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Meeting Title: Brief by Nussbaumer on Level of Design Detail for Part 52

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Title: BRIEFING BY NUMARC ON LEVEL OF DESIGN DETAIL FOR PART 52

Location: ROCKVILLE, MARYLAND

Date: DECEMBER 19, 1990

Pages: 17½ PAGES

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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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BRIEFING BY NUMARC ON LEVEL OF
DESIGN DETAIL FOR PART 52

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PUBLIC MEETING

Nuclear Regulatory Commission
One White Flint North
Rockville, Maryland

Wednesday, December 19, 1990

The Commission met in open session, pursuant to notice, at 9:00 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 AND PRESENTERS SEATED AT THE COMMISSION TABLE:

SAMUEL J. CHILK, Secretary

WILLIAM C. PARLER, General Counsel

BYRON LEE, President & CEO, NUMARC

J. PHILLIP BAYNE, President & CEO, New York Power Authority

WILLIAM COUNSIL, Vice Chairman, TU Electric

CARLO CASO, Westinghouse

DANIEL WILKINS, GE Nuclear Energy

A. EDWARD SCHERER, ABB Combustion Engineering

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

9:05 a.m.

CHAIRMAN CARR: Good morning, ladies and gentlemen.

The Commission is being briefed today by representatives of the nuclear industry on its views on the level of detail required for an essentially complete nuclear power plant design for design certification under 10 CFR Part 52.

Specifically, the industry is requested to provide its views on the NRC staff recommendations provided in SECY-90-377, Requirements for Design Certification Under 10 CFR Part 52, which the Commission is currently considering.

Implementation of design certification provisions of Part 52 will require the NRC for the first time to give final approval on all features of the plant necessary for safe operation except for site specific features based only on a document review.

In SECY-90-377, the NRC staff has identified an approach to determining the level of detail considered necessary to reach a final conclusion on all safety matters. In proposing this approach to the level of detail, staff has drawn on previous licensing experience as well as knowledge

from operating events which we want to prevent in future designs. Under this approach, finality of safety decisions for certified designs will not only enhance the protection of public health and safety, but will have additional economic and regulatory stability benefits for those who build these designs.

The proposal under consideration by the Commission reflects consensus with industry on a number of issues. The NRC staff has recognized the need for a certain amount of flexibility to finalize the design and construct a facility and has proposed a change process to accomplish this. Staff also recommends the use of inspections, tests, analyses and acceptance criteria, or ITAAC, to confirm a plant has been built and can be operated in accordance with a referenced certified design.

It is the Commission's intention to reach a final decision on SECY-90-377 as early as possible so that realistic schedules may be developed and we can move on with our review of standard design certifications for nuclear power reactors.

I understand that copies of the slides for the industry's presentation are available at the entrances to the meeting room. The SECY paper was released to the public on November 9th, 1990.

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

If not, Mr. Lee, please proceed.

MR. LEE: Thank you, Mr. Chairman. Good morning, Commissioners. The industry appreciates the invitation to meet with you this morning to discuss the design certification issues, in particular the level of detail question and the implications of SECY-90-377, and also the industry's strategic plan for building nuclear power plants.

I have with me today Phil Bayne, the President of New York Power Authority and the Chairman of the Nuclear Power Oversight Committee or NPOC's ad hoc committee that developed the strategic plan. Phil will summarize the plan and present the Committee's activities to give you assurance that the utilities support standardization beyond certification.

Also here is Bill Counsil, Vice Chairman of Texas Utilities Electric Company and the Chairman of the NUMARC Standardization Oversight Working Group. Bill will discuss NUMARC's concerns with SECY-90-377 as requested and Bill's working group includes a broad cross section of experience as shown by the various companies that are listed on this overhead.

We also have representatives from the

three nuclear steam supply vendors who are actively pursuing design certifications here at the table to respond to any specific questions that you may have. Representing Westinghouse is Carlo Caso. Representing GE is Dan Wilkins, and representing ABB Combustion Engineering is Ed Scherer.

In January of this year, the industry recognized that Part 52 alone would not be sufficient to reestablish confidence in a nuclear option. To address this issue, NPOC established an ad hoc committee to develop a strategic plan to coordinate the industry and institutional activities to enable advanced nuclear power plants to be built with the confidence that they will be safe, reliable and economical.

I'd ask Phil if he would give us an update on that program.

MR. BAYNE: Thank you.

Good morning, Commissioners. My name is Phil Bayne and I'm a member of the Nuclear Power Oversight Committee, NPOC, and currently serve as President and Chief Operating Office of the New York Power Authority.

For this past year I have served as chairman of an ad hoc committee formed by NPOC to

develop a strategic plan for building new nuclear plants. We in the electric utility industry feel strongly that it's in the national interest that nuclear energy be a planning option for new base load capacity. The new nuclear capacity is needed to help provide a safe, environmentally compatible, reliable and affordable supply of electricity needed to sustain the U.S. economy and the rising standard of living of all Americans.

Consequently, the industry has set a goal to order and begin building new nuclear power plants within the next several years so that they are on line by the end of the decade. But many questions must be answered and many issues resolved before utilities will be able to order new nuclear capacity. The NPOC strategic plan creates a framework within which new nuclear plants may be built.

This plan is an expression of the nuclear industry's serious intent to create the necessary conditions for new plant construction and operation. The industry has assembled a comprehensive list of all the actions that must be taken before new plants can be built. We have assigned responsibility for managing the various issues and we've set time tables and milestones against we must measure progress.

One of the key elements of this plan is standardization, from design certification through engineering and construction to the operation and maintenance of the plant. For many years, people in the U.S. nuclear industry have known that significant economic advantages were possible if we build nuclear power plants to standard design. France has proven that to us.

The organizations that comprise NPOC have endorsed an aggressive plan to define and implement standardization to the maximum practical extent. The groundwork for tough decisions has been laid in the advanced light water utility requirements documents and in the individual design certification submittals in preparation or under review.

NUMARC has developed an approach to implementation of standard designs from a licensing perspective and is working towards NRC acceptance of that approach. This meeting, we hope, will further the acceptance of the industry definition. Responsibility to refine definitions and plans for standardized engineering from design certification to the point of an order has been given to EPRI, the Electric Power Research Institute and the vendors.

NUMARC and INPO, the Institute of Nuclear

Power Operations, are defining standardization in areas that go beyond design. The NPOC plan proposes four stages of standardization in advanced light water reactors. The first stage is established by the advanced light water reactor utility requirements document which specifies owner/operator requirements covering all elements of plant design, construction operation and maintenance. We expect that after NRC review and approval, agreement will be reach[illegible] generic safety issues that will provide a basis [illegible] NRC design certification. The document also describes owner/operator requirements in design features such a layout, availability goals, instrumentation and control, human factors and so on.

The second stage of standardization involves design certification. This includes design criteria and bases and performance requirements for systems to assure plant safety. The application will include the detail design information necessary for the NRC to make final safety determinations.

The Commission should press for standardization as it relates to decisions on safety regulations, but not for reviews of engineering detail beyond the regulations. Such reviews have the potential to jeopardize achieving certification. Our

second building block, predictable licensing and stable regulation, is aimed at providing the level of detail needed to achieve standardization within the scope of the NRC regulations.

The third stage of standardization carries the design to a level of detail beyond that required for design certification to enable the industry to achieve the efficiency and economy of commercial standardization. Since the level of detail required for design certification will vary based on safety significance, it follows that the starting point for commercial standardization will carry the design to the point that an order can be placed with confidence in the cost and the schedule to build it. The industry is committed to commercial standardization and the economic benefits that will come from it.

The final stage of standardization goes beyond design. A standardized approach will be developed in areas such as construction practices, operating and training standards, maintenance and spare part procurement. This stage creates the ground rules and the organizational entities that will maintain standardization throughout the life of the plant. This will ensure that the economical and technical benefits of standardization will be

maintained during the plant's lifetime.

Based on these principles, the ad hoc committee for the NPOC strategic plan agreed to develop a comprehensive policy that outlines the overall industry commitment to standardization. Nuclear power plant standardization is a life cycle commitment to the uniformity and the design, construction and operation of a family of nuclear power plants. Rigorous implementation of standardization is expected to achieve efficiency and economy typically associated with increase in scale or breakthroughs in technology.

The benefits of standardization in this context include the following: early definition of requirements to ensure regulatory stability and the elimination of unnecessary changes; timely, systematic and thorough resolution of problems; optimization of design to improve constructability, reliability, operability and maintainability.

More simple and uniform designs that are easier to construct and operate lead to more efficient and effective regulatory oversight and enhance public confidence, focused and efficient application of technical and financial resources, and an expanded resource base that enhances support capacities for

design, manufacturing, construction, insulation, inspection, testing, operating, maintenance and replacement parts.

We want to maximize learning from past experiences and accelerate experience feedback. We are developing a policy that will achieve and maintain standardization throughout the construction and operating life of the family of standardized plants, a plant design that will be transferrable without alteration to any site within the design envelope for the family of plants. Major structural, mechanical, electrical or I&C components including installed spares essential to nuclear safety or reliable power generation will be identical. Construction drawings and specifications are identical for each plant within a family, standardization beyond hardware design that will be implemented in such areas as training, maintenance and operating procedures, quality assurance, licensing, spare parts, management and outage management.

The draft policy is presently under review by the Nuclear Power Oversight Committee, along with more detailed supporting statements on the four stages of standardization which I have briefly summarized. This complete statement will be a guiding document to

the industry for the overall implementation of standardization of nuclear plants. After review and approval for the statement by the Nuclear Power Oversight Committee, it will be furnished to the Commission for your information and comment. We expect this policy to be completed in early January and request that you consider this important initiative in your deliberations.

Thank you very much.

MR. COUNSIL: Mr. Chairman, Commissioners, we owe it to the Commission to be direct and candid in expressing our concerns. In the industry's view, SECY-90-377 represents a departure from the provisions of Part 52 in the following major respects:

The staff has departed from the sufficiency for safety standards specified for the level of detail in Part 52 and has substituted a new and unworkable, feasible and practical standard. The level of detail proposed by the staff for inclusion in tier 1 negates the flexibility which the staff recognizes to be appropriate for tier 2. The staff proposed tier 3 or available for audit information, conflicts with the Part 52 requirements that such information be prepared only if it is necessary for the Commission to make its determination. Issue

finality is cast in doubt at both the combined license and preoperational stages by the staff treatment of tier 3 information in SECY-90-377.

A regulatory guide is not needed for the four areas identified in SECY-90-377. Moreover, a tier 3 reg. guide is inconsistent with the provisions of Part 52 and could undermine the viability of the design certification, combined license and preoperational processes. These proposed changes place in jeopardy continuation of the industry design certification efforts and, more broadly, renew industry's deep concern about regulatory predictability.

If the level of detail requirements described in SECY-90-377 are endorsed by the Commission, then it seems almost certain that certified designs will not be available in a time frame consistent with the industry's needs as detailed in the NPOC strategic plan. The additional up-front cost of the new requirements proposed in SECY-90-377 is estimated to be in excess if $500 million. In the present regulatory climate and general economic conditions, the probability of obtaining funding of that magnitude without an order is understandably low.

The industry urges that the staff base its

review on Part 52 and those applicable requirements referenced in Part 50. That rationale is based on the standard review plan which should be the basis for the level of detail required to make design certification safety determinations, supplemented as necessary where any new safety related concepts, technologies and techniques are introduced.

Let me now turn to each of the concerns which I have identified earlier.

Level of design detail. Should the Commission adopt SECY-90-377, the requisite standard for level of detail would be different than that prescribed in Part 52. Specifically, the staff has departed from sufficiency for safety standards specified in Part 52. Even though during its December 7th, 1990 meeting with the Commission the staff sought to clarify its use of a feasible and practical design detail requirement, it went on to seek Commission endorsement of a reg. guide in accordance with Appendix A of SECY-90-377 which is based on the feasible and practical ethic. We find such an approach unacceptable.

The level of detail requirements of Part 52 were developed as a result of substantial interchange and lengthy discussions among the staff,

the Commission, the ACRS and the industry. The increased level of detail called for in SECY-90-377 is substantially similar to what was recommended to and rejected by the Commission at the time of adoption of Part 52. It is extremely disturbing that this resolved issue should resurface a year later with no apparent recognition of its prior consideration and resolution.

Two-tier approach. The two-tier approach was intended to further standardization while at the same time accommodating necessary flexibility that is part of the reality of a large complex construction project and operating facility. The staff recommendations in Appendix A for the design detail to be contained in tier 1 will result in an impractical process when attempts are made to translate the certified design into a constructed facility. Minor design and construction changes with no safety significance would result in the need for license amendments and the potential for numerous public hearings.

It should be recognized that the most compelling safety benefit of standardization is not inclusion of increased design details but rather of new and fundamental design features that make the next

generation of plants safer.

Tier 3 information. The Commission should reject the staff proposal for the preparation of an ill defined and potentially massive staff prescribed tier 3 and direct the staff to require material only after review of submitted information and only after the staff has a demonstrated need to receive additional information to make its safety findings. This, in fact, is what Part 52 prescribes. Under Part 52, so-called tier 3 information is required to be prepared only if such information is necessary for the Commission to make its safety determination.

The staff will convert this into a new requirement for a vast array of detail design products. These design products would be defined in a reg. guide proposed to be developed over the next year. The staff concedes that only a fraction of the available audit information is needed for its safety review, but justifies the balance as serving the purpose of standardization. It is the role of the Commission, here as elsewhere, to assure safety. If the Commission believes that there are safety benefits associated with standardization beyond what is required to assure adequate protection, those increased requirements should be subject to the proper

procedural approach which we assume will include the justification for them.

SECY-90-377 purports to justify a vast prescribed tier 3 level of design detail because of the absence of a constructed facility against which to measure proper design implementation. This, of course, ignores the functional distinction between design and facility approvals and the corresponding review processes purposely set out in Part 52. It also ignores the role of ITAAC in assuring that the approved design is reflected in the constructed facility.

The need for a regulatory guide. The industry believes the development of a regulatory guide for any of the four purposes suggested in SECY-90-377 is inappropriate and unnecessary. First, Part 52 and its reference to existing requirements, provide sufficient guidelines for the content of a design certification application. Second, for the reasons earlier stated, there is no need to create an entirely new requirement for preparation of tier 3 information. Finally, decisions as to where the line should be drawn between tier 1 and tier 2 for specific designs and the creation of the accompanying ITAAC are best left to development and individual design

certifications as specifically contemplated by Part 52.

We are particularly concerned about the staff proposal for a tier 3 regulatory guide. This could transform the design certification proceeding into an open-ended inquiry on the sufficiency of tier 3 and the adequacy of the staff's audit.

Issue finality. A Part 52 premise is that once issues have been resolved in a design certification proceeding, they are not open to challenge in later combined license and preoperational proceedings. SECY-90-377 casts in serious doubt issue finality at both combined license and preoperational stages. The document's treatment of so-called tier 3 information is ambiguous at best and, most seriously, creates the potential for an open-ended combined operating license and preoperational proceeding.

If the staff means the information in the available for audit category can later be used to reopen tier 1 and tier 2 matters and COL and/or preoperational proceedings, this subverts the very concept of design certification finality and the viability of the certification process established in Part 52. Unless the available for audit information is incorporated in tier 1 or tier 2, it has no

regulatory significance. Available for audit information is irrelevant at the COL stage and Part 52 makes compliance with approved acceptance criteria and that alone the definitive benchmark for determining licensee conformance with the contents of a certified design at the preoperational stage.

The industry urges the Commission not to adopt the recommendations of SECY-90-377 as the basis for its forthcoming guidance on level of design detail and related issues. Instead, we would urge the Commission to endorse the basic principles set forth in this presentation and by doing so return to the basic requirements of Part 52. We on the NUMARC Standardization Working Group stand ready to assist the staff in this effort.

MR. LEE: Thank you, Bill, Phil.

I'd like to conclude the presentation by restating the industry's commitment to standardization. Both the industry and the Commission have important and complementary roles to play in this process. As we've said, the Commissioners' focus must be on safety, while the industry focus will include the practical attainment of the economic benefits of standardization. Part 52 struck the appropriate balance.

We urge the Commission to provide further guidance under Part 52 based upon the considerations we have presented today. We will transmit a letter to you with the principles by the end of this week to assist you in your deliberation and we stand ready to work with the staff, as Bill has indicated. We also ask you to hold your decision until after the NPOC review that Phil Bayne mentioned earlier.

Now, with that, I would like to again thank you for the invitation and open for questions. We have a whole array of experts who have been involved in this process besides the people at the table here to try and answer all of the questions that I'm sure are in your mind.

CHAIRMAN CARR: Thank you very much.

Questions, Commissioner Remick?

COMMISSIONER REMICK: I assume, Mr. Lee, that your vendor representatives are here other than just to provide balance to the table. I have a couple questions related to the vendors. In some of the letters that have been received from the vendors, you've indicated that if SECY-90-377 was implemented that there would be significant changes in the design information that you would submit. I was wondering if you're prepared to give me any specific examples of

the impact of 90-377 on System 80+ or ABWR or whatever.

MR. LEE: Dan?

DOCTOR WILKINS: Well, let me begin. The design information we have submitted on the ABWR was based very heavily on the reg. guide 170 format and content for safety analysis report and on the standard review plan and in areas where that wasn't completely clear on the licensing review basis that was established back in 1987. The review has proceeded now for almost four years on that basis. That included the concept of the level of detail being that needed for safety determination and, along with that, the amount of detail tied to the safety significance of the system.

SECY-377 goes far beyond that by requiring essentially a level 2 level of detail or the whole nuclear island, the turbine island, the rad waste, largely independent of the safety significance of the particular system. It would cause a great deal of additional work in the areas of the plant that have the least safety significance in order to provide the requested level of detail, yet also --

COMMISSIONER REMICK: Excuse me. If I could interrupt you there.

DOCTOR WILKINS: Yes.

COMMISSIONER REMICK: Do you have any problem with level 2 for the nuclear island in general?

DOCTOR WILKINS: In general, I think we're fairly close to level 2 in the nuclear island. Our biggest concerns were in the turbine island and in portions of the nuclear island that have relatively low safety significance. It also requires information that, in effect, requires us to know vendor information.

For example, the call for a prototype of the control room is something that you can really only do after you've selected the hardware for the control room. The software validation and verification in the control room is something that you can only do after you've selected the hardware for the control room because that determines the software. Now, these are all things that in the overall standardization plan that Phil Bayne has described we intend to do eventually but not part of certification.

In Japan, we are building a mock-up of the control room, a prototype, and we are going through the software validation, but that's being done with Japanese hardware and to Japanese standards. We would

expect to do the same thing eventually as part of a lead project in the U.S., but not during the certification phase.

There's a number of other examples in SECY-377 of going into hardware detail. It calls for complete equipment qualification and seismic reports. That's something you normally do after you've picked the hardware and qualify the hardware. It calls for final nozzle penetration loads. Again, something depends on hardware component weights and so forth. It calls for motor control center starter sizing, circuit breaker coordination, voltage drop and cable length calculations, again things that depend on the loads of individual pieces of equipment.

So, we find the thing, the SECY-377 quite inconsistent with the whole concept of certifying a design and then moving on into the selection of hardware.

CHAIRMAN CARR: Can I buy in for a second?

COMMISSIONER REMICK: Certainly.

CHAIRMAN CARR: Let me quote you the August 7th, '87 licensing review basis paragraph.

"The degree of design detail necessary for providing an essentially complete design is to be that detail that is suitable for obtaining specific

equipment or construction bids and to demonstrate conformance to the design safety limits and criteria."

That's almost the same words in Part 52. I don't understand what you're saying the difference is.

DOCTOR WILKINS: Well, the --

CHAIRMAN CARR: Are you meeting this? The ACRS letter says you're not meeting that.

DOCTOR WILKINS: We believe that we're meeting our licensing review basis and if --

CHAIRMAN CARR: Well, let me read you the November 24th, '89 letter from the ACRS to Mr. Taylor.

"The staff's ABWR licensing review basis letter to GE," which I just read the quote from, "states," and that's the quote they state. And then it says, "We believe that the level of design detail in mod 1 falls short of this requirement." That was in '89. Maybe you've met it by now, but certainly the requirement is the same as 52 and it was on the record in '87. Excuse me.

DOCTOR WILKINS: Yes. I would say there has been a great deal of activity since November '89. I think in many areas the staff has asked for and we have provided additional information. There have been six, I think, major ABWR amendments submitted during

1990. My impression is that we are rapidly closing between the staff and General Electric on what is needed to make safety determinations. There are still open items and holes, but I don't think we're far apart.

COMMISSIONER ROGERS: What is your concept of the design detail that you would supply for the control room? You say level 2 is a problem for you. What would be specified there? You know, we've learned over the last few years, last decade, how important human factors are in all aspects of a plant. Certainly it starts in the control room. We've learned a lot about things that are less than satisfactory about earlier placement of controls and how people operate in the control room. How would you plan to specify the level of design detail that takes these things into account if you don't meet a level 2 requirement?

DOCTOR WILKINS: Let me describe the approach we've used. Let me preamble this by saying that the advanced control room is probably the area of the plant where we have the least in terms of past practice and guidance to rely upon. So, we and the staff have been feeling our way through that one for some time. In fact, that was the licensing review

basis area that we tackled early on.

We think that our safety analysis report provides, after a number of amendments and meetings, sufficient information to resolve the safety issues. Now, I'm not sure at this point. I'd say the staff has come to that conclusion, but I think we're narrowing the gap. What's in there describes our safety approach, it describes our panel plan and panel descriptions, it describes the characteristics of the panels, the touch screens, the color displays. It describes what's on the big screen in the terms of safety parameter display and information.

It goes into great detail on how we designed the control room, the human factors approach, the task analysis for the operators, how we've laid out the information not by system as we've usually done in the past but to support each task that the operator has to perform. It goes into some detail in the verification and validation of software and how that process will be done after we pick hardware and software suppliers for the control room.

We have also, because of concern about the advanced technology in the safety area, we have ensured that the safety functions in the plant do not depend on the process computer. In other words, the

process computer is not a safety component and, in addition to that, we made the remote shutdown station hardwired so that we would have even independent of all this advanced technology an ability to shut down the plant on a hardwired basis.

So, we think we have provided what's needed to resolve the safety issues, but that's an area that's very much alive and active right now. In fact, we just received another round of questions this week from the staff.

COMMISSIONER ROGERS: I wonder if, just while we're on this subject, it seems to me it's a very important area, this whole question of software validation. You've essentially taken it out of the direct safety concern by saying the safety functions won't depend on the process computer. Is that true for the other vendors? Have you, Westinghouse and Combustion, taken the same approach?

MR. SCHERER: We've maintained our split between reactor protective system and plant monitoring system. But we have an advantage in that we have used digitized protection system for several years and we have a very formal configuration control system for the software which has, over the years, had some experience in making changes and the documentation for

changes. We've been using some, I believe it's 20 criteria that we've agreed to with the staff and we've been successfully implementing that over the years. So, there is some benchmark in how to go about making those software changes, even on reactor protective system safety grade channels.

MR. CASO: In support for the AP 600, we're utilizing more the microprocessor approach and therefore we're not relying on the major number cruncher computer for safety function. The different microprocessor are tied together through a network, local network, and are not necessarily using the function of a major processor.

COMMISSIONER ROGERS: But that doesn't address the software V&V question by itself.

MR. CASO: No, no, that doesn't address the software. I thought you were asking whether we're using the --

COMMISSIONER ROGERS: Well, yes, but if you say that your safety functions depend on a computer rather than on a central computer -- I mean I don't want to draw that distinction.

MR. CASO: I misunderstood the question.

COMMISSIONER ROGERS: Sidestep the issue that way. The issue is software V&V.

MR. CASO: Yes.

COMMISSIONER ROGERS: And not whether you use microprocessors or a central processor.

MR. CASO: We do use the software for safety function.

COMMISSIONER ROGERS: So then there is an issue of how software V&V will be provided for in the detail of design document.

MR. CASO: That's correct, but that's something that we are definitely planning to address and we've had discussion, preliminary discussion because we are at the very preliminary stages this time, but we are discussing with the staff to discuss how we're going to do the verification.

COMMISSIONER ROGERS: Okay. But it does seem to me that there's a difference in approach here. What we have to come to is some common view that applies here in this matter. If each of the vendors is taking a different point of view on software V&V, I think we have to recognize that there isn't a common approach that you're all taking here.

MR. SCHERER: I think that there are two issues. One is whether the design as we present to the staff in the standard safety analysis report is acceptable and needs the Commission's regulations and

requirements.

The second, and that includes V&V, gets into ITAAC which are the demonstrable evidence as we build the plant, that we have complied with those design requirements. I think when we start mixing the two is where some of the confusion occurred and this discussion that occurred in the SECY paper about the tier 3 and the need for the staff to essentially walk through our warehouse picking at random different items to audit before they can certify our design gets into the elements of mixing those two.

I think there were two separable findings. One is, does the design as we present meet the Commission's regulations and requirements for the next generation of plant? If the answer is yes, then the second question is will the ITAAC elements as presented verify that? Are they necessary and sufficient to demonstrate as we're building the plant on a sign as you go basis that we have complied with that design. If you start to mix those two, you mix up what is going to be in the final design approval and mix up what's in ITAAC and that creates a lot of the confusion as to what the staff needs to review and does not need to review before issuing a design certification.

CHAIRMAN CARR: Let me focus this a little bit. NUMARC report on inspections, test analyses and acceptance criteria provided for staff review by letter dated November 20th of 1990, which is a little less than a month ago, described, and I quote, "The level of detail required for design certification under Part 52 is, at a minimum, that which is equivalent to the design detail contained in a final FSAR, i.e. at the time of OL issuance under Part 50, except for site specific, as-procured and as-built information."

Is that what you're going to give me in the control room?

MR. CASO: Yes.

CHAIRMAN CARR: Is that what you're going to give me in the control room?

DOCTOR WILKINS: Yes.

CHAIRMAN CARR: And that's what you're going to give me?

MR. SCHERER: Yes, sir.

CHAIRMAN CARR: Final FSAR --

MR. SCHERER: Yes.

CHAIRMAN CARR: -- i.e. at the time of OL issuance under Part 50?

MR. SCHERER: Yes, sir.

CHAIRMAN CARR: And that's before certification?

MR. SCHERER: Yes, sir. Equivalent so that the staff can make final safety determinations.

CHAIRMAN CARR: I didn't say that. That's your words.

MR. SCHERER: I said it. I added those words.

CHAIRMAN CARR: But you agree to give me what it said in this paragraph?

MR. SCHERER: Yes, sir.

CHAIRMAN CARR: Okay.

MR. LEE: And I think the point that Ed was making here is the utilization of the ITAAC. We may have to have some discussions on that, but I think there has been an impression that ITAAC was going to replace design as designs that were going to come later. I think that the ITAAC was to confirm that the actual construction and application of the various codes and all the things that we're doing as a part of the project comply with the acceptance criteria that have been established at the front end of this project.

CHAIRMAN CARR: Excuse me. It's still your question.

COMMISSIONER REMICK: Doctor Wilkins, I think you've answered what was going to be my next question, at least indirectly. That was to specifically address one of the attachments in 377 that addressed the status of ABWR and inadequacies of submitted information. What is the actual status of your submittal compared to that? I assume things have changed since -- I think that was a snapshot in February as the staff indicated.

DOCTOR WILKINS: That was referring to Appendix F.

COMMISSIONER REMICK: Appendix F, yes.

DOCTOR WILKINS: And we are in the process of providing the staff a GE view on Appendix F. There's many issues there. Unless you want to, I don't propose to go through all of them.

COMMISSIONER REMICK: No.

DOCTOR WILKINS: But I think generally they fall into a couple categories. There's one category where the view expressed in there was valid at the time it was expressed, which I think was in February of this year, but we have submitted, as I mentioned, six amendments since then. The control room and advanced C&I area was a particular one that we had worked hard on this year. We had a meeting in

March with the staff and tried to hammer out how to close that gap and then we've since submitted information consistent with that meeting.

There's another set of issues in Appendix F where the staff observes that they do not have or could not obtain certain information, but we think-- we don't understand the safety relevance of that information. We think it's very much tied to the SECY 90-377 view of standardization as opposed to safety. So, I think there's probably going to be a lot of continuing discussion in that area as to exactly what is the safety determination and what can we provide the support and we'll provide it.

COMMISSIONER REMICK: Okay. Mr. Caso, do you have any views from Westinghouse? I guess they would apply to the advanced -- impact on advanced reactors.

MR. CASO: Correct. We are on a different situation than GE because we have not submitted our application and therefore our views are not related to what we have submitted, whether it is adequate or not, but to the extent or detail that we see would be required if we were to apply 377. Indeed, the issue for us at this point in time would be the cost, additional cost and additional effort that would be

required to satisfy 377 versus what we understood to be the amount of detail needed for the design certification.

When we participated and we achieved the successful completion of the contract with the Department of Energy to achieve design certification, we specified in the work breakdown structure specifically the task that we thought were necessary to achieve the final goal. When we compared the effort that we estimated under that scope of work with what we understand 377 would require, we do see significant additional effort. Some of it is the man-machine interface which basically will require to go to a higher level of development of type of prototypes of systems and so on to verify the working of the system, construction drawing, performance specification, the detail design specification, pipe stress calculations and so on. Altogether, it's going to end up in a significant additional amount of work to satisfy the requirement of 377.

So, we have not submitted our application and therefore we do not have the situation that Doctor Wilkins just mentioned where he has to amend what he has. But we will not be able to achieve the design certification with the program submitted to DOE if we

were to implement 377.

The other point that I think is of concern to us that I think goes back to some broad interpretation of your question is the concept of feasible and practical versus sufficient for safety because not only do we believe that 377 requires a high level of detail, but we are in a situation where we do not have the same definition of what is going to be needed for safety that we assume and therefore we end up in a situation that is much broader and much wider, more open.

COMMISSIONER REMICK: Well, you touched upon one of the points I was going to ask you because you seemed to stress it would take additional work and I don't think that's necessarily the question. The question is does it go beyond the information that we need to make our safety findings. Then the other matter that has been addressed this morning of whether it requires vendor-specific information to be able to provide that information.

MR. CASO: If I may address your specific point.

COMMISSIONER REMICK: Yes.

MR. CASO: When we submitted our program to the Department of Energy, to DOE, obviously we

submitted everything we thought was necessary to achieve safety. To the extent that the work we have to do goes beyond that, it is work that we do not believe is necessary to achieve the safety verification. So, perhaps I was not clear, but obviously we did not submit the program to DOE which obliges us to obtain design certification for a fixed DOE contribution and we are already by that. We did not submit a program that was going to eliminate items we thought were necessary. So, the items I mention are items that we did not think were necessary to achieve the safety evaluation of the plant.

COMMISSIONER REMICK: Okay. How about would it require vendor-specific procurement item knowledge to be able to provide some of the information that's been suggested?

MR. CASO: In some areas it will because in some areas, for example, it will require a definition of some components. In the man-machine interface, for example, it will require definition of some components in order to be able to verify some of the items specified in 377 which are not necessary for the design certification effort.

COMMISSIONER REMICK: Ed, do you want to add anything?

MR. SCHERER: Well, our position is relatively close to the position that GE articulated and I agree with their position. I would like to make one further statement.

In my reading of SECY-90-377, it appeared to be a misunderstanding of what is and is not in ITAAC and its purpose. There seemed to be a feeling or a misunderstanding on the part of the staff that somehow ITAAC was intended to defer design decisions and that unless the staff were to review a new tier 3, there was a chance that the final design somehow to be done after the design certification stood a chance of not looking like the one that we submitted.

Nothing could be further from the truth. It is our intention to submit the design in our final safety analysis report and the ITAAC, as I said earlier, are the elements which will be considered up front as part of the design certification process to be necessary and sufficient to demonstrate to the staff that we have, in fact, complied with that design.

But this is not our first plant. This is not our first standardized plant. We intend to take every step to make sure that everything in tier 1 remains unchanged throughout the design process. We

have controls in place to do exactly that. This is not a vague set of design criteria that we hope will be implemented in the as-built plant. These are requirements that will be in the as-built plant and that will remain unchanged.

I've read transcripts and attended Commission briefings where the Commission may have been led to believe that unless the Commission audited our process before issuing design certification the chance is we might come back later and tell you, "Well, gee, the diesel generators are undersize." That's just not going to happen. If we're going to size diesel generators up front, they will be adequate. Not only will they be adequate, but the margins that we said the diesel generator will have will be the same margins at the end of the process because we're not going into this process blind and we're not going into it in a naive manner.

We've designed a few plants. We've designed standardized plants. Our System 80 is a standardized plant. So we intend to make sure that the outcome of this product is not going to change as we go through the implementation phase. I'm just trying to put in context some of the comments that we've made. Certainly I agree with General Electric

in their comments on the control room and on the status of the design.

COMMISSIONER REMICK: If I recall, NUMARC has an ITAAC definition effort underway. Is that correct? If so, what is the status? Am I correct there's an effort underway to define what might specifically be in ITAACs or am I wrong?

CHAIRMAN CARR: That's the next hurdle.

MR. LEE: Yes. Well, where the ITAAC is, we have the expert on the ITAAC program right here with us. So I'll ask Dave Rehn to --

CHAIRMAN CARR: Dave, would you go to the microphone and identify yourself, please?

MR. REHN: Dave Rehn, Duke Power Company.

The efforts that we have underway currently is to take the next step from what we have already described in terms of how we see the design certification and the ITAAC and to carry that forward to the COL stage as well, to look forward. But to take real life examples associated with some of the various components and, in fact, some of the items you've discussed here today, such as control systems, and to look at how you're going to define the functional characteristics and then verify that that is indeed what you have procured and what you have

installed in your plant and then what are the tests, if you will, inspections and analysis that are necessary and sufficient to demonstrate that.

I think the points are very key that you raised here today. That is we will be providing that level of detail up front that's analogous to that FSAR. I think it meets the intent of that LRB that you read. However, the minus aspect in there that is very important is that we will be absent vendor-specific information.

Heretofore, if the analogy back to a car is that we in the past have had both the specifications and the ability to go out into the showroom and kick the tires. At this point, we're going to have the detailed specifications and what we must define then is what allows us enough detail to ensure that what is going to be out there meets what we have.

Quite frankly, the difficulty in that is to take that philosophical approach and then work through the particulars. I think that's what we saw to some extent in 377, the first attempt to try to translate this concept, if you will, into some real life examples.

CHAIRMAN CARR: Of course, our problem is

at the time of that FSAR and the operating license we've been able to go to the control room and look at it and this time we aren't going to have that and we've still got to certify the safety of the plant.

COMMISSIONER REMICK: Mr. Counsil, you, in your presentation, mentioned the $500 million and I didn't want to home in on that, but I didn't understand if that was the incremental cost or total cost.

MR. COUNSIL: No, that's an incremental cost. In other words, it's transferring money that would have been spent probably later in this whole process of the combined operating license and moving it up front.

CHAIRMAN CARR: Across three vendors?

MR. COUNSIL: Yes, sir.

CHAIRMAN CARR: But not each vendor?

MR. COUNSIL: No, not $500 million per vendor, total. It's an estimate. Something in excess of $500 million total for the three vendors in this process.

MR. LEE: Four designs.

COMMISSIONER REMICK: And just a comment. In your comments you address the staff. The staff has proposed, but we must remember that they are

responding to their perception of what the Commission wanted. So, if there's criticism, why, it has to be shared with this side of the table and not necessarily the staff's --

CHAIRMAN CARR: Well, I think it's important to note that that draft appendix that they put in there has two columns, one technical and feasible or maximum technically available, and the one they recommended. Those are different columns, which leads me to believe the one they recommended is what they think they need for the safety determination. Now, I don't know whether that's the column you're attacking or if the one that says maximum technically available is the one you're attacking. Now, that's the one we asked them to give us. The one they give us in addition to that is the one they think they need for safety. So, you're on notice.

COMMISSIONER REMICK: That's all the questions.

CHAIRMAN CARR: Commissioner Curtiss?

COMMISSIONER CURTISS: I just have two or three areas that I want to cover.

Let me begin with picking up on a point that we discussed at the last meeting, this question of what's in tier 3 and what the safety relationship

is to that information.

If I understand what you've said and I've read the comments of the vendors and listened very carefully, Bill and others here, to what you've laid out. On this question of how much detail in tier 3 would be required, I gather your argument is that the staff is proposing to cast the net so broadly in that tier 3 category that it would capture a whole lot of detail. Maybe $500 million is simple rule of thumb that one could use to capture how much detail, beyond what's necessary for the Agency to make its safety determinations.

The staff on the other hand, if I understand their argument, based upon their experience with plants that have been licensed before -- and I want to ask you in particular on that point in a minute -- their argument, I gather, is that the tier 3 information has the potential when fleshed out to affect matters in tier 1 and tier 2. That is to say once you develop that tier 3 information, it may indeed suggest a modification to, an addition to or in some respect a change to an issue that's addressed in tier 1 and tier 2. Then that procedurally would be kicked up in the tier 1, tier 2 level.

I guess the question that I have, staff,

as you know, at the last meeting pointed to the difficulty of knowing ahead of time precisely which information has that potential for affecting design issues addressed in tier 1 and tier 2. But is that a plausible hypothesis that tier 3 information, when fleshed out, could indeed have an impact on the issues addressed in tier 1 and tier 2, first. And secondly, if that's the case, tell me how we know in advance which tier 3 information to require because you're suggesting that some of the tier 3 information, that is to say that which is necessary for the Commission to make its safety determination, ought to be required but not all the rest of that stuff. I guess I'm asking you how do you predict that in advance and considering the experience that we've had with the licensing of the previous 110 plants where you get to an FSAR stage and you may have a whole list of amendments to the FSAR based upon fleshing out the design detail. Can you speak to that?

MR. COUNSIL: Yes, sir. Let me take a shot first. Maybe I'm going to be too simplistic and if I am, stop me. But tier 1 is analogous, in my view, to the technical specifications, if you will. We're giving them to you up front. Tier 2 is your FSAR. Tier 3, which is not a tier 3, but it's there,

it's in our files, or has been in the past, backs up the tier 1 and tier 2 information. For instance, if I tell you that under certain conditions we will not exceed a DNBR or 1.3, you should be able to go into the backup files of the various vendors, pressurized water vendors, and look at that analyses that says, "Okay, we will not exceed the 1.3 DNBR, go less than" and so forth.

What we are deeply afraid of at this point in time is that when you specify what will be developed in tier 3, we are going to have a whole new plethora of things to choose and pick from that people have on a plate today, such as floor flexibility, of certain things during a seismic analysis. There's a lot of people that would love us to do all kinds of great new things with floor flexibilities at this point in time. That belongs in tier 3 if you specify it, but it's not specified today, it's just a means of putting that on the plate, that that's what we're afraid of. We are absolutely obligated to back up tier 1, tier 2, and it will be in our files. But we will back it up. If, in fact, you don't feel we've got enough or sufficient information, you can ask us to provide more. But what we're afraid of, if you put that plate out there in the beginning, there's going

to be a heck of a lot more than just those specific questions.

COMMISSIONER CURTISS: I'm not sure I understand the answer to my question. The premise of the staff's approach is that in some respects the information in tier 3 has the potential for affecting the actual design set forth in tier 1 and tier 2. Is that a plausible premise? Have we seen that happen?

MR. CASO: May I --

COMMISSIONER CURTISS: Yes, go ahead.

MR. CASO: May I answer the question maybe in a different way? If indeed when you review tier 3 you have a change to the information in tier 1 and tier 2, I assume that this is going to happen after design certification because if it happens before you can incorporate whatever information that we call tier 3, which is the rest of the information, and put it in tier 1 or tier 2. So, I'm assuming that this happens after design certification.

COMMISSIONER CURTISS: Yes. Well, there's that body of information that you're proposing not be included in tier 3 because it's not safety related. My question is, with respect to the body that you would excise from tier 3, have we seen with that kind of information instances where that information has

led to design changes in tier 1 and tier 2?

MR. SCHERER: That's the point I was talking about earlier and that's the confusion I was talking about earlier. I tried to -- I think the point is tier 1 and tier 2 ought to be the basis for the licensing. That's it. We will be doing tier 3. We had not considered to call it a tier 3 because we didn't recognize that as being a licensing document or a licensing commitment. We will not -- and I tried to make the point, we're not naive in establishing and agreeing to a tier 1 set of requirements. We think the chances of design information being generated after design certification that would somehow change tier 2, much less tier 1, is very, very small.

Can I eliminate it totally? No. What would happen in developing my detail design, the calculation -- let's take Bill's analogy, that I do a detailed thermal hydraulics analysis and fail to show that I meet a DNBR of 1.3 using current methods. Well then, I might have to go back and change tier 2, which would probably be a notification to the staff. If I had to change a tier 1, I'd have to pay the penalty and the penalty would be I'd have to come back to the Commission and reopen my design certification because I failed to comply with the tier 1.

We are going to do everything in our power to make sure that the tier 1 will not be violated. We're not going to do that by accident. We're not going to trust that an analysis that we deferred to after design certification will come out okay. We are going to pick the criteria, and agreed upon criteria and agreed upon methods, so that we have a very, very high degree of assurance that when we do those detailed analyses they will by definition come out okay.

MR. LEE: Let me see if I can take a whack at it and if there's anybody else. But it seems to me that as a part of the whole design certification process that there will be lots of materials that will be developed that are needed in that design process, but the applicant does not believe that they're necessary to be a part of tier 1 or tier 2. I think we all agree that there is that whole set of information that will be back there.

As we review the SECY document, it seems to open the door to the point that if it has not been reviewed it's considered kind of unresolved and it's an open issue. So, if somebody has not looked at all of that information that's out there, it is now information that could come back sometime, at the COL,

at the OL or at the finding at the post-construction period as a possible area that needs to be reviewed through a potential hearing.

I think the other side also, if there's data back there in the certification process that's needed to make those decisions, it will be drawn up. If it's there or if it's not there, it will have to be developed and submitted to the staff as a part of that certification process.

MR. SCHERER: Let me reinforce that. I never perceived a tier 3 remaining, that if the staff came back to us and needed design information which we had not already submitted in our SAR, our safety analysis report, that was needed to make a final safety determination, we would supply it. It would become tier 2. It would no longer be a tier 3 information or anything else, it would be part of the record. The issue as to the standing of tier 3 would go away.

MR. LEE: But there might be some information that they'll audit, look at, decide that, "Yes, it really isn't important," or, "I don't need that for the decision" and it's there. But there's a whole bank of that information that will be around that appears to be subject to resolution in the

future.

COMMISSIONER CURTISS: Yes, I'm not -- I guess the mechanics of what the staff has proposed lead me to conclude that the procedural problem of litigation at some future stage is less of a problem because of the mechanism of saying, if we come across the information in tier 3 that is safety related, that gets placed into tier 2 and thereby specifically identified in terms of what the staff needs. So, the staff, I think, has a mechanism for addressing the question of would the rest of the information that doesn't get kicked up into tier 2 be subject to litigation? I think the answer to that is no.

Bill, you've been through this most recently with a specific plant and maybe that would be edifying to talk about it. I had my staff go back and take a look at Comanche Peak because it is one of the most recently licensed and on this question of how much detail gets developed after we get out of the blocks at the front end. The FSAR for Comanche Peak was amended 75 times, approximately.

MR. COUNSIL: That's right.

COMMISSIONER CURTISS: And I've got a list here, and this is just what the staff has given me, not my list but what they consider to be the major

design issues that arose in the process of amending the FSAR those 75 times and a result of fleshing out the design detail. I'll just read them to you.

"Inadequate design requiring reanalysis and redesign of a substantial portion of ASME pipe supports, conduit supports and component supports. Number two, inability to determine the adequacy of U bolts used in pipe supports. Number three, HVAC duct joint design inadequacies resulting in insufficient structural integrity.

COMMISSIONER ROGERS: Would you read that one again, please?

MR. COUNSIL: I'm going to address each one of these, believe me.

COMMISSIONER CURTISS: HVAC duct joint design inadequacies resulting in insufficient structural integrity, and finally, service water piping internal coating failures.

Now, before you get into the details, this isn't a licensing board and I'd rather not get into all the details, but I guess the question that I would ask and then in as much detail as you'd like to address, are those the kind of issues in a recently licensed plant that has seen its FSAR amended 75 times that the tier 3 detail, if fleshed out at the front

end, would ameliorate in terms of the need to address those later in the process and understanding that you address them at the OL process but here it would be at the CPOL process.

MR. COUNSIL: Sir, the current Part 52 process wouldn't have helped us a bit. We got thrown into a regulatory arena whereby our plant was designed to codes and criteria established in 1974. Through a hearing process that we became tied to, we were forced to update that plant in 1938, approximately 1988.

Now, I'm going to give you an example, pipe supports, one of my favorite subjects. I took the procedure from Millstone 3 when I went to Comanche Peak in 1985. I knew pipe supports were an issue. I accepted that. I accepted everything else everybody said whether it was true or not true at Comanche Peak. I took that Millstone 3 approved procedure and said I was going to update Comanche Peak to Millstone 3. By the way, they're very similar plants. They're both 3525 Westinghouse four loops. So, I should have been able to do it, shouldn't I?

I took a Millstone procedure of 250 pages, very complex procedure. When I got finished with the staff reviews, intervenor reviews, judges reviews, I had 880 other pages. That was the most complex thing

I've ever seen in my born days. I just sat on the stand and I'm testifying in a rate case to this. I'm having a very difficult time. I spent 33 hours talking about it and I do get emotional about it because why I want Part 52 is so this never happens again, never. I don't think any utility should be subjected to this type of risk.

Now, if you'd like, I'll go on with U bolt, HVAC, service water and I've got about 35 others I can list in addition.

COMMISSIONER CURTISS: Let me just ask you, were there instances where design detail that in the tier 3 context to what the staff has proposed, if that information had been developed here at the time of design certification, at the front end, would have affected what you did on a tier 1 -- or what we call a tier 1, tier 2 issue here?

MR. COUNSIL: No, no. Here's why. In the FSAR tier 2, you certify in there that you're going to meet certain standards to the SME and so forth, and you're going to certify your design, your seismic design of your plant. All that other information, some 100,000 or so pages of information then is in tier 3. It's there for audit. What happened basically was in that audit process whole new criteria

started popping up. A great many new criteria started popping up. For instance, additional loadings added to pipe supports and thermal loadings that had been negligible before and always had been negligible but now had to be considered specifically in the analyses of all support.

So, what happened basically was new criteria were being added. Tier 2 didn't change. The certification was still there and we had it all in the back-up but now the back-up was no good.

COMMISSIONER CURTISS: Your argument is that you had all that information fleshed out and designed and set forth in all your documents --

MR. COUNSIL: Yes.

COMMISSIONER CURTISS: -- every one of the respects addressed in the 75 amendments that it was a set of changing requirements?

MR. COUNSIL: That's correct.

COMMISSIONER CURTISS: Okay.

MR. COUNSIL: What we ended up doing on those 75 requirements was invoking code cases, one thing or another, that were not applicable. I can give you a good example, the SRP program. We were not an SRP plant. We were told in 1986, "Go back and review the plant totally to the SRP process, Part 88,"

and we did. We went back and did it. We had to do it. But we were not an SRP plant.

COMMISSIONER CURTISS: Okay. There's one other question I want to ask you, Bill, and then I have one concluding question here.

I guess I didn't understand, Bill, when you were talking about the -- let me just read the note that I took here, that the treatment of tier 3 information raises the potential for a CPOL or a pre-OL hearing because of the ambiguity in which the staff would treat that. Let me go back to the point that I made earlier. The staff approach, as I understand it, would require tier 3 information to be developed and where that information is necessary for a safety determination, that gets kicked up into tier 2, thereby becoming part of the certification and thereby permitting that issue to take advantage of the issue preclusion scheme of Part 52.

Why is it that either at the CPOL stage or pre-OL, that issue identified in that manner raises the potential for reopening the question at either of those two stages?

MR. COUNSIL: Let me go back and see if I can tell you basically. Let's take pipe supports again.

In tier 2, we'll tell you how we're going to analyze the seismic structures and thermal hydraulic performance of pipe supports and why the piping systems are going to be okay. If, in fact, now in that analyses I've got it all laid out there and I'm going to do it by specific approved code by the staff, so forth, and then in tier 3 the staff tells me, "Well, include within the analyses thermal hydraulic considerations of the accident itself within the containment system." In other words, include on those pipe supports within containment the heat-up of the containment as one of the loads placed upon the support, self-exciting of the support itself, which isn't part of the system to start with. That tier 3 will affect tier 2.

COMMISSIONER CURTISS: Is that a safety-related --

MR. COUNSIL: No, it is not. The SME code ignores it, but there are members of the staff that would love to see it included.

COMMISSIONER CURTISS: But your argument is there's a whole host of information that the staff is going to incorporate by reference or use as the basis for its determinations?

MR. COUNSIL: That's what the theory is.

COMMISSIONER CURTISS: And that it's really a procedural concern here.

MR. COUNSIL: Yes, sir, it is. That's why we had sought in some cases protection under 5109 back under Part 50. There were backfit requirements being imposed upon the power plants after we had agreed as to what we were going to do in building such a plant.

Do you understand where I'm coming from?

COMMISSIONER CURTISS: I understand what you're saying. Now, let me boil down what I've heard here in the last hour and a half. It will be awful expensive to develop this information, $500 million, A. B, it's not necessary for safety determinations and, C, from the utilities' perspective there is a concern that all the issues in tier 3 may be bootstrapped into the process at either the CPOL stage or at some later stage pre-OL.

MR. COUNSIL: Well said.

COMMISSIONER CURTISS: Let me just ask a couple of questions on what you're taking a look at here between now and January. We've had the paper out on the street for some time and, in fact, this issue has been rattling around the Commission since April when it came up at a collegial meeting and then I think the July meetings on the SECY paper at the time

where you all came in, or most of you. The recent SECY paper has been out since November for public comment.

Now, you all indicated -- I just want to clarify what your thinking is in terms of the timing here. You were going to put together a statement of principles. I think I understand the principles here. It was pretty -- discussed in quite a bit of detail. But between now and the end of the month you are going to put together a statement of principles and then you would like an opportunity to what, comment in more detail after the input of NPOC in January?

MR. LEE: Two separate issues.

MR. BAYNE: What we're developing at the Nuclear Power Oversight Committee is we're trying to define what we mean by standardization and how we're going to get there, which is a difficult issue because we've got to get a lot of utilities on board with that issue. And so we've been working very hard trying to get that definition and that policy statement down, what do we mean by standardization and how are we going to get there. We would like to -- it hasn't been approved by the Nuclear Power Oversight Committee, full committee. What we want to do is continue to develop that policy, take it to the

Nuclear Power Oversight Committee, have them approve it and then bring that policy statement to you to show you what we feel we mean by standardization, hoping to convince you that we really are serious about standardization of these plants.

COMMISSIONER CURTISS: And what's the time frame for that?

MR. BAYNE: That meeting will take place on the 9th of January. It's fortuitous because the meeting will be held just prior to an EEI-CEO meeting which could be very helpful in at least letting all the utility CEO's know what's coming down the pike and perhaps convincing them that --

COMMISSIONER CURTISS: Shortly thereafter we'll have the --

MR. BAYNE: And we would bring it to you. I think the most profitable way is to have somebody like Sherwood Smith and myself bring it up and show you what we mean.

COMMISSIONER CURTISS: That's all I have, Ken.

CHAIRMAN CARR: Commissioner Rogers?

COMMISSIONER ROGERS: I wonder if we could go back to this available for audit question because this is one of the very big questions.

In our presentation a week or so ago from the staff, one of the points that came out was that in doing their safety reviews they do not do a -- and of course you all know this, but they do not do a repeat of every analysis that every designer has made in designing the plant. Can't do that. So they have to do it on a sampling basis of some sort.

When they are faced with that kind of a prospect, of doing a sampling, taking a sampling approach to looking at safety issues in the design, then wherever they do a probe on this, if they don't have the necessary detail of design to complete that they're going to get stuck. Well, your answer to that might be, "Well, just come to us and we'll supply that information." The problem that I see there is that-- in that approach, although it might be a way to deal with the issue, is that they will never do a complete review of every analysis and every conceivable safety question on that design. They simply don't have the resources and time to do it.

So, wherever they do an analysis, if they run into a problem and the vendor simply says, "Well, we'll give you that additional information if that's what you need to complete that," then the nagging question in back of your mind after that is, "Well,

what about those other areas that we didn't sample?"

So, the staff is saying, "Well, give us everything and then we can do it."

There's the dilemma. How do you address this? How do you propose addressing this issue?

MR. COUNSIL: Let me take it first, all right?

Tier 3. What the staff is basically saying is, "Put everything in your files. Then we'll pick and choose what we want to look at." Well, that's fine up to a point. Let me see if I can give you, Doctor Rogers, an example on a pressurized water reactor today. We got a design of 2500 psia on a pressurized water reactor. We go through a whole transient analysis, all right? We put reliefs on the pressurizer, safety valves on the pressurizer. Those have a certain blow-down capability and so forth. We say we're going to protect the plant to 2500 pounds. We do not provide the analyses that says, "Okay, this blow-down on this reset point is okay with one safety valve out of service. It doesn't work, whatever." But it's there. It's in the files. The SRP says we've got to have it and we're going to live to the SRPs right now. It's there for audit.

But what has happened in the past is the

staff assumes that they don't have to go look at that. That's a very easy calculation for a mechanical engineer to make, so they don't look at it. They'll look at more the esoteric, the new ones that are coming out such as the I&C design of this new control room if, in fact, that control room is every licensed. Those are the type things they should look at because they're new and they're different.

But I think what we're reading in tier 3 at this point is, "We'll give you a menu of everything we want you to put, and therefore it would be any possible question that we could possibly ask in the foreseeable future. You do all of that and it's there and we'll audit some of it and therefore the plant is bound to be safe."

Well, that's too open-ended. We're trying to sit with what right now we have been doing, and that is with the SRP. There are other issues with tier 3 too, believe me there are. If we could just take one moment and we'll let Marc Rowden what else can happen with tier 3 that we fear.

Mark, can you do it in two minutes?

COMMISSIONER ROGERS: Well, I'd like to hear on this particular concern that I expressed how you deal with that dilemma.

go that as we implement the detail design and build the plant, that we have continued to comply with the design which was reviewed and approved by the staff.

Elements of that plan will, without doubt, involve the staff coming to our files over the years after design certification and auditing calculations and auditing compliance and auditing the physical building of the plant to the ITAAC criteria which we will, for the first time at licensing hearing agree is necessary and sufficient to verify that the plant has been built in accordance with the design. At that point, the staff will have material and an acceptance criteria for them to review.

The question and the confusion only arises in SECY-90-377, the staff implies that they must do that before design certification and we're saying, no, those are elements which we will agree on that you will do after design certification based on the ITAAC plan which has the acceptance criteria and verify that the design which you've certified is indeed the one that we're building --

COMMISSIONER ROGERS: Oh, that's a second issue. That's not the issue I'm talking about. I'm not talking about that at all.

I'm talking about what the staff needs to

MR. COUNSIL: I guess I would say that --

MR. LEE: When Mark finishes, I'd like to come back to that, Commissioner Rogers.

I'm not sure that submitting the data to that dilemma is going to solve the dilemma. If the capabilities aren't there to analyze and to understand I need it, I guess by just submitting our data, I have a feeling one of our problems in the past is we have submitted tons and tons of data that have required a lot of effort and have been of no value to the process.

MR. SCHERER: I'm concerned we're talking past each other. I think there remains confusion about what information we're going to supply before design certification and what information after. I don't think there's controversy here except when we try to understand what is in the design certification for the FDA and what is a part of ITAAC.

In my view, we're going to submit the design for certification. That does not involve walking through our warehouse or a need to walk through our warehouse at that point. We will submit the design and an ITAAC plan both for review and prior approval. Elements of that ITAAC plan by definition will involve the staff verifying and signing as they

do a safety analysis, what they feel they need to do a safety analysis.

MR. LEE: I think the answer was given before, that you will get all of the information that you need to do the safety analysis.

MR. SCHERER: There's nothing in tier 3 that the staff needs.

MR. LEE: There also is a massive quality assurance program involved with all of these efforts that will have a high degree of control, again, over these programs. I know there will be the concern that we had problems with quality assurance programs in the past. Again, I would second that, as Bill Counsil said, that was a changing set of requirements also during a lot of that period in the same vein that Bill was talking about on his examples before.

COMMISSIONER CURTISS: Just for clarification, Ed, do I understand you to be saying that there would be some ITAAC -- maybe all the ITAAC -- that would be submitted and developed sometime after design certification?

MR. SCHERER: No.

COMMISSIONER CURTISS: You will submit the ITAAC at the time of design certification?

MR. SCHERER: Yes.

COMMISSIONER CURTISS: And need that approved as part of the design certification?

MR. SCHERER: Yes, sir.

MR. LEE: Yes.

COMMISSIONER CURTISS: Okay.

MR. LEE: Mark?

MR. SCHERER: But implementing the ITAAC would occur.

MR. LEE: Marc?

MR. ROWDEN: Marc Rowden, NUMARC Lawyers Committee. I assume the two minute whistle has sounded.

Let me try and put a focus on the tier 3 issue in terms of our two fundamental problems, and I'll start as the point of departure, Commissioner Curtiss' question about is it inconceivable that there might be need for access to audit category information in order to assure that tier 1 and tier 2 will be properly implemented. Whatever the factual predicate for that is, let me assume that hypothetically that can and would be the case.

The two basic questions are: is this the most sensible and practical functional way to go about meeting that need, namely the preparation of a comprehensive regulatory guide prescribing the

preparation of pre-prescribed what the staff calls design products, which they would audit only in part and even a lesser part would actually be incorporated in the record of the design certification review proceeding? Bill Counsil's most recent statement on that point is, I think, directly responsive to your question with regard to the functional aspect of that.

Yes, audit category information could be required. No, the staff does not know what information it will require to conduct that safety review. I thought the comments made by the staff in the December 7 briefing to the Commission were transparently candid in that regard, and I believe Doctor Murley said, "If we were to prepare that regulatory guide today, we do not know what information would be necessary to serve that purpose. Therefore, the staff would require the maximum amount of that information." And I think that picks up a thought that Chairman Carr expressed before as to what the staff's intentions are in that regard.

Let me address a point which I don't think has been adequately covered, and that is our abiding concerns about the procedural consequences for preparation of a regulatory guide for tier 3. The staff is institutionalizing the available for audit

category in a way which I believe is going to transform at a minimum the combined license proceeding. The staff is saying "this information is necessary for us to be able to adequately discharge our safety review responsibilities and we will audit part of that information."

In my judgement, this immediately opens as major issues, open-ended issues in a combined license proceeding, the adequacy of what the staff has prescribed for pre-preparation in this regulatory guide. Remember, this won't have the status of a regulation. Nobody's going to be able to rely on it. All it does is introduce another issue. And furthermore, it will introduce the further issue of the adequacy of the staff's audit of that information.

I believe that this holds the potential for converting the combined license proceeding into something other than what the Commission contemplated and certainly the industry understood Part 52 prescribed in this regard. I would urge the Commission to give various consideration to the procedural consequences of this action as well as to the cost and other consequences of requiring preparation of such a regulatory guide.

COMMISSIONER CURTISS: If your premise is

that everything that the staff would require in tier 3 we can say today and it will hold throughout is safety-related. I do think it has the potential, if it's not included in the design certification, for being addressed at some point downstream.

At the risk of over-simplifying, I guess I see three ways to approach this if it is plausible that information in this category has no effect on tier 1 and tier 2 design information.

Number one, you do what the staff did, which is to say we're not quite sure precisely what information has that potential, but in this category generally we think that information does have the potential and we'd rather err on the side of requesting more rather than less, the "Why does it take three ships to discover America?" analogy that Tom Murley mentioned. We'd like to have more, so that when we get into the process we'll have that information available to us.

Secondly, I guess, the alternative that you're suggesting, which is we can define with precision at the outset what you all think, the vendor think will be necessary to address the safety determinations and hit the mark right out of the blocks.

Or, third, which is probably the more likely scenario it seems to me if the staff's approach isn't pursued, you take your best shot at it, but when you get into the process you discover that there will indeed be safety information that you have to stop and go develop or go find or in some manner incorporate into the review.

The procedural question, it seems to me, though, I'm not sure that's not a curable problem if there is a focus as the staff's proposal suggests on what the safety nexus is between the information that they are requesting at the outset, ultimately relying on, and then incorporating in tier 2. That just seems to me to be a very -- to use your word -- transparent process that would specify that category of the tier 3 information that ultimately proves to be safety-related prior to the design certification.

You raise an interesting point. I'm not sure I agree with it, but I would like to think about the procedural question, whether it's a curable problem, because I don't think it's intended to boot-strap all that information that normally necessary and may ultimately not prove to be necessary into the adjudicatory process at the CPOL stage. I certainly don't support that and I don't think the staff intends

that, but I would like to think --

MR. ROWDEN: I know the staff doesn't intend it and I'm sure the Commission doesn't support it, because it's totally at odds with the basic procedural concepts in Part 52. What I'm suggesting is a deep concern on our part that that will be the consequence. You will have these additional issues introduced into what was intended to be a proceeding which would take as a given the design which has been certified and approved in both tier 1 and tier 2 of the design certification proceeding.

COMMISSIONER CURTISS: Okay. I understand the point.

CHAIRMAN CARR: Well, I'm concerned, I guess, that we've lost sight of the original intent of Part 52 and that was to avoid the litigation and solve all the problems before the spade was put in the ground. From what you tell us today, there's going to be a hell of a lot of problems out there after the spade's been put in the ground and I'm concerned about when they're going to appear and what the effect of those are going to be.

You know, this is not the first time that we've done a safety analysis on a plant, to use your analysis. We certainly ought to know what those major

issues are, both the staff and everybody else. Your saying the staff's going to require a lot of things that are not needed for safety doesn't make a lot of sense to me. If you don't like that draft appendix or whatever it is, then seems to me the ideal way to work that out is to argue out what ought and ought not to be in there and come to some agreement.

So, I'm a little uneasy as to why you don't like a reg guide. How about somebody telling me why you don't want to work that out with the staff and come to some agreement on "yes, we agree this is what's needed."

MR. LEE: Bill?

MR. COUNSIL: I'll take the first shot.

I don't think -- for instance, there are four reg guides or the potential for four parts to a reg guide that are in 90-377. An explanation of what should be in a reg guide or in a reg guide determining, say, for a Westinghouse tier 1, tier 2, I suppose, could be done, or for a CE tier 1, tier 2 split, or a GE tier 1, tier 2 split, but they're all different and they will be different. And I don't think that has been recognized. I don't believe, for instance, that it's necessary to do that. Part 52 allows you to work that out during the process --

CHAIRMAN CARR: We're not arguing about the necessity. We're trying to figure out wouldn't it ease the process.

MR. COUNSIL: I don't think so. I think what it's going to do is add more burden on the process, because what's going to happen are the resources that should be reviewing the docket now for CE or the docket now for GE are going to be writing the reg guide or waiting for the reg guide to do the review.

CHAIRMAN CARR: My understanding is there's not a lot of argument over the NSSS piece of what we want. Everybody agrees that's pretty much the same. I don't understand why steam plants aren't preity much the same no matter who's going to -- these guys aren't -- you take some kind of steam out and you run something with it. Why couldn't they agree on what they need in the back end of the plant? What's the problem?

MR. COUNSIL: It's not just the back end of the plant. Tier 1 and tier 2 between these three vendors will be different.

CHAIRMAN CARR: But not from a safety standpoint.

MR. COUNSIL: Oh, absolutely. Absolutely.

CHAIRMAN CARR: Why can't we settle on what is required from a safety standpoint and put that in some kind of guidance to these three people?

MR. SCHERER: I think you already have that. That's our point. If the Commission were to tell the staff that we want you to collect and document only that information necessary to make final safety determinations and make them final, then we think that the basis is already in place. It's called a standard review plan. It may need some tweaking in different areas, but the standard review plan essentially tells --

CHAIRMAN CARR: The standard review plan is only a guide to a guy who is reviewing something else. That's not going to help us any. What we want to look at is the design. That's what the plan tells the guy, to look at what parts of the design. Right?

MR. SCHERER: That's what the case looks at. In every case that's submitted an FSAR, it looks at the design.

CHAIRMAN CARR: Staff's already told us standard review plan won't work in this case.

MR. SCHERER: I think the staff's told you that it needs revisions in certain areas like advanced control room, but in many of the areas it's already

perfectly adequate and tells you the level --

CHAIRMAN CARR: You still haven't told me why it wouldn't be a good idea. You're just saying we don't need it. We've got a lot of things around here we don't need.

MR. SCHERER: For example, we submitted material on CESSAR. We can't seem to get reviewers sufficient to review our design and give us questions back as to -- so that they understand the design we submitted, now you're asking me whether I agree that maybe we take another person off a design, whereas I understand that I only have about one and a half equivalent people reviewing my design in the first place. How many people can you take off that before my design grinds to a standstill?

CHAIRMAN CARR: That's my manpower problem. I'm trying to figure out if it wouldn't be advantageous to have that reg guide in place so that you'll know at least the kinds of things the staff thinks they need, put some bound on the problem of tier 3 or whatever that is.

MR. COUNSIL: We think the standard review plan does that now, and we're willing to work with the staff to upgrade the SRP in the areas of I&C, in particular, because of their concern on advanced

control rooms. But, right now, the SRP provides that information. We believe that it's not in our best interest to start with a new document today.

CHAIRMAN CARR: Well, don't forget we're doing this without anything to go look at.

MR. COUNSIL: But you're also doing it, sir, with an ITAAC that you never had before.

CHAIRMAN CARR: No. We haven't designed this ITAAC yet. It's going to be the second major problem that we're going to face.

MR. COUNSIL: Well, it's going to be given to you as part of the design cert phase, and you will have it.

CHAIRMAN CARR: But, I say, that's another hurdle to get over. The first one we've got to get over is this level of design detail. If you put it off until ITAAC, that ain't going to work.

MR. COUNSIL: ITAAC will be submitted during this design cert phase.

CHAIRMAN CARR: That's fact, yes.

COMMISSIONER REMICK: Ken, could I add a question on that?

CHAIRMAN CARR: Please.

COMMISSIONER REMICK: Am I correct that your point is that what would be in the reg guide is

best developed during the give and take of the certification review and the rulemaking, that that's going to determine what's in tier 1 and tier 2?

MR. COUNSIL: Yes.

COMMISSIONER REMICK: If that's the case, would you have any objection after the certification to take that wisdom of what you decided was in tier 1 and tier 2 and documenting that for future vendors?

MR. COUNSIL: For that class of plant?

COMMISSIONER REMICK: For that class of plants.

MR. COUNSIL: I would have no problem with that.

MR. SCHERER: Philosophically, I have no problem with the revealed standard, if you will, approach to this issue, assuming that the guidance from the Commission is that the information that he is seeking and that his reviewers in the level of detail is sufficient to make final safety determinations. With that caveat, I have no problem with the revealed standard approach.

CHAIRMAN CARR: Let me -- there seems to be some real desire to keep material out of tier 1 and tier 2.

MR. COUNSIL: That's correct.

CHAIRMAN CARR: I don't understand that, if the object is to avoid litigation. Because, if we get it in there and solve it before you dig into the ground, then we solve a lot of problems that are never going to come up.

MR. COUNSIL: Right now, if you take a look at tier 1 -- and I'm not prepared to give you all examples of tier 1 right now today -- but in tier 1 the staff has placed certain industry codes that may or may not be -- date, let's say, five years from now or three years from now.

CHAIRMAN CARR: I can solve that problem by just saying "or successor."

MR. COUNSIL: "Or successor"? Well, I guess you think you can, and as far as -- if it's a design cert, as I read it, it's a rule.

CHAIRMAN CARR: Yes.

MR. COUNSIL: And if it's a rule and the things in the rule are spelled out, if you make a change to it you've got to have another rulemaking hearing.

CHAIRMAN CARR: No. When you come in for your application, if you're the fifth plant down the line and it says "or successor," then the date of that approval is where you're going to be, whatever is in

effect at that date. I don't understand why that's a problem.

MR. LEE: But then I think you're -- in a sense, you're really deviating from the standardization and the family of plant approach. The whole idea --

CHAIRMAN CARR: I'm not the guy who changed the criteria for the ASME standard, which I guess we wanted to do or we wouldn't have changed it.

MR. COUNSIL: But they will change, and we're quite certain they will change.

CHAIRMAN CARR: Well, I would hope so.

MR. COUNSIL: You know, what we believe that should be in tier is the actual design criteria for the plant, not the code from which -- not even the code, the standard from which it was developed.

MR. LEE: That's a question of continually going back and upgrading everything you've done in the past to the latest code. The code is an evolving issue and hopefully it makes improvements. But, again, they're marginal step types of improvements that are not significant enough to have to have everybody in the world go back and modify everything they've done in the past and I think the whole idea of the Part 52 and the certification process was that it

was going to be constant long enough, not even with those kinds of changes, to give people confidence that they can order that certified design --

CHAIRMAN CARR: Okay, so I don't change it to the ASME standard.

MR. COUNSIL: Well, that was just one example. We haven't done a detailed review of those tables yet. We haven't had time. But, those were examples of --

CHAIRMAN CARR: Well, that's slow. We put this out in November.

MR. COUNSIL: Well, I'm so slow, sir --

MR. LEE: We got it just before Thanksgiving and we have been working on it pretty diligently.

CHAIRMAN CARR: Well, are you going to do that in your detailed comments, whatever you promised us here in your comments? Are you going to say, "Hey, these are the products that you've got in there I don't think you really need"?

MR. LEE: We have not, at this point in time, committed to do that. We are going to give you some of the, again, as I said, general principles that we've talked about here. But, again, I think one of the concerns, Mr. Chairman, is that, again, if we lay

down the specific regulatory guide as such, that locks in -- and the issue, we think, it's better to use the standard review plan that exists today and to work out these issues.

CHAIRMAN CARR: Well, but we're on what's in level 1, level 2, why you're trying to keep material out of there issue. If it's not in there, as far as I'm concerned, it's subject to litigation anytime.

MR. COUNSIL: Not if it's not safety-related.

CHAIRMAN CARR: But that's what the litigation will be over.

MR. COUNSIL: Well, I don't think, for instance, a question of whether IEEE 383-19, whatever, is safety-related or not. It's an IEEE code. Unless you make it safety-related, it is not safety-related. The results, the design that says we meet that or meet something is safety-related and will be in tier 1, but that standard doesn't have to be there, especially if it changes at a later date, and it will. IEEE changes everything every week.

CHAIRMAN CARR: So, you could tell me what you want to take out of tier 1?

MR. COUNSIL: Out of tier 1?

CHAIRMAN CARR: In 377.

MR. COUNSIL: We believe tier 1 is adequately defined right now by the standard review plan and we are providing that information. And, tier 2, we are providing that information --

CHAIRMAN CARR: Well, standard review plan was written before there was a tier 1.

MR. COUNSIL: Of course, but there was a standard technical specification.

MR. LEE: It was safety issues that --

CHAIRMAN CARR: But, don't forget the staff's got to come up and recommend that we approve this, certify this design is safe. Always before when the staff did that they could go down and look at the plant if they had a question before we had to let it operate. The staff is working with paper only.

MR. SCHERER: On your Part 52 there, you still go to look at the plant before you let it operate, but let me point out that I think that --

CHAIRMAN CARR: Say that again?

MR. SCHERER: Under your Part 52, they still go look at the plant between the time you issue a COL and it starts to operate.

CHAIRMAN CARR: But, you've already got your operating license.

MR. SCHERER: That's right, but I still haven't --

MR. COUNSIL: We don't have a go until you bless it.

MR. SCHERER: I haven't implemented my --

MR. LEE: But there's a requirement at the end before operating can start that --

CHAIRMAN CARR: Let me step in.

COMMISSIONER CURTISS: I can't resist making just a general observation here. Part 52, I thought, came about in large part because of a concern that we were seeking to encourage and foster -- by "we," I mean this agency. I don't mean the commercial standardization effort. I mean this agency. I sat through a lot of meetings and a lot of hearings when I was on the Hill and heard a lot of concerns about how it was the process of this agency that inhibited standardization, that there was a disincentive for the utilities to come up with complete design information at the CP stage because they knew it had to be relitigated at the OL stage, so let's come up with as little as possible. There wasn't any financial or institutional incentive to come up with complete design information. Let's get out of the blocks with whatever we need to have at the front end, knowing

that we'll have to litigate that at the pre-operational stage.

These are complicated issues, but I must say I find myself somewhat puzzled now, given all of that years of concern about the process here inhibiting standardization, that we've as we've sought in Part 52 to come up with a process that does the opposite, to encourage standardization, and in a positive way that at each juncture, tier 1, tier 2, tier 3, litigation and so forth, the comments are consistently and I think uniformly in a direction that on particular issues, what ought to be in tier 1 versus tier 2, what ought to be in tier 2 versus tier 3, what ought to be in tier 3, what's safety related, what ought to be litigated and so forth.

I guess I'm just troubled by the undertow here that on each one of these I think very important issues that you seem to be coming down on the side--on the other side of an argument that the institutional structure that we establish and the regulatory framework that we impose, given a choice between a regulatory framework that it seems to me would foster a good deal of standardization and in a manner that is in my view directly related to safety. I see those almost as inseparable.

The sum and substance of the comments seem to suggest that it's not the regulator's role, that it's the responsibility of the industry's commercial standardization effort or the Department of Energy or who-have-you, after hearing years of concern that it was the process here that inhibited it, and I guess I find that frustrating. I don't have anything other than that observation to make, but just consistently the strain that I hear throughout the comments I think troubles me.

MR. CASO: May I try to answer?

COMMISSIONER CURTISS: Please.

MR. CASO: I think we have seen the frustration, at least from our point of view. On the one hand, we are terrified of the possibility of having a second hearing. And some of the discussion you heard on tier 3 that were made by Marc Rowden specifically addressed the point that we see the possibility of tier 3 to reopen the hearing later on, and I think there are no questions in anybody's mind that if the second hearing or the possibility of having a challenge to design certification as COL is a real opportunity. Nobody's going to move ahead.

So, a lot of the comments that we have provided tended to indicate that to the extent that

changes or making available for audit or those kind of statements open up the possibility for a second hearing, we are really worried that it would make the process unworkable.

The other issue that is related to tier 1 and tier 2 is the issue of maintaining that flexibility that is necessary to operate the system. We talked about code and standard. Maybe Chairman Carr has the solution. We're going to modify that to indicate that, but those things have to be worked out and it is not possible to build a plant and ten years later or five years later, whatever it is, to build the same plant without having some flexibility to modify those items that are not related to safety but that may be necessary because are not available anymore. The supply has gone out of business or there is something that is necessary to do because the technology evolved or there is a problem we have identified. And, therefore, to the extent that some of those concerns are -- some of those constraints are put in tier 1, you will require to open up the hearing again.

So, I think we understand your frustration. I think we have very similar frustration on our side to eliminate those two big specters that

we see: on the one hand, the possibility of having more than one hearing; on the other hand, the real question that we have to maintain some flexibility.

I think that, first of all, are we willing to work with the staff? And I think you heard from the previous discussion, yes, we're very much willing to work with the staff. The biggest concern we have in terms of a reg guide is the reg guide that address tier 3, because by establishing a reg guide you establish tier 3, which, as I said before, we see that as an opportunity to open hearing later on.

From the Westinghouse point of view, we believe the SRP is an adequate tool to get the tier 1, tier 2 definition, but we would not have anything against working out a process whereby we can define the tier 1 and tier 2. But the point is, I think that in order to reach a solution to this problem we have to understand the reciprocal concerns.

COMMISSIONER CURTISS: That's a good example.

CHAIRMAN CARR: Well, a reg guide by any other name, whatever we call it. I don't care what we call it, a certification guide or something.

MR. CASO: Yes. But, again, we're very concerned if we were to do that for the tier 3,

because that is implication that go beyond the definition of what we --

COMMISSIONER CURTISS: Well, I think what we ought to do is ask our lawyers to take a look at that particular problem --

MR. CASO: That would be fine.

COMMISSIONER CURTISS: -- and see whether it's procedurally curable. I don't know if it is. I guess my impression is that that doesn't seem to be an intractable problem.

The thing that frustrates me -- and that's just one example of sort of the theme that I'm concerned about -- is that given a choice between looking at the procedural routes to cure that problem versus not having any tier 3 at all, not requiring any of that information, in instances where those choices have arisen in the discussion that we've had here this morning and where there look to be opportunities such as a procedural cure to that particular problem, there's a consistent theme here that just seems to me on every one of these points to come down on the other side of the Agency having a role in standardization as a safety matter.

I realize there will be responsibilities and steps that the industry will take that go way

beyond our responsibility to encourage standardization from a commercial standpoint. This isn't the be-all and end-all to standardization, in my view. There are a lot of things that we ought to do.

Somebody mentioned the French experience. I've been over there and seen the plants. Their pumps in their reactors are the same design, same component manufacturer in every single plant. We cite the benefit of the French experience in standardization. Staff's not proposing that here, but there are significant benefits when you go in and you have a problem with the pump. It's got the same bar code label on every single design in that generation, every single pump of that design. Now, those are benefits that I encourage you all to proceed with and to pursue and try to accomplish.

But, this, I thought, was a pretty reasonable effort, say, from a regulatory standpoint, and in view of the years of concerns that we've heard about how our process here inhibits standardization, to redress those concerns. I don't think we've got the final word on it. I think the reg guide makes a good deal of sense to put out there in the industry's court, and let's get to work chewing on it. If there are issues in there that under no circumstance are

safety-related, let's find out what those are.

Let's get down to rolling up the sleeves and working out the issues in that reg guide in tier 3 that you think under any circumstance conceivable just wouldn't have a safety nexus whatsoever. Let's get our lawyers to work on the question that you've raised about the procedural downsides of a tier 3 type approach and see if that's procedurally curable. I happen to think that it may be cured already in the way the staff has recommended that approach.

I'm going to stop there. I've gone on too long already, but I just wanted to impart that concern.

CHAIRMAN CARR: Been very quiet this morning on the independent design review. My understanding is you're against that as well, but it's also my understanding the staff has added an integrated design inspection or an independent design verification before making the final safety determination on all the recent operating licenses. How are we going to get around that? Maybe you're for it. I don't know.

MR. COUNSIL: You have not had it in all of the last --

CHAIRMAN CARR: No, but most of the recent

ones.

MR. COUNSIL: Well, we feel overall that the quality assurance requirements and the program and the ITAAC make that point moot in the staff's sign-as-you-go process. If in fact they do have a very strong sign-as-you-go process, you shouldn't need an IDI done by the staff. In fact, they would have been doing an IDI all along.

CHAIRMAN CARR: So, you're not just against that per se? It's one of those things you don't think is necessary?

MR. LEE: We think all of the concepts are already incorporated into the program, and just to have a separate program --

CHAIRMAN CARR: Let's go back to this prototype of innovative designs question a minute.

How do you expect the NRC to make a final safety conclusion on an innovative design if we don't have any prototype testing?

DOCTOR WILKINS: We have frequently licensed designs with requirements for qualification testing, and performing those tests and getting acceptable results can certainly be part of the ITAAC process.

Now, I don't think in anything we're doing

in the advanced control room area that we're out in the R&D area. We are talking about application of digital control and multiplexing systems and fiber optics, all of which have been done in nuclear plants and licensed, only here we're talking about applying them on a larger scale and in a more integrated system. So, I don't see that we're out on the fringes of technology. We're just talking about doing a more system-engineered job of things that have already been done before.

CHAIRMAN CARR: May have more effect on the passive designs that come down the pike, though.

MR. CASO: But, there are tests -- there is a pretty significant series of tests that are being scheduled to guarantee the operation of the plants, so I do not --

CHAIRMAN CARR: You don't object to prototype testing per se, if we --

MR. CASO: It depends what you mean.

CHAIRMAN CARR: -- if it's necessary to make a safety determination.

MR. CASO: We have tests of the different phenomena that are needed to be reviewed as part of the safety. I'm concerned about your word, "prototype testing." If you mean that you have to build a plant

in order to license, yes, I would object to it, because the aspect that we are going to test are going to provide the answer that are needed to determine the safety of the plant.

In terms of the passive design, we are talking about calculating a transfer coefficient, basically, and a methodology for convection and the natural circulation. Those items are going to be calculated much more in a test that is specifically designed for that purpose, rather than have a prototype test which will never ever answer all the question. And you're not going to have an accident just to test the safety of the plant.

So, I think we are planning tests. We're planning specific tests to calculate heat transfer, the circulation, all the behavior of the different surface phenomena, and those are definitely going to be part of the certification of the plant. We're running them now, and we plan to run significant more in the future.

CHAIRMAN CARR: On the issue of finality, so you agree with the staff in their position on issue finality or have you got some problems with issue finality as 377 pitches it?

MR. LEE: Yes. In part of -- in Bill's

discussion, we tried to cover that. And in particular, with regards to this tier 3 issue, we have serious concerns -- that's what we've been talking about -- on the issue of finality.

I think back to your question about, earlier, the fact that if you put everything in tier 1, then you have it resolved and it's not subject to litigation. The problem is, if there is any modification or any change that is needed in that process, it does open it up to an amendment and a hearing.

Now, again, if it's a safety type of an issue or if it's a design or it's a modification that is felt is to the benefit of that particular design to go through that process, whether it's for safety or whether it's for economic reasons, you'll have to make that decision on doing it, and you may do it. I think our concern is, if it's all up in there, it may not be of a magnitude that it ought to open that door to a hearing.

CHAIRMAN CARR: Part of my concern with this whole problem is we're talking about design work that's going to have to be done anyway.

MR. LEE: Yes, sir. We agree with that.

CHAIRMAN CARR: Before the plants ever

going to operate, it's going to have to be designed and built. From what I hear, you've all probably got somewhere in the neighborhood of $200 million involved in your advanced designs now. You're talking about, if we say 500 over four plants, another $125 million apiece to get to where 377 evidently predicts they'd like to go. Since that money has got to be spent anyhow, it appears to me it would be a lot easier to certify the safety of that plant and not only that, to build it, to build it on time for a reasonably accurate amount of money.

I guess I have a real problem understanding why it's impossible to get the money up front. Somebody want to --

MR. CASO: I can try to give the answer, and I'd like to give the answer in two different bases.

Let me answer directly to your particular question. In today's environment, it's very difficult to collect the amount of money that is necessary to the complete design, given the fact that there are significant uncertainties relative to the possibility to place a plant, look at a plant, what the things are going to be.

So, in this environment, I think even the

economical issue will raise the feasibility of being able to complete the design and get design certification. Without design certification, nobody is going to step forward to buy a plant, and therefore you get very much in a catch 22, that you need the money to do the design certification. Without design certification, nobody is willing to buy and plant and it's very difficult to collect the money needed for design certification without the commitment to the plant. So, there is that particular issue of the concern in terms of the amount of detail.

However, the second part of the answer, I really believe that, while the issue of the money is a significant issue, in the presentation that we have made today we raised the issue that are not related only to the money. There are some issues that are related to concerns that we are not going to achieve the goal that Commissioner Curtiss eloquently described, to get a standardized plan that is a certainty in the license.

So, I think we should not eliminate the two aspect, because it's not only the money aspect which is a great concern to us, but is also the fact that there are aspect in the rules which we believe are going to create a problem rather than provide a

solution.

MR. SCHERER: I agree with that, share that concern, and I want to say that my concern is that even if we had the money -- and where's Senator Dirksen when you need him -- $100 million here and $100 million there and pretty soon you add up to some real money. I don't see people with hundreds of millions of dollars to invest on potential sales of nuclear power plants. But be that as it may, even if I had that level of information --

CHAIRMAN CARR: We heard the gentleman say they're going to build nuclear power plants.

MR. BAYNE: We're going to build nuclear power plants if we can clarify some of these issues and solve some of these problems. If we have an uncertain --

CHAIRMAN CARR: One of which is certification.

MR. BAYNE: Right. One of which is certification, and one of which is --

CHAIRMAN CARR: Which seems to me would be easier if we had a complete design.

MR. BAYNE: And one of which is certainty of licensing. But, you're not going to get anybody on Wall Street to go out and raise money for you to buy a

nuclear power plant if they think we're going to go through what we went with the last ones.

CHAIRMAN CARR: That's how we came up with Part 52, I thought.

MR. BAYNE: Right. And we support Part 52. We really do.

What I'm worried about with the tier 3 business is a giant fishing expedition. You give me all this information and then I'll go fishing in there and try to find something and maybe it could -- I always take things to the simplistic end to see where things could go. And, in my mind, you give a bunch of guys all this information and the simplistic end is you prove to me that it's not safety related, instead of me proving to you that I need the information for safety. And that could happen and it's happened in the past, and that's just an untenable --

CHAIRMAN CARR: Yes, but I'm not sure that you're going to end up in the position where, if the staff says they need it, they're going to have to prove they need it. If you want certification and they say they need it --

MR. BAYNE: We'll probably go out and get it, but, you know, if they say "give us everything you got and then we'll certify the plant," we probably

won't do it because we can't afford to.

MR. LEE: Because we may need it.

MR. SCHERER: I have a very high degree of confidence that the level of information we're prepared to submit at this point in time comes very, very close to the level of information the staff has in the past required to approve plants for operation.

Now, let me point out that in addition to the concern that we've been expressing about the classic catch 22 which we may be building for ourselves in that the money won't be available until the design certification and the design certification may be contingent on the money, but let me go further. If I had the level of information in my warehouse, I would still share Phil Bayne's concern that so much information would then be part of the record under which the design certification was made that I would have great difficulty operating the plant past the first day. As the first parts start to wear out, the level of information which would have been part of the record for this plant would reopen ever time that I had to change a pump valve or heat exchanger. I would end up having to relicense through rulemaking this plant, because the tendency is when in doubt throw it into the public record and if it's available in that

warehouse let's have some trucks back up and bring it here to Rockville and make it part of the record.

CHAIRMAN CARR: I think you're all overlooking the tremendous thought process the staff has always had when they've approved a design of before it ever operates I can really go look at it. Certifying this design is something they haven't done before and it's going to be very hard from all standpoints.

MR. SCHERER: I beg to differ. They can still go look at the plant. What they can't do this time is change the regulatory standards as they look at the plant. I have no problem --

CHAIRMAN CARR: Oh, they can if they think it's not safe when they see it.

MR. SCHERER: No doubt, if we fail to comply.

CHAIRMAN CARR: And you're telling me they've changed it without it being a safety consideration?

MR. SCHERER: Part 52 eliminates the practice where the staff has to go --

CHAIRMAN CARR: Answer that question.

MR. LEE: I think Bill Counsil's examples that he talked about before borderline on that

situation.

CHAIRMAN CARR: Borderline, yes.

MR. LEE: And that's the problem, I think, with --

CHAIRMAN CARR: He wouldn't have changed it if he hadn't thought he had to.

MR. LEE: Well, he had to because he was under extreme financial pressures to do it.

CHAIRMAN CARR: Well, he's going to be under that again.

MR. LEE: Well, I think that's the point we were trying to make.

MR. COUNSIL: Hopefully, I will be changing the plant, though.

MR. LEE: We will have a standardized certified design. I think that was the point in Commissioner Curtiss' comment. And, as Phil Bayne said, we did agree and accept the Part 52 rule. I think it's what we now appear to think is an expansion of that rule into areas that will just turn the risk back to the licensee eventually in the future, and I think that's the risk that the utilities, on the second part, just feel unable to cope with in the near future.

COMMISSIONER ROGERS: I wonder if I could

just ask a question here that relates to this financial aspect, not the legal aspect.

Would some kind of an NRC licenseability opinion prior to a full certification of a design be of any help in this regard?

MR. SCHERER: Aren't you essentially reinventing a construction permit? And haven't you turned a one-step licensing into a classic two-step licensing, Part 50?

COMMISSIONER ROGERS: I'm asking you whether it would be of any help.

MR. LEE: I think not. I think it does not give that kind of assurance that all of those questions have been answered and that we can build that plant and it will be acceptable to the safety regulator of this industry.

CHAIRMAN CARR: Let me -- on 12/11/90, at a plant not to be named, sanitary discharge line violates secondary containment integrity. They have a four -- they're in a four hour LCO because penetration seismically qualified sanitary discharge line from the refueling floor restroom to the reactor building basement and an associated vent line which connects to the radioactive floor drains HVAC system. You would normally think that the sanitary discharge system

wouldn't be a safety-related operation.

MR. COUNSIL: I wouldn't normally put one inside containment. If I needed it, I'd bring in a port-a-potty.

CHAIRMAN CARR: I don't know whether that's tier 3 or not.

MR. LEE: And I think a part of, again, the requirements documents and all the efforts going on in these designs, unless it is safety-related, that ought not happen in the -- which I'm not sure how back that design goes. Remember, most of these designs are 1960 or early '70 designs.

CHAIRMAN CARR: That one's not that old.

MR. LEE: Operational-wise, but look at the design.

CHAIRMAN CARR: Let me ask you, you're talking about you need it to be there by the year 2000. The end of the decade is what you said. I assume that's --

MR. BAYNE: Let me clarify what I said. I said we would like to have the nuclear option when the need for capacity, baseload capacity, develops.

Now, it's up to the utility --

CHAIRMAN CARR: Where did I get the words, "by the end of the decade"?

MR. BAYNE: We would like that.

CHAIRMAN CARR: That was your pitch, right? You want it on-line by the end of the decade?

MR. BAYNE: We think we will need it by then and have to have it on-line by --

CHAIRMAN CARR: We're getting a lot of heat from, shall I say, the vendors and from the Department of Energy that we're the guys holding up the show. I guess my real question to you is do you want it so bad that you get it bad, or do you want to take some time and work this problem out? How bad do you want it?

MR. BAYNE: Well, there are a lot of other areas where it's being held up and we're trying to work them all at the same time, and we don't want it bad enough to get a bad process. We don't want it bad enough to get a process that we then cannot find an investor so that we can buy one of these plants. No, we don't want it that bad, but we certainly feel that the economy of the United States needs a supply of electricity, because everything we do is -- our whole gross national product tracks the use of electricity and has for a lot of years.

There are some excess capacity in the states, but we're running short everywhere and we're

going to need capacity. Now we get in the competitive situation where we've got one or two sources, namely coal and gas. You know, these plants run for 50, 60 years. I've heard we've got 60 years of gas left. Are we going to go build plants where the fuel supply is going to run out towards the end of their life? I don't know. Do we want to just say, "Okay, we'll just build coal plants?" I don't think we want to do that. What we'd like to do is give the utilities the capability to use nuclear if they want, to use coal if they want, and use gas if they want.

We don't think you can get the capability to build a nuclear plant unless you solve these issues, which means that when you go out and raise the money to buy a nuclear power plant, there's a reasonable assurance that you will get that plant licensed and operating and be able to get a reasonable return on your investment. If we cannot get to that point, we won't build any plants and we won't buy any.

But I think I read the utility executives that I talk to, and I talk to almost all of them, really think we need this option and they're ready to go out and, in essence, they're betting their company when they're talking about this.

CHAIRMAN CARR: I guess my concern is I'm

not -- until we decide on this level of detail, we're not going to be able to predict when the certification date is going to be.

MR. BAYNE: Well, you have to do what you think is necessary in the time frame you think it's necessary. We're here to try to help you in every way we can to try to meet the schedule that we feel is essential to provide the electricity supply that we think this country needs.

MR. LEE: And I guess we have indicated we're willing to work with the staff. We think it is an important question and that we need to be sure we all understand the issues completely. So, we do not want to rush to a decision.

CHAIRMAN CARR: Any other comments or questions?

COMMISSIONER ROGERS: Yes. I'd like to just come back on what NPOC is expecting to produce and get to us, that you're asking us to wait for.

I heard that it would be a definition of standardization.

MR. LEE: Yes, sir.

COMMISSIONER ROGERS: I think that's great because it seems to me one of the big problems in this whole business is that everybody's been using the word

"standardization" without really having a very precise meaning when they're talking about it. Will you be trying to separate or draw a distinction between standardization and a level of design detail in that or will you not?

MR. BAYNE: Yes. We think that we'll end up with the definition of four types of standardization. Certainly one of them will be the design certification process. But there's also design detail, detailed design after the certification process that we feel would be necessary. That will produce a level of standardization that will be economical for the utilities and for the vendors. It will make the plants more constructable and more predictable.

Then we think there are even things beyond that, like how you maintain a plant, how you operate it, how you train your operators, all those things. That's the reason that we've taken a little bit longer than we wanted to to get that policy statement out, because those are hard issues and they're hard issues that we've got to convince people to sign onto.

MR. LEE: But it will not, I don't think, Commissioner, give you a specific schedule of what it is that we think needs to be in design certification.

NUMARC has been charged with that effort as a part of that program and that's what we've been working on and will continue to work on.

CHAIRMAN CARR: Commissioner Remick?

COMMISSIONER REMICK: Just a couple comments on what we've discussed this morning.

One, I don't like to focus in on what it's going to cost because there's no question the bottom line is we have statutory safety finding responsibility. It will cost what it costs for the Commission to do that.

Now, there's always been this warehouse of information. It's always existed. I think what you're saying, and I believe that that warehouse will exist in this case also, it will be there. The question is when does all that have to be developed? Now, the staff will have to issue an SER and to issue that SER they're going to have a lot of questions to ask, I'm sure. You're going to submit an SSAR. You're hopefully going to be complete. My guess is they're going to have lots of questions.

Out of that tier 3 you're going to have to provide some information. If you haven't properly anticipated their questions, it might take some further development. But there's a large amount of

that warehouse that they will probably not ask in making their safety determinations.

So, I think, Jim, that even though we might hope that there might be on SSAR, I would assume there are going to be a number of revisions of that SSAR before the staff ever issues an SER based on the additional information they receive. I hope it's less than the case that you've indicated.

From my perspective, I think what should be in tier 1 and tier 2 and what fr[illegible]ht be moved up to tier 2 or possibly tier 1 can best be done through the staff getting on with the specific reviews, working with the vendors, ironing these things out in the FDA review process and the certification process. I think that's the best way we can proceed rather than asking the staff in advance, which is hypothetical, on what they might need and not case specific and therefore, and I can understand the staff's position to be safe, they're going to have to ask for everything in that up front type of thing.

So, I would think the way to do this is get on with these reviews, staff ask whatever information they need if they don't have it and so forth and that's the way to proceed at this time, in my view.

CHAIRMAN CARR: Any other comments?

Well, I'd like to thank the industry representatives for their briefing.

The Commission has been considering the level of detail required for the next generation of nuclear power plant designs over several months and has received significant input from the industry on this issue.

The industry and the NRC staff have reached consensus on a number of important issues such as the two-tier approach to design certification, the use of a change process similar to 50.59 during construction for tier 2 information, a graded approach to level of detail depending on the safety significance of the system, the philosophy that the level of detail should equate to a final safety analysis report minus as-built and as-procured information.

The key to the whole issue, however, is that the staff must have enough information to reach a final conclusion on all safety matters.

The Commission received a letter from the Advisory Committee on Reactor Safeguards on December 10th, 1990 and now that we've heard from the industry it's our hope to complete this matter as soon as

possible. The Commission will carefully consider the additional information you've provided today in reaching a decision.

Any of my fellow Commissioners have any closing comments?

If not, we stand adjourned.

(Whereupon, at 11:20 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 BY NUMARC ON LEVEL OF DESIGN DETAIL FOR PART 52

PLACE OF MEETING: ROCKVILLE, MARYLAND

DATE OF MEETING: DECEMBER 19, 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