russell to talk about his thoughts, but also particularly the validation and verification.

MR. RUSSELL: Bill Russell of the staff.

As it relates to the control room and the I&C areas and validation verification, a number of issues immediately come to mind and I have the staff working on this as a separate topic which we expect to bring to the Commission.

The first one is that you cannot do this review at the more global level, that is a commitment to a standard. You can make commitments to do a control room design using good human factors, but if we want to actually see how it's being laid out, what the displays are, they're going to be so different from what we see in the current generation. If you're going to go to a desk top without having distributed controls using a computer interface rather than switches and controls, there's a fairly good potential that we will need to have some type of further developed design and potentially a control room simulator as a prototype to do such things as procedures, licensing operators on these new designs, et cetera. The whole scope of that is being reviewed now.

The issue with validation verification --

COMMISSIONER ROGERS: Just on that, before you move off it, what's the state of the dialogue

between the staff and the potential vendors on this issue?

MR. RUSSELL: We've had some dialogue with Westinghouse. It appears that -- and it's very preliminary. It does not appear that there is a large difference between what the staff is considering and what Westinghouse is considering. But that's very preliminary. What you find is when you get into the details, there's usually difference and sometimes the staff expects more than what the vendor is.

But we need to develop this, identify the areas of concern and I've identified this as work that the staff is working on and we'd be proposing to bring this to the Commission similar to the way we brought the other 15 technical issues to you.

In the area of validation and verification, there's two levels that I'd like to discuss. One relates to the control room as it relates to all the controls for the control panels. If you go to a central computer using software to run your controls with an interface through a CRT screen and a keyboard, you have a very different situation potentially with validation and verification because of complexity of the architecture of the software that's basically running the plant. As compared to a

situation where you have a protective function that you want to have run by software where you essentially have one input and one output. That is you sense a plant parameter and when that parameter is adverse the computer with the software causes an output of scramming the reactor.

So, depending upon what application you're using it for, whether it's a protective system or it's a control system and the complexity of the architecture of the software itself creates a great variety of review problems and review depth for the staff.

We have been dealing with the Canadians who are fairly far along in validation and verification for safety systems and we've been having dialogue with the British and we have pulled this issue sort of aside and we have a senior individual reporting directly to the branch chief, Joe Joyce, who's been involved with this for some time, who is looking at both the validation and verification aspects to keep current with what's going on.

We're also developing other engineers with that capability. So, we're working on the problem. It has a long ways to go. We don't have standards yet. We've done some reviews for replacements of

analog systems with digital systems, essentially black box type replacements, but we have not yet gotten to the point of a sophisticated software program that has multiple inputs and multiple outputs and you're looking for how well it's done.

So, it's a significant piece of work that the staff has and that we're working on developing.

COMMISSIONER ROGERS: Okay. Good. That's very important.

Well, I just want to say that I think the staff has done a very fine job here. These are tough questions. We know that. I don't think we should be dismayed that to some extent we're still groping around here because it's a brand new business. I just urge us to, while moving expeditiously, not be stampeded in any way. I think that it's very important that we all understand where we are and where we're going as we move along I think we're still in the process of doing that. Each time we meet with the staff and each paper we get, we have new issues to explore and new questions that have to be answered and that's entirely proper. I don't think we should in the least bit be chagrined that everything isn't flying right off the drawing board. It's a new business for us and we have to do it right.

I commend the staff for the very fine efforts, even though I may differ a little bit on some things that are in the reports. Thank you.

CHAIRMAN CARR: I think I got most of my comments in earlier on. I would like to comment that I think that we want to be sure that final determination is the important thing before we certify and that we don't expect any design issues to be left open at design certification except for those that are site specific perhaps. Also, I think it's important to note that I don't think we ought to leave it up to ITAAC to make those final design determinations either. My impression of ITAAC is that's going to make sure that it was built like it was designed and works like it was designed. So, I would hope that when we get ready to certify, we're certifying a design that we know what we're certifying.

Are there any other questions?

Well, I'd also like to thank the staff for this very informative presentation. It's obvious there's been a great deal of thought on the subject and the staff is commended for this effort.

I've noted that severe accident issues raised in SECY-90-016 have not been further mentioned in either SECY-90-241 or in SECY-90-377. I urge the

staff to integrate severe accident considerations into the review of other aspects of design certification and remind the staff, as the Office of the General Counsel did relative to SECY-90-016, that the question of the desirability of additional severe accident mitigation measures still needs to be addressed under the National Environmental Policy Act or NEPA either in design certification or in some preliminary rulemaking.

My view is that the staff's approach is going in the right direction and is consistent with what the Commission intended in promulgating 10 CFR Part 52. I agree with the staff's conclusion that the level of detail should be adequate to enable the staff to reach a final conclusion on all safety matters considering that there will be no physical plant to examine and there should be no open items except for site specific features at the time the design is certified.

It is important to keep in mind that for the first time the NRC using this process will give final approach on all features of the plant necessary for safe operation except for site specific elements.

I believe the staff should view the implementation of ITAAC as confirmatory only. Design

issues should not be left open at design certification with the expectation that ITAAC implementation will resolve those issues.

If the staff's recommended approach is approved, the staff should ensure in developing the regulatory guide that the level of detail is sufficient such that the insights from the design specific PRA are implemented in the design. The staff should also ensure that the change process parallel to Part 50.59 be incorporated into the combined operating license adequately addresses the risk levels assumed in approving the plant design.

When the level of detail in the design certification is adequate for the staff to reach final conclusions concerning the safety of the design from the traditional standard review plan point of view, as well as risk and severe accident issues, we will have achieved a great deal of standardization. The industry and the nation will gain in the additional safety benefits of this standardization which is an appropriate focus for this agency.

I would urge the Advisory Committee on Reactor Safeguards to provide their comments on SECY-90-377 regarding the staff's recommended approach as soon as possible. The Commission would be interested

in further detailed comments during development of the proposed regulatory guide if that is approved.

Do any of my fellow Commissioners have any closing comments they'd wish to make?

I would hope we could close this out this month, if possible, but we'll make every effort. Again, my thanks to the staff and we stand adjourned.

(Whereupon, at 11:54 a.m., the above-entitled matter was concluded.)

CERTIFICATE OF TRANSCRIBER

This is to certify that the attached events of a meeting of the United States Nuclear Regulatory Commission entitled:

TITLE OF MEETING: BRIEFING ON LEVEL OF DESIGN DETAIL FOR PART 52

PLACE OF MEETING: ROCKVILLE, MARYLAND

DATE OF MEETING: DECEMBER 7, 1990

were transcribed by me. I further certify that said transcription is accurate and complete, to the best of my ability, and that the transcript is a true and accurate record of the foregoing events.

Carol Lynch

Reporter's name: Peter Lynch

STANDARDIZATION AND PART 52 LICENSING

DECEMBER 7, 1990

THOMAS E. MURLEY
MARTIN J. VIRGILIO

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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
- AUTHORIZ DEVELOPMENT OF REG. GUIDE