

# UNITED STATES OF AMERICA NUCLEAR REGULATORY COMMISSION

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DESIGN ISSUE FOR PART 52 SUBMITTALS

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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

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DESIGN ISSUE FOR PART 52 SUBMITTALS

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PUBLIC MEETING

Nuclear Regulatory Commission  
One White Flint North  
Rockville, Maryland

Monday, July 16, 1990

The Commission met in open session,  
pursuant to notice, at 2:00 p.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

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## STAFF AND PRESENTERS SEATED AT THE COMMISSION TABLE:

SAMUEL J. CHILK, Secretary

WILLIAM C. PARLER, General Counsel

BYRON LEE, JR., President and CEO, NUMARC

SHERWOOD H. SMITH, JR., Chairman and President  
Carolina Power and Light

DAVID L. REHN, Division Manager, Catawba Engineering  
Division, Duke Power

MARCUS A. ROWDEN, Esquire  
Fried, Frank, Harris, Shriver and Jacobson  
Chairman, NUMARC Lawyers Committee

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

2:00 p.m.

CHAIRMAN CARR: Good afternoon, ladies and gentlemen.

An issue currently before the Commission is the question of how detailed an application and design certification must be under Part 52 in order to support both a safety review by NRC and to encourage standardization.

Today, representatives of the Nuclear Management and Resources Council will provide the Commission with their views on this subject. The Commission will be also briefed on this matter by the NRC staff this coming Wednesday.

I understand that copies of the briefing slides to be used today are available at the entrance to the meeting room.

Do any of my fellow Commissioners have opening comments?

I would like to welcome the industry representatives here today.

Mr. Lee, please proceed.

MR. LEE: Thank you, Mr. Chairman. We were talking a little before, this is the first meeting that anybody can remember where each of the

1 participants was given a copy of the Code of Federal  
2 Regulations. I hope we'll not get bogged down in  
3 legal terms.

4 COMMISSIONER ROGERS: Don't try to read  
5 them all before we begin.

6 MR. LEE: But again, we thank you for  
7 the --

8 CHAIRMAN CARR: Did we furnish that?

9 MR. LEE: We appreciate the opportunity to  
10 talk about another segment of the industry's advanced  
11 light water reactor program. You've heard from the  
12 EPRI ALWR Steering Committee about its requirements  
13 documents several weeks ago. Today, we want to  
14 discuss the utilities' view of future electricity  
15 needs and what we believe needs to be done for nuclear  
16 power to play a role in those needs.

17 We also want to cover NUMARC's  
18 standardization working group efforts to develop  
19 guidance on the implementing the requirements of your  
20 new Part 52 rule.

21 Let me begin by introducing the speakers  
22 who are with me today, while I think you know most of  
23 them. Sherwood Smith, to my left, Chairman, President  
24 and CEO of Carolina Power and Light, and is also the  
25 Chairman of the industry's Nuclear Power Oversight

1 Committee, or NPOC. Sherwood will discuss the  
2 project -- projected future electricity demands and  
3 capacity and where the nuclear utilities stand on the  
4 future of the option.

5 Dave Rehn, on my right, is the Division  
6 Manager at Duke Power and Chairman of our task group  
7 on inspections, tests, analysis and acceptance  
8 criteria of ITAAC. Dave will describe the results of  
9 his task group's efforts to develop an industry  
10 approach to the implementation of Part 52, including  
11 the level of detail required for design certification  
12 and the role of the NUMARC ITAAC report.

13 . Last, Marc Rowden, Chairman of our NUMARC  
14 Lawyers Committee, and a member of the NUMARC working  
15 group and the task group, Marc will explain the  
16 industry's two-tier approach and how it relates to  
17 Part 52 based on our active involvement in this  
18 rulemaking process for several years.

19 Also, I'll introduce behind me and inside  
20 the rail, we have members from each of the  
21 manufacturers and Ed Kintner representing the EPRI  
22 ALWR Steering Committee. Joe Quirk is from General  
23 Electric, Ernie Kennedy from Combustion and Bill  
24 Johnson from Westinghouse.

25 Before we begin, I have a few introductory

1        comments about the process in general. The industry's  
2        approach to implementation of Part 52 supports three  
3        goals that we believe are embedded in the rule and  
4        desired by industry. One is the preserved  
5        standardization of design. Two is to assure that  
6        issues raised at the design certification stage are  
7        resolved and thereby precluded from being reconsidered  
8        at the COL and the preoperational stages. And three,  
9        to assure the practicality of the design certification  
10       rule at the time of the COL issuance during facility  
11       construction and at the preoperational stage. In  
12       other words, it must take into account the realities  
13       of a large complex construction process, which a  
14       nuclear plant is.

15                The LWR design work undertaken by the  
16       industry, which includes EPRI, DOE and the individual  
17       suppliers, is moving along very well. The  
18       certification reviews, however, appear to be following  
19       the course of the past, uncertainty. This observation  
20       deepens the industry's fear that we won't have the  
21       predictable licensing process needed to support the  
22       future nuclear plant orders. We hope that as a result  
23       of our briefing today that we will be able to reduce  
24       that uncertainty.

25                At this point, I'd like to ask Sherwood to

1 talk about the supply, demand and future.

2 MR. SMITH: Mr. Chairman and members of  
3 the Commission, as Byron Lee stated, I'm here as  
4 Chairman of our Nuclear Power Oversight Committee, or  
5 NPOC as it's called. I wish to discuss very briefly,  
6 but it's fundamental to our being here, the question  
7 of will we, and I think the answer is yes, and how  
8 will we continue to have an adequate supply of  
9 electricity in this country through the 1990s and  
10 beyond.

11 For about the last 25 years, in one way or  
12 another, I've been involved in the planning,  
13 designing, litigating, licensing, managing an  
14 organization that has owned and operated nuclear power  
15 plants. Our company built the first plant in the  
16 Southeastern part of the United States. We now offer  
17 a four units and we operate both BWRs and PWRs.

18 I've seen many national questions raised  
19 from time to time over that career period and have  
20 served in a number of industry trade associations and  
21 similar capacities. All of that experience, over and  
22 over again, has indicated to me one thing, that delay  
23 can be disastrous in the planning, design, licensing  
24 and construction of nuclear power plants.

25 Providing a new electric supply for this

1 country for the '90s and beyond is a matter that  
2 involves many risks and many uncertainties. Certainly  
3 one of the major uncertainties is how much electricity  
4 will we need? We now have an adequate supply of  
5 electricity in many parts of the country, but we also  
6 have seen parts of the country this year where we have  
7 had voltage reductions or rolling blackouts in the  
8 Northeast in March, more recently here near the place  
9 we're located today earlier this summer.

10 I think our industry, the electric utility  
11 industry, is committed to meeting the future demand.  
12 The question is how will we be able to meet that  
13 demand? For environmental as well as economic  
14 reasons, we think it's fundamentally important to our  
15 success in providing an adequate and reliable supply  
16 of electricity that we can again consider the nuclear  
17 option.

18 In preparation for our meeting this  
19 morning, as some of us were talking, I said that I  
20 don't think by any matter or means that we've reached  
21 the end of the development of nuclear power in this  
22 country, nor have we seen the beginning of the end,  
23 but I think we've come to a place where we're at the  
24 end of the beginning. I think it's now incumbent on  
25 us to move forward and do the job right and, Mr.

1 Chairman, we concur the job must be done right. We  
2 cannot afford to repeat the many mistakes and problems  
3 and difficulties that we've had over the last 10 to 12  
4 to 15 years.

5 But by the same token, I think we must do  
6 it right in an orderly and expeditious time frame. I  
7 think that the complexity of certification of new  
8 designs, the certification rulemaking proceedings that  
9 will follow those, all of the other things mean that  
10 unless we set a very challenging schedule, a schedule  
11 that some would call optimistic, we're not going to be  
12 able to have the availability of a certified design  
13 that we can consider ordering in the mid-1990s. And I  
14 think in the mid-1990s we, the industry, need to be in  
15 a position to consider placing orders for plants that  
16 would come in perhaps not before the turn of the  
17 century but shortly after the turn of the century. I  
18 do think that any delay in certification, as delays in  
19 the other issues we must address, can extend on a  
20 linear basis the date when we will be able to order a  
21 new nuclear plant.

22 When one looks at the power supply in this  
23 country and the rates of growth which often are stated  
24 to be two to three percent a year, regardless of  
25 whether it's closer to two percent or up closer to

1 three percent, we're going to need a substantial  
2 amount of new capacity in the next ten years. The  
3 last official report of the North American Electric  
4 Reliability Council published last year indicated that  
5 we would need between 100 and 200,000 megawatts. If  
6 you take the low end of that band, if you take the  
7 100,000 megawatts and you assume that some of it  
8 should be peaking capacity, some of it will be fossil  
9 capacity, there is still a large amount of capacity as  
10 to which no decisions have been made, that decisions  
11 soon should be made if we're going to have that  
12 generation in place around the turn of the century.

13 Today, we can't consider the nuclear  
14 option. We must consider either coal, oil or gas.  
15 Utilities have embraced the concepts of conservation,  
16 demand management, energy efficiency and I think that  
17 we will be able to do a great deal with those  
18 concepts. But even in spite of those we're going to  
19 need a great deal more base load capacity than we  
20 currently have planned.

21 If one looks at the base load capacity  
22 that was committed for at the beginning of this year,  
23 some 7,200 megawatts -- 72,000, 72,200 -- in the  
24 nuclear business, you have to remember to keep moving  
25 the decimal point to the right. One of the things

1 we're trying to do is stop that from the cost  
2 standpoint.

3 If you look at that 72,200 megawatts,  
4 about 41 percent of that had not been placed under  
5 construction. About 25 percent of that capacity is  
6 being built by non-utility generators. Those non-  
7 utility generators don't have the same public service  
8 legal obligation that utilities do to have that  
9 capacity in place to serve the load and some of that  
10 capacity is probably more susceptible to delays than  
11 would the utility planned capacity be.

12 About 11 percent of that planned capacity  
13 is under construction, but less than 50 percent  
14 complete and only 23 percent of that capacity is under  
15 construction and more than 50 percent complete. But  
16 that capacity includes Watts Bar and Bellefonte and  
17 certainly those schedules are open to question.

18 The fossil plant construction that is  
19 either underway or committed is certainly subject to  
20 cost and schedule delays because of what may happen  
21 with clear air legislation and global climate  
22 uncertainties if there's more legislation or more  
23 activity on the environmental front in that area. We  
24 see, at NEARC, the likelihood that we may have  
25 capacity shortages in the Eastern United States by the

1 turn of the century and those capacity shortages need  
2 not occur. The public need not be burdened by those  
3 if we take proper action now.

4 In my written statement, I made reference  
5 to several sentences that appeared in a letter sent by  
6 the President to the Nuclear Power Assembly in mid-May  
7 of this year and I'd just like to quote three of those  
8 sentences, if I may.

9 "Just as America gave birth to nuclear  
10 technology in the 1940s, we can lead the world into a  
11 new era of safe, reliable, economical and  
12 environmentally clean nuclear power in the 1990s.  
13 This clean, domestic source of power lessens the risk  
14 of energy dependence on foreign sources. At the same  
15 time, environmentally harmful emissions are reduced  
16 and economic growth is fostered."

17 Rhetorically, I would ask what do we need,  
18 particularly what do we need from this Commission in  
19 order to move forward? We need a stable and  
20 predictable regulatory process and I think the actions  
21 taken by the Commission within the last 18 months or  
22 so go a long ways toward stabilizing the process and  
23 making it more predictable.

24 We, as I said before, and I use "we" in a  
25 very broad sense and certainly to include the

1 industry, cannot repeat the problems of the past. We  
2 will need early site approval, we will need designs  
3 that are certified, we will need standardization, we  
4 will need combined construction and operating permits.  
5 All of these steps are essential, but the purpose of  
6 our meetings with you today is to discuss the  
7 certification of standardized designs.

8 To be specific, our position is simply  
9 that we agree with the Commission on the need for  
10 parallel review of the EPRI ALWR Steering Committee  
11 requirements document and the two evolutionary ALWR  
12 utility designs that are now before the Commission.  
13 As to the passive designs, we feel that the EPRI ALWR  
14 Utility Steering Committee requirements document  
15 should have the highest priority. That's sort of our  
16 polar star of navigation as we look at the passive  
17 designs. These should be the mechanism to resolve any  
18 major technical issues and policy issues.

19 We agree with the Commission that the  
20 staff should review information and activities that  
21 are related to specific passive designs that could be  
22 useful as it conducts the EPRI review and to prepare  
23 for the review of specific designs. Design  
24 certification is the linchpin of all the other issues  
25 before our industry, because as our industry seeks to

1 address the other issues and they are significant but  
2 we think that they are resolvable, unless there is a  
3 product that has been certified by the NRC, then we  
4 have nothing upon which to focus.

5 Again, Mr. Chairman, we must get it right  
6 this time. We know that will mean there will have to  
7 be a very thorough, painstaking review. We understand  
8 that it will require a commitment of Agency resources  
9 that is equal to the task and commensurate with the  
10 job that must be done.

11 We commit ourselves to do our part. We  
12 feel that we have a responsibility to this country to  
13 maintain an adequate supply of electricity. We feel  
14 that in order to do that and to do it on the basis of  
15 economy, safety, reliability, environmental  
16 compatibility, that we must exert every possible  
17 effort to include nuclear power as a part of that  
18 energy supply for the future.

19 Thank you very much.

20 MR. REHN: Mr. Chairman, members of the  
21 Commission, I appreciate the opportunity to discuss  
22 several aspects associated with the design  
23 certification process as defined in Part 52.

24 Industry, through NUMARC, established  
25 approximately a year and a half ago a task group to

1 propose guidance on implementing the inspections,  
2 tests, analysis and the associated acceptance criteria  
3 or so-called ITAAC, that are necessary to demonstrate  
4 that after the issuance of a combined license, a  
5 nuclear facility is built and will operate according  
6 to the terms of the combined license, including the  
7 certified design referenced therein.

8 This effort necessarily included  
9 formatting a position on the form and content of a  
10 design certification application, a design  
11 certification rule and a combined license so as to  
12 provide a framework within which to address the  
13 implementation of ITAAC. Proposals of the task group  
14 have been embodied in a report which is currently  
15 undergoing final review by NUMARC's Standardization  
16 Oversight Working Group. We anticipate having this  
17 report issued in the near future.

18 During the development of the report,  
19 emphasis was placed on providing guidance that would  
20 result in a faithful implementation of our  
21 understanding of the Part 52 requirements since the  
22 task group relied heavily on the content of both Part  
23 52 and the statement explanation contained in the  
24 statements of consideration that accompanied the rules  
25 issuance.

1           While acknowledging that Part 52 process  
2 would be different from the past Part 50 licensing  
3 process, the task group sought to build upon the  
4 established and tested NRC and industry practices  
5 which were relevant. We wanted to simply learn from  
6 the mistakes and the lessons that we had learned in  
7 the previous process.

8           The task group strived to satisfy three  
9 major goals and I'll reiterate what Byron had said  
10 earlier. First of all, to preserve the  
11 standardization of design. Second, to assure that  
12 issues raised at the design certification stage were  
13 resolved and thereby precluded from being considered  
14 at the combined license and preoperational stages.  
15 And finally, to assure that design certification rule  
16 is crafted so as to be practicably usable at the time  
17 of the combined license issuance, during the facility  
18 construction, at the preoperational stage, and during  
19 plant operation, taking into account the complexity of  
20 large construction projects.

21           I would like to provide you now with a  
22 summary of some of the key points contained in our  
23 report. Guidance and recommendations were developed  
24 on specifically level of design detail which should be  
25 contained in a design application, design

1 certification application, the treatment of that  
2 design information in the design certification rule  
3 and the role of ITAAC in this process.

4 Starting first with the design  
5 certification application, let's quickly review what  
6 Part 52 has to say concerning level of design detail  
7 associated with the design certification application.  
8 Referring to Section 52.47(a)(2), guidance is provided  
9 on the level of design information to be submitted as  
10 a part of the application for a design certification,  
11 and quoting, "It's a level of design information  
12 sufficient to enable the Commission to judge the  
13 applicant's proposed means of assuring that  
14 construction conforms to the design and to reach a  
15 final conclusion on all safety questions associated  
16 with the design before certification is granted."

17 Further, Part 52 also provides guidance on  
18 the type of design information that must be submitted.  
19 It can be characterized as follows. The design  
20 information analogous to that typically contained  
21 today in a final FSAR, minus site-specific details.  
22 Since we have not yet built the plant or proceeded  
23 into the final stages of procurement, it would not  
24 include as-built construction information or as-  
25 procured details, so-called nameplate data.

1           In addition to ~~this~~, we will have a couple of  
2 other items that we have not historically provided,  
3 certainly a detailed delineation of the inspections,  
4 tests, analyses and the associated acceptance  
5 criteria, or ITAAC, which is a new element that has  
6 been added to Part 52, and also the results of a  
7 probablistic risk assessment.

8           Further, Part 52 defines this information  
9 must be sufficient to accomplish a variety of tasks.  
10 First, it must allow to define the systems, structures  
11 and components for the certified portion of the plant,  
12 including those which can effect plant safety. It  
13 also must define interface requirements with the non-  
14 certified portion of the plant, typically the site-  
15 specific elements of the plant.

16           It must be sufficiently detailed to allow  
17 the NRC to accomplish three things. First, complete  
18 their safety evaluations and resolve all associated  
19 safety questions, judge the adequacy of the  
20 applicant's proposed means of assuring construction  
21 conformance with design, and the preparation and  
22 scheduling of their inspection requirements.

23           And finally, it must be sufficiently  
24 detailed to permit preparation of performance-based  
25 procurement, construction and installation specs.

1           Thus, a Part 52 design certification  
2 application will contain more design information than  
3 current operating license applications filed under  
4 Part 50.

5           In order to maybe better understand what  
6 these requirements mean and to evaluate what impact  
7 nameplate and site-specific issues might have on  
8 design details, we want to quickly review with you two  
9 examples. In particular, we'd like to look at a  
10 containment building and an HVAC system.

11           (Slide) First let's examine the  
12 containment building for a proposed BWR. The  
13 application would include various types of  
14 information, as shown on the accompanying overhead.  
15 Dimensional detail would be final and precise and this  
16 is due to the fact that nameplate information and the  
17 design details associated with typically a concrete  
18 structure of this nature, have little or no impact on  
19 that structure.

20           (Slide) Moving on to the HVAC system,  
21 similar types of information are provided. What's the  
22 noticeable differences? Codes and standards are more  
23 extensive. System performance requirements are and  
24 will be defined in detail and equipment type and  
25 functional requirements are also defined. Layouts

1 must necessarily make provisions for the envelope of  
2 equipment dimensions for that equipment which has not  
3 yet been specified at the procurement level. While  
4 some variations in dimensions would occur based upon  
5 the supplier that is ultimately chosen, all the  
6 functional requirements must be satisfied. Those are  
7 the functional requirements specified in the certified  
8 design application.

9 Thus, if we were to look at a specific  
10 system contained in a specific room within a plant,  
11 certain characteristics would be readily observable.  
12 In looking at this example in maybe a little more  
13 detail, assume for a moment that we're looking at a  
14 fluid system that contains a pump, a heat exchanger  
15 and a valve. The design certification application  
16 would define in detail the safety functions and  
17 performance requirements of each component, as well as  
18 of the complete system. The specific location of the  
19 room with the envelope dimensions of the equipment,  
20 complete with orientation, would be provided.

21 The level of detail supplied must be  
22 sufficient to resolve safety questions related to this  
23 particular system, such issues as fire protection,  
24 seismic interaction, seismic qualification, security  
25 and environmental qualification.

1                   Thus, specific locations --

2                   COMMISSIONER REMICK:       Can I ask a  
3 question?       You made a statement something about  
4 components orientation and I can understand that if it  
5 was a turbine generator. But suppose it's a pump or a  
6 heat exchanger?

7                   MR. REHN:       Typically, the major  
8 orientation of that particular component would be  
9 defined to allow for the necessary definition on pipe  
10 routings and that type of thing. Certain minor  
11 variations obviously will occur when a specific vendor  
12 has been selected such that a nozzle location on a heat  
13 exchanger might be slightly above or below. But  
14 typically for space considerations and other  
15 interaction considerations, the envelope dimensions  
16 would be shown on that layout.

17                  COMMISSIONER REMICK:   So, in a room, if  
18 you had a pump and a heat exchanger, you would expect  
19 that roughly the location would be in the  
20 certification?

21                  MR. REHN:   Yes.

22                  COMMISSIONER REMICK:   Okay.

23                  MR. REHN:   Specific locations of major  
24 piping, HVAC ductwork and cable tray, as well as  
25 specified corridors or layout zones or envelopes for

1 the routings of other components must also be defined.  
2 The only difference then that would be observable if  
3 you were to go to different plants would be those  
4 differences in appearance that are due to the  
5 potential for different component suppliers.  
6 Typically, this would be local variations in pipe  
7 routings, cable routings, cable drops going into the  
8 equipment, and those necessary to simply allow a  
9 particular supplier-specific component to be utilized  
10 in the overall system configuration.

11 Now, given that this is the level of  
12 design information that's going to be submitted as a  
13 part of the application and/or available for audit as  
14 defined in Part 52, should the design certification  
15 rule encompass all of it, i.e., should the entire SSAR  
16 become a part of the design certification rule?  
17 Clearly, that is one option. But let's evaluate the  
18 practical workability that's required to construct and  
19 operate one of these plants.

20 There are several issues that we believe  
21 are associated with practical workability. Let me  
22 briefly cover these. First of all, as-built  
23 deviations. We believe that even the most complete  
24 design will require some flexibility to handle  
25 deviations identified during construction. Certainly

1 the proper utilization of tolerances and the  
2 development and utilization of modern day CAD or CAE  
3 techniques will minimize the needs for this type of a  
4 situation. But it will not eliminate all of these.  
5 In some cases, large tolerances cannot be specified  
6 due to cumulative or interactive effects or  
7 limitations of practical design; i.e., as one begins  
8 to try to open up tolerances, there is a price to be  
9 paid in terms of the engineering considerations.

10 Also during start-up, operation and then  
11 the routine maintenance, problems arise. Sometimes  
12 components do not perform as designed. Minor  
13 modifications to these components might be required to  
14 ensure that they satisfy their functional  
15 requirements.

16 Obsolescence. During the time between the  
17 issuance of the design certification rule and the  
18 initiation and completion of plant construction, as  
19 well as during the life of the facility, equipment may  
20 become obsolete and require an ultimate selection.

21 Lastly, equipment improvements. Referring  
22 to the Commission's statement of consideration, we  
23 believe equipment improvements were anticipated.  
24 Quoting again, "Moreover, the level of design detail  
25 and certification should afford licensees an

1 opportunity to take advantages of improvements in  
2 equipment."

3 With consideration for the above issues,  
4 we believe care must be taken to ensure that the  
5 design information contained in the design  
6 certification rule was structured in such a manner so  
7 as to achieve the safety and the standardization  
8 objectives of Part 52, but do so in a workable manner.

9 That leads to an obvious question. What  
10 form should the design certification rule follow to  
11 accomplish this? Marc Rowden will now describe a  
12 process that achieves these objectives.

13 MR. ROWDEN: Mr. Chairman and members of  
14 the Commission, I'm here to present the industry's  
15 recommendations for what I would call the architecture  
16 of the design certification rule. That is the  
17 framework for the rule's design description and ITAAC  
18 content.

19 I think it appropriate to observe at the  
20 outset that our task group did not invent the so-  
21 called two-tier approach that I'm going to describe.  
22 Rather, that approach, through the structure of the  
23 design certification rule, is based on the specific  
24 requirements of Part 52 as explained by the  
25 Commission's statements of consideration. They

1 distinguish between what will be submitted for NRC  
2 review in the design certification application and  
3 what will be contained in the design certification  
4 rule itself.

5 Now, the two-tier structure, I would  
6 emphasize, is central to our recommendations since it  
7 provides the framework for certified design and  
8 related ITAAC development and their design  
9 certification and combined license implementation.

10 As to the design content of a design  
11 certification rule, the Commission explained that and  
12 here, if you'll indulge me, I will quote from the  
13 statements of considerations, that, "There will be  
14 less detail in a certification than in an application  
15 for a certification and that a rule certifying a  
16 design is likely to encompass roughly the same design  
17 features that Section 50.59 prohibits changing without  
18 prior NRC approval."

19 Regarding the ability of a combined  
20 licensee or applicant for a combined license to make  
21 design changes, the Commission went on to explain that  
22 it would not adopt an industry proposal that Section  
23 50.59 be made applicable for facility-specific changes  
24 from the certified design and that it would also not  
25 adopt recommendations by other commenters that no

1 changes from the certified design be allowed.

2 Instead the Commission stated, and again I  
3 quote, "The final rule prohibits a licensee of a plant  
4 built according to a certified design from making any  
5 change to any part of the plant which is described in  
6 the certification unless the licensee has been granted  
7 an exemption under 10 CFR 50.12; while 50.59 will  
8 continue to apply to the uncertified portion." That's  
9 the end of the quotation.

10 After recognizing these distinctions, the  
11 Commission went on to state, and again I quote, "How  
12 much detail is present in a design certification will  
13 be an issue that will have to be resolved in each  
14 certification rulemaking." And as earlier stated, and  
15 again I quote, "The Commission expects that there will  
16 be less detail in a certification than in an  
17 application for certification and that a rule  
18 certifying a design is likely to encompass roughly the  
19 same design features that 50.59 prohibits changing  
20 without prior NRC approval."

21 And then the Commission added, as David  
22 Rehn has also stated, "Moreover, the level of design  
23 detail in a certification should afford licensees an  
24 opportunity to take advantage of improvements in  
25 equipment."

1 I want to emphasize that the two-tier  
2 structure which the industry recommends is simply a  
3 means for formatting and documenting in the design  
4 certification rule the certified and the non-certified  
5 parts of the design, and specifying the change  
6 mechanisms governing each, all in accordance with the  
7 requirements of Part 52 which I've just described.

8 The first tier would contain a description  
9 of the certified design which we recommend be based on  
10 SSAR Section 1.2 with detail comparable to that in  
11 current SERs; the full array of inspections, tests,  
12 analyses and acceptance criteria which Part 52  
13 requires; and any information which the NRC has  
14 determined should not be subject to change under  
15 Section 50.59.

16 The second tier would reference the entire  
17 SSAR design description. Now, the SSAR is the primary  
18 technical document of the design certification  
19 application and will, as a practical as well as a  
20 regulatory matter, be the basis for the NRC's final  
21 design approval and design certification reviews. By  
22 referencing the SSAR in the design certification  
23 rule's second tier, the NRC would document the  
24 features and commitments that were the basis for NRC  
25 approval beyond those certified in the first tier and

1 document as well, and here again I quote, this time  
2 from the rule, Section 52.63(a)(4), "matters resolved  
3 in connection with the issuance of a design  
4 certification."

5 Now, the second tier would also contain  
6 what we characterize as validation attributes which  
7 the NUMARC report proposes as a bridge to  
8 demonstrating compliance with those first tier  
9 acceptance criteria that are not readily measurable or  
10 otherwise verifiable by direct field inspection or  
11 test. David Rehn will deal with this later in more  
12 detail.

13 Now, the design certification rulemaking  
14 would consider and resolve all issues covered by both  
15 tiers, including among these issues the design detail  
16 to be included in each tier. This is in accordance  
17 with Section 52.63(a)(4). Now, this resolution of  
18 issues will be binding on later combined license  
19 applicants and combined license holders. It will be  
20 binding on the NRC and it will be binding on any  
21 interveners in subsequent combined license and  
22 preoperational proceedings.

23 Now, as to the two-tier design description  
24 in the design certification rule, combined license  
25 applicants and licensees will be obligated to comply

1 with all provisions in both tiers absent an exemption,  
2 an amendment or another form of permitted change which  
3 I'll describe in a moment.

4 Now, more specifically, the matters  
5 covered by the first tier, that is the design  
6 described in that tier and the ITAAC, those matters  
7 can only be changed through an NRC-approved exemption  
8 or amendment proceeded by a hearing opportunity and  
9 this is in accordance with Sections 52.63(b)(1) and  
10 52.97(b).

11 Second tier matters can be changed without  
12 NRC approval only if a change meets the requirements  
13 of Section 50.59, again as prescribed by the  
14 Commission's regulations.

15 COMMISSIONER CURTISS: Marc, on that  
16 point, if a second tier change is made through the  
17 50.59 process that you described, would that have to  
18 be proceeded by an opportunity for hearing?

19 MR. ROWDEN: 50.59 would apply as it is  
20 presently formulated. If it is a change which is  
21 permitted under 50.59 without NRC approval, it would  
22 not have to be proceeded by an opportunity for  
23 hearing. As a matter of fact, by definition, it would  
24 not require NRC approval.

25 But let me interject something at this

1 point because I think that it will clarify our  
2 proposal and our understanding of how our proposal  
3 would operate in the design certification process and  
4 the later combined licensing and preoperational  
5 processes.

6 First, the NRC would determine initially  
7 to what extent 50.59 would be applicable because it  
8 will be the NRC that determines what goes in tier 1  
9 and what goes in tier 2.

10 Second, that determination will be subject  
11 to rulemaking consideration. In other words, the  
12 rulemaking proceeding will consider not only what  
13 design content shall be in tier 1 and what design  
14 content shall be in tier 2, but the corollary, to what  
15 extent 50.59 will be applicable. There will be an  
16 opportunity for public participation in that process,  
17 something which does not now exist with regard to the  
18 application of 50.59 to present day operating  
19 licenses.

20 Third, I do not view 50.59 as being a  
21 license to make unbridled changes to the design.  
22 Number one, I don't think 50.59, as it's presently  
23 structured, allows that. Number two, and I've  
24 discussed this with my colleagues, I believe that  
25 there's going to be a practical disincentive for

1 design certification applicants and combined license  
2 holders to overload the second tier with design  
3 description that will be subject to 50.59 for several  
4 reasons.

5 One, there's no assurance that the staff  
6 is going to approve a 50.59 change. If it doesn't,  
7 then it will require an amendment and that would have  
8 to be preceded by a hearing opportunity.

9 Secondly, there is a price you pay for  
10 making a 50.59 change and that is that at a  
11 preoperational hearing, an intervenor can claim that  
12 the acceptance criteria have not been met because a  
13 change that has been made under 50.59 did not comply  
14 with the criteria of 50.59. So, as I say, there are  
15 costs and benefits attached to using that and I think  
16 there's safeguards in the process. That's a fuller  
17 answer to the specific question, but I think it  
18 requires a total appreciation of what we're proposing  
19 to understand that proposal.

20 Now, the two tiers of the design  
21 certification rule would be incorporated by reference  
22 in any combined license utilizing that certified  
23 design. The combined license would also contain a  
24 comparable two-tier description of the site specific  
25 plant features and of operation related features

1 including the emergency planning program and their  
2 corresponding confirmatory specifications. We believe  
3 that the two-tier format, with the contents as  
4 described and with the substantial constraints which  
5 I've also summarized, that that format produces a  
6 result which is fully consistent with the specific  
7 requirements of Part 52.

8 Further and again I would pick up the  
9 thought that Dave Rehn initially emphasized. We have  
10 tried hard to meet our understanding of the  
11 standardization, issue preclusion and workability  
12 objectives which we saw inherent in the Commission's  
13 Part 52 regulations.

14 MR. REHN: Let's assume for the moment  
15 that the format and the content of the design  
16 certification applications and the associated rule  
17 have been agreed upon. An important part of the  
18 design certification application and the associated  
19 rule is the so-called ITAAC, the inspection, tests,  
20 analysis and associated acceptance criteria that are  
21 deemed necessary and sufficient to provide reasonable  
22 assurance that if they are performed and the  
23 associated acceptance criteria are met, that the plant  
24 which references the design is built and will operate  
25 in accordance with design certification.

1           Thus, ITAAC forms the basis for the  
2 verification process that will occur during  
3 construction and preoperational testing. Therefore,  
4 we believe ITAAC is not a substitute for either lack  
5 of design, lack of design details or for failure to  
6 resolve safety issues.

7           Now, in defining the scope and the source  
8 and the content of the basic elements of ITAAC, the  
9 tests were built upon existing regulatory requirements  
10 and verification programs and made only those  
11 modifications necessary to meet the requirements of  
12 Part 52 or otherwise further the objectives of  
13 standardization and early resolution of issues. The  
14 concept of design features of a constructed facility  
15 should be verified by inspections, tests and/or  
16 analysis is not new to Part 52. Indeed, in Part 50  
17 licensing, applicants had to demonstrate and the NRC  
18 had to find that a facility had been constructed in  
19 substantial compliance with the design as described in  
20 the FSAR.

21           Acceptance criteria, for example, should  
22 be based upon and derived from the general design  
23 criteria of 10 CFR Part 50, Appendix A and similar  
24 high-level safety criteria, such as 10 CFR Part 100.  
25 Although basically derived from the GDCs, the

1 acceptance criteria applied under Part 52 will be more  
2 specific and more quantifiable than the high-level  
3 safety criteria contained in 10 CFR, Appendix A.

4 The standard review plan and modern FSARs  
5 also contain numerous examples where some of the  
6 acceptance criteria, as well as the associated  
7 inspections, tests and analysis, can be abstracted and  
8 used as the starting point in developing the Part 52  
9 ITAAC requirements.

10 In the specific area of inspections, tests  
11 and analysis, an extensive and well defined systems  
12 testing program has been developed over the past 20  
13 odd years. Chapter 14 of each SAR specifically  
14 defines the testing to be performed to demonstrate the  
15 operational adequacy of each important system.  
16 Chapter 17 of the SAR similarly documents the quality  
17 assurance program and the referenced topical reports  
18 which will provide the overall framework for a  
19 construction verification program. We believe that  
20 the Part 52 application should retain the Chapter 14  
21 test program and the Chapter 17 quality assurance  
22 program.

23 The principal new program element  
24 represented in ITAAC is a requirement for the pre-  
25 construction identification of and subsequent

1 documentation of concurrence with those inspections,  
2 tests and analysis and their associated acceptance  
3 criteria. To facilitate early and sequential  
4 verification of the adequacy of construction by both  
5 the combined license holder and the NRC, we believe  
6 the ITAAC should be organized to correspond to the  
7 sequence of construction. This will better support  
8 the combined licensee's sequential determination that  
9 the segments of the ITAAC have been met and facilitate  
10 what we have characterized as a sign-as-you-go process  
11 on the part of the NRC.

12 The key ITAAC programs resulting from the  
13 considerations discussed above are:

14 Specification by the design certification  
15 or the combined license applicant of the pertinent  
16 ITAAC and their subsequent approval by the NRC;

17 Formulation and documentation of such  
18 ITAAC principally from existing requirements and  
19 verification programs;

20 Sequential arrangement of these ITAAC to  
21 promote early identification and resolution of  
22 problems as they emerge;

23 Reliance on an effective quality assurance  
24 program for successful implementation of ITAAC; and

25 A complementary sign-as-you-go inspection

1 program with periodic public notices of the successful  
2 completion of the ITAAC milestones.

3 Although ITAAC in a sense are principally  
4 a reformatting of information that is contained in the  
5 SSARs and to some extent existing verification  
6 programs, this discipline reiteration is necessary in  
7 order to fulfill the ITAAC purpose, namely to provide  
8 an expressed delineation of those inspections, tests  
9 and analyses and their companion acceptance criteria  
10 that are necessary and sufficient to provide  
11 reasonable assurance that if met, the plant has been  
12 built and will operate in conformance with the design  
13 described in the upper tier of the design  
14 certification rule and that of a combined license.

15 It must be recognized, however, that  
16 numerous inspections, tests and analyses beyond those  
17 identified in ITAAC are part of an established quality  
18 assurance program and the associated implementing  
19 procedures will be performed in the course of  
20 construction to verify all aspects of a plant design  
21 residing in the lower tier of the design certification  
22 rule, or the like tier of a combined license.

23 At the same time, the implementation and  
24 documentation of the quality assurance program  
25 supports the upper tier inspections, tests and

1 analyses in establishment of conformance with the  
2 acceptance criteria.

3 During the course of our work, it became  
4 evident that certain acceptance criteria, typically  
5 associated with analyses, may not always be amenable  
6 to direct verification by one or more field  
7 inspections or tests. An example of this might be the  
8 seismic analysis that is performed on a building  
9 structure. Typically, these analytical methods, the  
10 computer programs, the acceptance criteria and the  
11 associated inputs or assumptions that will be employed  
12 in these analyses are provided as part of the design  
13 certification, will be reviewed and approved as part  
14 of the design certification process.

15 However we find many of the analytical  
16 inputs are associated with physical plant  
17 characteristics, therefore the task group developed a  
18 concept of what we call validation attributes. We  
19 chose these words simply to differentiate between  
20 those inspections, tests and analyses that are defined  
21 as ITAAC within Part 52. They are proposed to reside  
22 in the second tier of the certification rule.  
23 Functionally they reside -- excuse me, functionally  
24 they can be thought of as a field measurable element  
25 that are more capable of being quantified and thus

1 readily measurable and otherwise verified through the  
2 established quality assurance program the overall  
3 implementation of ITAAC. They are a link, then,  
4 between the traditional quality assurance program and  
5 the acceptance criteria in those situations where  
6 because of the nature of certain analysis acceptance  
7 criteria direct verification by field inspection or  
8 test is not possible. Thus, validation attributes  
9 serve to verify the validity of design inputs or  
10 assumptions utilized in analyses previously approved.

11 Certainly we recognize that many  
12 attributes may need to be included in the overall  
13 ITAAC. The thought for the thrust in this particular  
14 discussion was to differentiate between those of  
15 critical importance in assuring the safety and the  
16 compliance with the plant and the variety of other  
17 elements contained in a typical quality assurance  
18 program.

19 COMMISSIONER CURTISS: Are there any other  
20 differences that would attach to that distinction,  
21 procedural or otherwise?

22 MR. REHN: Typically we are allowing them  
23 to reside in the second tier and would be handled as  
24 such as other elements of the second tier.

25 COMMISSIONER CURTISS: Would you have any

1 ITAAC in the second tier or would they all be --

2 MR. REHN: No. We propose and view ITAAC  
3 as residing totally in tier 1.

4 COMMISSIONER CURTISS: Okay.

5 MR. REHN: Thus the challenge, the key  
6 challenge of these Part 52 concepts is to identify  
7 those critical inspections, tests, and analyses which  
8 are truly necessary and sufficient to demonstrate  
9 conformance with the acceptance criteria specified in  
10 the upper tier of the design certification rule and  
11 then to evaluate those inspections, tests, and  
12 analyses and ultimately to demonstrate compliance with  
13 the acceptance criteria.

14 Before I summarize on level of detail, I'd  
15 like to briefly return to an earlier example that we  
16 had on the HVAC system to draw your attention to a  
17 couple of key points. In looking at the definition of  
18 information that we believe would be supplied with the  
19 system performance, we see a variety of details  
20 consistent with the functional definition of this  
21 system, such things as heat load, air flow rates,  
22 cooling water flow rates, cooling water temperature,  
23 and a variety of other information associated with  
24 this functionality of this particular system.

25 In addition, if we are to look at a

1 particular component contained in one of the HVAC  
2 systems, we propose and believe that the type of  
3 information to be supplied would be very specific,  
4 such things as the type of fan; as we said earlier,  
5 the mounting orientation; flow rates; flow heads;  
6 motor types; motor sizes; service environment and  
7 other key functional parameters.

8 It is our belief that this level of detail  
9 as proposed satisfies all of the requirements of Part  
10 52. Further, we believe that this level of detail  
11 will result in a standardized plant that meets not  
12 only those specific requirements but also the  
13 standardization goals of Part 52. Hence we believe  
14 plants will be built which are virtually the same from  
15 a safety review, physical arrangement, operating and  
16 training perspective.

17 Thank you. I'd like to turn the program  
18 back over to Byron for some concluding remarks.

19 MR. LEE: Thank you, Dave.

20 In conclusion, I want to thank you for  
21 allowing us the opportunity to discuss first the  
22 industry's interest in the future of nuclear power  
23 what role we can and should play, we think, and our  
24 implementation approach which we believe is consistent  
25 with the new Part 52 Rule.

1           The industry shares the Commission's  
2           desire to avoid building future generations of one of  
3           a kind plants. The industry believes that the NRC's  
4           Part 52 Rule, coupled with the implementation approach  
5           that we've worked hard on for over a year and a half  
6           and described today, will provide the needed level of  
7           safety and provide the predictable regulatory process  
8           also needed to allow utilities to include the nuclear  
9           option in their near-term planning. We also believe  
10          it will produce a high level of standardization.

11                 As you've heard this afternoon, the  
12          industry believes timely completion of the design  
13          certification process is a necessary prerequisite to a  
14          new order for a nuclear unit in this country. It's  
15          been suggested that there's no urgency to completing  
16          this process because no utility has stepped forward to  
17          order a new nuclear plant. From the utilities'  
18          perspective, the situation is just the opposite.

19                 As Sherwood Smith has said, the utilities  
20          have a real need to begin planning new base load  
21          capacity, and for base load capacity the planning time  
22          is now for the end of this decade and the early parts  
23          of the next decade. But we feel unable to consider  
24          the nuclear option until we've demonstrated that the  
25          design certification process works. Until then, the

1 regulatory uncertainty makes the financial risks too  
2 great.

3 I hope we've helped you understand the  
4 utilities' position and our strong desire to move  
5 ahead steadfastly. To do that -- and I want to  
6 emphasize here -- the industry and we believe the NRC  
7 staff needs policy decisions from the Commission soon  
8 in two areas: one, the viability of our approach,  
9 especially the two-tier concept; and second, the level  
10 of design detail the Commission believes is necessary  
11 to meet the Part 52 Rule.

12 For nuclear power to figure in utility  
13 planning in the 1990s for units in the first decade of  
14 the next century we must set tough schedules. The  
15 industry urges the Commissioners to make meeting  
16 schedules a high priority and to apply the necessary  
17 resources to do so.

18 We conclude by stressing the need for  
19 parallel review, which Sherwood mentioned before, of  
20 the EPRI ALWR utility steering committee requirement  
21 document and the two evolutionary ALWR plant design  
22 certifications. We believe that that can be completed  
23 by the end of 1992. There has been an amazing amount  
24 of work done and we are, we believe, fairly close.

25 For passive plants we concur with the

1 Commissioners' position that the passive requirements  
2 document review should be given the highest priority  
3 to formally resolve the major technical and policy  
4 issues prior to specific design reviews. At the same  
5 time, resources should be applied by the staff to  
6 resolve other necessary issues for passive plants  
7 which are not affected by the resolution of these  
8 issues. We believe this approach is fully consistent  
9 with the current Commission guidance in your June 6,  
10 1990, SRM and is essential to enable passive plant  
11 certification to be accomplished consistent with the  
12 utility needs. We believe it's possible to learn from  
13 the evolutionary plant experience and to complete both  
14 passive plant design certifications by the end of  
15 1995.

16 We ask that the NRC staff SECY paper on  
17 the level of design detail -- which you mentioned in  
18 your opening remarks, Mr. Chairman, will be discussed  
19 this Wednesday -- be made public as soon as possible,  
20 as the industry should have an opportunity to comment  
21 on this paper since it will be of such critical  
22 importance to the large ongoing efforts that we have  
23 underway.

24 And now we have passed a lot of  
25 information on and we ask for any questions and

1            hopefully we can clarify anything that need be.

2                    CHAIRMAN CARR: Commissioner Remick?

3                    COMMISSIONER REMICK: First question for  
4            Mr. Smith. You indicate -- you made a statement that  
5            you would hope that the NRC would allocate resources  
6            consistent with the task at hand. And realizing  
7            that's really a matter for us, do you or industry have  
8            a view on resources that you see us allocating? Do  
9            you feel that they're adequate for the task?

10                   MR. SMITH: Well, Mr. Remick, we don't  
11            have a number of people in mind. My statement was  
12            intended as stated to encourage that an adequate  
13            number of resources in terms of people, well-qualified  
14            people, the right sort of project manager who can take  
15            this and drive it to a conclusion -- I personally have  
16            no information that indicates that you have done  
17            otherwise or would do otherwise. It was just a  
18            statement to underscore the urgency with which we feel  
19            this process should move along if we're going to do  
20            it. And we think we need to do it on a timely basis,  
21            do it right but do it on a timely basis and don't let  
22            it drag on interminably.

23                   COMMISSIONER REMICK: Okay. Mr. Rowden,  
24            is it safe for me to infer that your proposed two-tier  
25            would not require any kind of rule change? Do you

1 have an opinion on that? In other words, is it  
2 consistent with current rules?

3 MR. ROWDEN: I quoted the Commission's  
4 language with some calculation. Yes, sir, it is my  
5 judgement that this structure is fully consistent with  
6 the Commission's regulations and its explanation of  
7 the regulations.

8 COMMISSIONER REMICK: And certainly it  
9 seems like the success of a two-tier would be the  
10 ability to adequately specify what's in the two-tiers,  
11 to do it concisely so there are few questions in the  
12 future. I think there are probably bound to be some  
13 questions that come up. Has thought been given to  
14 whether that can be done in a logical technical sense  
15 to clearly identify what's in tier 1 and tier 2?

16 MR. REHN: We have attempted to do that  
17 through the utilization of examples. Clearly what we  
18 found is once we had developed the process and the  
19 guidance that we thought we were going to utilize, the  
20 most difficult part began in terms of taking a  
21 specific example and working it through this criteria.  
22 We've done that to date and have in our report two  
23 examples. One is a containment system structure, if  
24 you will, and that was probably the easier example  
25 that we chose. There were a lot of issues there that

1       lend themselves to this. And then we tackled a fluid  
2       system. That was a little bit more difficult.

3               It becomes probably even more difficult  
4       when you get into such things as control systems, and  
5       we're in the process of working through some of those  
6       examples now utilizing the real time work that is  
7       ongoing by the various suppliers that are in the  
8       design certification design process right now.

9               Yes, we believe it is workable.

10              MR. LEE: I would add, Forrest, I believe  
11       that the three manufacturers and the gentlemen sitting  
12       behind me here have all been actively involved in this  
13       effort and that it's been developed in such a way that  
14       they believe it can be applied practically and are in  
15       fact in the process of trying to utilize it.

16              COMMISSIONER REMICK: So you feel that  
17       you've looked at enough examples that you feel that it  
18       can be done so that there would be few questions later  
19       on? What's in tier 1? What's in tier 2?

20              MR. LEE: Well, the primary objective, I  
21       think, as Marc had pointed out, is to avoid questions  
22       later on.

23              COMMISSIONER REMICK: I realize, but I  
24       also realize these things are very complicated and  
25       somebody reading it five years from now might read it

1 differently than somebody might specify today. I'd  
2 anticipate there would be a few questions arise at  
3 least in the future, but I would hope that not a lot  
4 of questions.

5 MR. ROWDEN: The advantage of the two-  
6 tier, Doctor Remick, is that one specifies with great  
7 particularity what is in each tier. I'm sure there  
8 are going to be questions between the design  
9 certification applicants and the staff as to what is  
10 appropriate or desirable to put in one tier or the  
11 other from the standpoints I mentioned, not the least  
12 of which is the latitude for making changes.

13 The challenge now is to get on with the  
14 job and the critical path item that we have to  
15 confront is the need for guidance as to, A, whether  
16 two-tier is acceptable and, B, how it interfaces with  
17 the level of detail requirements of Part 52.

18 COMMISSIONER REMICK: If there was a two-  
19 tier system -- and let's say that you had an item that  
20 was in tier 2 and during construction there was some  
21 problem arose and the utility or the constructor  
22 decided to modify that going through the 50.59 process  
23 appropriately -- would that open up that being  
24 subject, though, to discussion in a hearing on the  
25 combined license on whether the plant was built

1 according to the --

2 MR. ROWDEN: That would be something that  
3 would not arise, I believe, at the combined license  
4 stage but at the preoperational stage.

5 COMMISSIONER REMICK: Preoperational.

6 MR. ROWDEN: It opens the possibility that  
7 an intervenor can come in and make a substantiated  
8 claim that this change did not meet the requirements  
9 of 50.59 and tie that to a further claim that as a  
10 result the acceptance criteria have not been met. And  
11 that is a risk which, as I've indicated, we are very  
12 sensitive to. So this is not a process that we would  
13 adopt or apply in a cavalier fashion, simply from a  
14 standpoint of self-interest.

15 COMMISSIONER REMICK: Okay. Another  
16 aspect you mentioned is this -- yes?

17 MR. LEE: It seems to be consistent,  
18 again, with practice today that 50.59 alterations are  
19 reported periodically. So there is an opportunity for  
20 somebody to challenge that and hopefully the system  
21 would be such that they'd have to challenge those  
22 early, again, that we can't, again, afford to wait to  
23 get through all of the allegations at the end of the  
24 process.

25 MR. PARLER: Of course, Commissioner

1 Remick, most of the 50.59 issues, at least as I  
2 understand it, come up after an operating license has  
3 been issued. And the purpose of the 50.59 was to  
4 distinguish between changes which could be made  
5 without prior Commission approval and amendments to  
6 the license which might require an opportunity for a  
7 hearing and indeed a hearing.

8 COMMISSIONER REMICK: No, I understand  
9 that. But under the Part 52 it seemed to me we're  
10 locking in very tightly changes could be made, and it  
11 seems to me that in the items that were in the second  
12 tier during a construction you might encounter a  
13 problem with other 50.59 you could make the necessary  
14 changes without going back to the Commission and  
15 asking for an exemption under 50.12 or something like  
16 that. And I was just wondering if this was done  
17 doesn't that open up the possibility for litigation  
18 and a hearing?

19 MR. ROWDEN: It's not an open-ended  
20 possibility, but it is a risk which any licensee who  
21 makes such a change has to confront, also has to  
22 confront the prospect of the staff disagreeing that  
23 that change is appropriate.

24 COMMISSIONER REMICK: Sure.

25 MR. ROWDEN: Again, this regime, if I may

1 characterize it as such, is I think preferable to and  
2 more disciplined than the present 50.59 regime which  
3 applies to operating licenses, not that that regime is  
4 inadequate. It's that in reviewing the application  
5 and in conducting the hearing, the role of 50.59 is  
6 not an issue in present operating license proceedings,  
7 whereas it would be a matter very carefully looked at  
8 by the staff and examined in the course of the design  
9 certification proceeding. Again, another check on the  
10 process.

11 COMMISSIONER REMICK: Do you foresee any  
12 need for change in 50.59 for this to be usable?

13 MR. ROWDEN: We looked at that very  
14 carefully and it's our conclusion that 50.59 is  
15 adaptable as it's written.

16 COMMISSIONER REMICK: One other item you  
17 mentioned that fascinates me because I've been in  
18 favor of it for a number of years is sign-as-you-go.  
19 Has anybody looked at the questions there from the  
20 standpoint of our regulations? Do they permit sign-  
21 as-you-go, the current regulations? I realize that  
22 Part 52 is new and perhaps would, but has anybody  
23 looked at that closely?

24 MR. ROWDEN: We've taken a preliminary  
25 look at that. We've addressed it in a preliminary

1 fashion in the ITAAC report that this is one of the  
2 areas that we identified for further study.

3 It is our view that Part 52, as applied in  
4 large part to the staff inspection processes that are  
5 presently in place, would lend themselves to a sign-  
6 as-you-go process. As you may recall, in the Vogtle  
7 proceeding there was a type of sign-as-you-go. Much  
8 useful experience has been gained from that. We  
9 believe it can be effectively applied here, but we do  
10 need to do more work on that before a specific process  
11 can be put in place.

12 COMMISSIONER REMICK: It was the Vogtle  
13 experience that made me feel that that was a very good  
14 concept.

15 MR. REHN: We've had quite a bit of  
16 discussion on the Vogtle experience and we are in the  
17 process of developing that to a greater extent than  
18 what we have to address some of the items that we  
19 believe should be at least discussed prior to entering  
20 into that process. But, yes, we think there's a good  
21 healthy precedent there.

22 COMMISSIONER REMICK: Kind of a couple  
23 comments. One on the level of design detail. It's no  
24 question it's an important issue and it came up, as I  
25 recall, several years ago with ACRS in a letter to the

1 Commission. And I must admit I'm a little  
2 disappointed that about five months before the  
3 previously scheduled date for the FDA for the first  
4 plant going under certification that we're still  
5 discussing it, but that's understandable, I guess,  
6 when we get into the detail. But I am disappointed at  
7 this late date we are just discussing it.

8 I am convinced that in the process we need  
9 some kind of a controlled flexibility. I find the  
10 two-tier concept an interesting one. I'm not sure I  
11 completely understand it, but I certainly have a  
12 better understanding after today's discussion. And I  
13 bring this up to urge my colleagues. I think it is an  
14 extremely important subject that we should give our  
15 top priority to resolving, because I think it's going  
16 to influence the schedule for the certification review  
17 by the staff and certainly in the submittal from  
18 applicants.

19 On the broader issue that, Mr. Smith, you  
20 brought up, a stable predictable regulatory process, I  
21 feel compelled to make a couple comments. Since  
22 joining the Commission, I've become concerned that  
23 we've lost our awareness in the Agency of the amount  
24 and the type of effort that it takes to do a thorough  
25 and timely licensing review of nuclear power plants.

1 We've gotten kind of rusty, I think, and we've lost  
2 some people and we have people doing things other than  
3 reviews.

4 And as I see it, by mid-1992 we expect to  
5 have in-house four applications for design  
6 certification of several evolutionary and several  
7 passive plants, and these are all new designs and  
8 they're being reviewed under new regulations both for  
9 certification and for licensing. And I see for the  
10 first time in a decade international interest in U.S.  
11 nuclear technology. There's a considerable amount of  
12 interest overseas in what we're doing both in the  
13 evolutionary but also in the passive areas, and people  
14 are extremely interested in what are the NRC views on  
15 these designs. And for the first time in a decade I  
16 see the opportunity for the U.S. to be a leader in  
17 this technology.

18 Now you folks today and the Department of  
19 Energy tells us that certified designs are essential  
20 for any orders and that industry is interested in  
21 having the nuclear option as one of the options for  
22 providing electricity to the country. However, I am  
23 concerned because I think we made some recent  
24 decisions which cause all of these design  
25 certification reviews to slip.

1                   And so I can't help but express my  
2                   personal concern that this Agency might be the one  
3                   that precludes certified designs being available at  
4                   the time, perhaps, when U.S. utilities would like to  
5                   have that as one option to consider. And if we do  
6                   that, I'm afraid we're going to be derelict in our  
7                   duty and that concerns me very much as a Commissioner.  
8                   I make those comments at this time mostly for the  
9                   benefit of my colleagues and I do it respectfully, but  
10                  I do have a personal concern that we are not finding  
11                  the resources necessary to come anywhere close to  
12                  meeting the schedules that you folks are telling us  
13                  that you're dependent upon to make the proper orders.

14                  With that speech, Mr. Chairman, I pass.

15                  CHAIRMAN CARR: Commissioner Rogers?

16                  COMMISSIONER ROGERS: I wonder if you  
17                  could comment on a couple of things. One is how do  
18                  you see proprietary questions dealt with here in the  
19                  two-tier approach and in the -- well, in the  
20                  certification, you know, document?

21                  MR. ROWDEN: It's a question that  
22                  transcends one-tier or two-tier. The Commission's  
23                  regulations deal very specifically with the  
24                  appropriate protection to be given to proprietary  
25                  information. There may need to be some further

1 implementation, internal implementation of those  
2 regulations, but we believe that they provide an  
3 appropriate framework for safeguarding or maintaining  
4 the proprietary status of that information and at the  
5 same time conducting a meaningful design certification  
6 proceeding.

7 COMMISSIONER ROGERS: Well it sounds good,  
8 but I'm not sure I understand exactly how it's going  
9 to work because the design certification is a public  
10 document.

11 MR. ROWDEN: That's one of the issues that  
12 we addressed in the comments that we submitted to the  
13 Commission on proposed Part 52. The Commission  
14 initially proposed that proprietary information be  
15 dealt with in design certification proceedings in the  
16 same fashion that they're dealt with in other  
17 rulemaking proceedings. Those were the provisions  
18 that were "on the books" with regard to protection of  
19 proprietary information rulemaking proceedings.

20 We urged and the Commission agreed to  
21 treat proprietary information in design certification  
22 proceedings in the same fashion that they would be  
23 treated in licensing proceedings, with the same right  
24 of access and the same degree of privacy. Those  
25 proprietary ground rules, so to speak, in licensing

1 proceedings have proved to be effective in practical  
2 usage and that is what I'm referring to specifically  
3 as the basis for application in design certification  
4 proceedings.

5 So I hope -- and I share your concern that  
6 it doesn't just sound good, but there is basis in  
7 experience to believe that we have the framework for a  
8 workable process.

9 COMMISSIONER ROGERS: It seems to me that  
10 some systems -- for example, fire protection -- may  
11 require more specification of the detailed  
12 configuration than other systems and that it may be  
13 acceptable to have some systems that are specified  
14 only at a functional level while others really have to  
15 have a detailed design configuration to answer certain  
16 safety questions. How have you dealt with that in  
17 your thinking?

18 MR. REHN: Well, I guess in a couple of  
19 ways. First of all, we agree that the types of  
20 information that we've described and the level of  
21 specificity associated with that will probably tend to  
22 vary from some systems to others. Clearly, we believe  
23 Part 52 states that that level of detail that the  
24 staff needs to make its safety determinations must be  
25 available and must be provided. And to the extent

1       that that has an impact on the resolution of a safety  
2       issue, then it must be made available, and that is the  
3       direction that we are headed in with that  
4       understanding that on some systems that level of  
5       information is necessary and yet on others it is not.

6               COMMISSIONER ROGERS:   Is it conceivable  
7       that for some designs what you might include in tier 1  
8       and tier 2 would be different from other designs? Can  
9       you settle that question of what goes into T-1 or T-2  
10      independent of design?

11             MR. ROWDEN:    I take the Commission's  
12      guidance at face value. That's exactly what you said  
13      and I think that's the guidance we have to live with.  
14      It may well be different from one design to another.

15             COMMISSIONER ROGERS:    You admit that  
16      possibility?

17             MR. ROWDEN:    Yes. Well, the Commission  
18      itself has specified that possibility. We accept that  
19      as a reality.

20             MR. LEE:   And especially with the BWR and  
21      PWR, obviously there would be some changes.

22             COMMISSIONER ROGERS:    I think I'll turn it  
23      over to you.

24             CHAIRMAN CARR:   Commissioner Curtiss?

25             CHAIRMAN CARR:    I do have a number of

1 questions. Let me begin with the comments that I have  
2 in picking up on the remarks that Commissioner Remick  
3 made.

4 There's been a good deal of discussion of  
5 the schedule question over the past couple of months  
6 and you picked up that and emphasized that point here.  
7 Additionally, we've just received a letter from the  
8 Department of Energy dated July 16th from Assistant  
9 Secretary Young.

10 I agree with Commissioner Remick that we  
11 ought to commit the entire range of resources that we  
12 need to keep these reviews on schedule and I think the  
13 Commission is committed to doing that, and if we're  
14 not doing that I guess I'd like to hear from your  
15 perspective whether you think reviews are slowing down  
16 to a greater degree than we're aware of so that we can  
17 redouble our commitment to apply the necessary  
18 resources.

19 At the same time, there are some complex  
20 questions that go beyond just the commitment of  
21 resources that the Commission has addressed in a  
22 series of SRMs that the staff received last year, and  
23 I take it that you're familiar with.

24 I must say I'm frustrated by the comments  
25 on the schedule, particularly in the DOE letter, but I

1 gather is suggested here. You're familiar with the  
2 SRMs and if you take a look at what they do it seems  
3 to me they boil down the Commission interest to three  
4 basic objectives: number one, the Commission has  
5 expressed an interest in being involved in the major  
6 technical issues that arise in these design reviews;  
7 number two, at an early stage in the process as  
8 opposed to waiting for a design certification; and  
9 number three, with the EPRI requirements document  
10 serving as the vehicle for resolving technical issues  
11 that are common to a given class of plants,  
12 evolutionary and passive.

13 Now the question that I guess I have, is  
14 there anything in the guidance -- and you're certainly  
15 familiar with it to one degree or another -- that you  
16 think the Commission has laid out that would implement  
17 those three objectives that in your judgement needs to  
18 be modified or changed in some respect?

19 MR. LEE: I guess in general -- and I'll  
20 ask others here to expand -- I think that the approach  
21 that the Commission has taken in the recent past,  
22 there was concern initially that involvement would  
23 cause additional delay and slippage. I think that in  
24 fact the understanding I get from the various people  
25 involved, including the EPRI requirements document,

1       that things are moving ahead on a fairly rapid and  
2       escalated scale at this point in time. So they seem  
3       to be moving ahead on a steadfast manner.

4               I think that there was one question that  
5       is in one of the SRMs related to the licensing review  
6       basis document, and I think that the EPRI and GE and  
7       Westinghouse are looking at that issue and trying to  
8       develop what they consider to be the proper approach  
9       and which is what I've tried to say here. There are  
10      things that can be reviewed and should be reviewed in  
11      the -- with regards to schedules that ought not be  
12      held back, that can be done in parallel in that effort  
13      also, Commissioner.

14             I don't know if Dave or Marc --

15             MR. ROWDEN:       Well, I'll offer some  
16      observations from my own perspective. One is simply  
17      to speak the reality of the time that's consumed in  
18      the process of Commission/staff interaction. Sorting  
19      these matters out has taken time. That time,  
20      particularly on the part of the staff, has involved  
21      people who would otherwise be working on design  
22      reviews and I think we have to confront that reality  
23      and recognize what the price is that you have to pay  
24      for this process of defining exactly what the -- the  
25      process of defining what the process is. That's

1 observation number one.

2 Observation number two is my sense of  
3 surprise, frankly, that the level of detail issue has  
4 at this stage become such a major impediment to moving  
5 forward, and I say this as someone who is involved  
6 intensively over a period of some two years if not  
7 more in interaction on behalf of the industry with the  
8 Agency in helping to define and commenting on the  
9 contents of Part 52. And Part 52 is not a blueprint  
10 for everything. Nobody claimed that it was. But if  
11 there was an issue that was ever identified,  
12 discussed, commented on between the Commission and the  
13 staff, between the Commission and the industry,  
14 between the ACRS and the Commission it was level of  
15 detail. And frankly, we believe that Part 52 coupled  
16 with the statements of considerations gave rather  
17 explicit guidance on level of detail.

18 I'm not saying that this is not a  
19 legitimate issue and that standardization concerns are  
20 something that should be dismissed. I am saying that  
21 level of detail has been an enormous consumer of time  
22 and now it's become a very critical, critical path  
23 item.

24 COMMISSIONER CURTISS: Well, I guess I'd  
25 encourage you if you -- in fact, I brought them along

1 here just to refresh my own memory on what we've  
2 wrought over the last year or so -- if you have any  
3 suggestions after reviewing the staff requirements  
4 memorandum and the SECY paper in more detail as to  
5 procedural process questions that you think -- and by  
6 that I mean the Commission process vis a vis the staff  
7 and the ACRS -- that you think need to be redressed,  
8 I'd like to know the particulars of that so that we  
9 can wrestle that down.

10 I must say I am frustrated, for example,  
11 that with some of the complex questions that we're  
12 dealing with now like level of design detail -- and I  
13 share your frustration that we're still dealing with  
14 it a year and a half later -- the NEPA question on  
15 design certification, the emergency planning exercise  
16 question, Part 52 is a significant difference in the  
17 way that we've done business around here and I think  
18 we all positively agree with that.

19 It's frustrating then in turn for the  
20 schedules that were agreed to two years before Part 52  
21 was promulgated to be the focus of -- or the  
22 benchmark, if you will, from which departures are  
23 measured now. I suspect there are going to be some  
24 changes in the schedule for those schedules that were  
25 reached at that point in time. And as I say, I think

1 the Commission is committed -- or at least I  
2 personally am and I think the others can speak for  
3 themselves -- to committing the resources necessary on  
4 our end to make sure that resources aren't the pacing  
5 item.

6 But as I say, if you have any comments on  
7 the process that we've established, I'd be interested  
8 in your particular suggestions.

9 Let me get to actually the subject of this  
10 meeting, because I do have a number of questions. The  
11 topic that's puzzled me -- let me go back to the ACRS  
12 meeting of last week. In reviewing the transcript of  
13 that meeting, one of the NUMARC presenters in talking  
14 about the relationship of the Part 52 process of  
15 standardization and the level of design detail made  
16 the following statement. "However, we feel at this  
17 time that standardization should not be imposed by  
18 regulation." That's a comment that we heard earlier.

19 Can you expand on that? Because, frankly,  
20 I thought that was what Part 52 and design  
21 certification was all about. What's your perspective  
22 on that?

23 MR. LEE: I'm not sure where that comment  
24 came from, but I guess that may have been a comment  
25 out of frustration on the definition of what

1 standardization means, and we may be talking about  
2 that for the next five years also.

3 COMMISSIONER CURTISS: Well, I'll read you  
4 some of the background. It's by Mr. Eng from NUMARC.  
5 "In other words, for the staff to make its  
6 determination of adequate safety of design, it's not  
7 our intent during our briefing," referring to the ACRS  
8 briefing, "today to discuss standardization. We  
9 certainly recognize that there is a significant amount  
10 of work that needs to be done with regards to  
11 standardization. The Nuclear Power Oversight  
12 Committee has asked NUMARC to coordinate various  
13 activities with regards to assessing options for  
14 enhancing standardization." Then the comment,  
15 "However, we feel at this time that standardization  
16 should not be imposed by regulation."

17 MR. LEE: I'm not sure what the basis for  
18 that was.

19 COMMISSIONER CURTISS: Okay. I guess I  
20 raised that question because I think Doctor Murley  
21 raised the same point in the earlier briefing in  
22 April, and I gather that there are some economic  
23 considerations that may be involved in the extent to  
24 which standardization is driven by the regulation.  
25 And what I hear you saying here is that the safety

1 information -- that information which is necessary for  
2 the Commission to make its safety findings -- ought to  
3 be what we focus on, with requirements beyond that  
4 that might achieve standardization or continue to  
5 foster it, I guess, being outside of the regulation  
6 itself.

7 MR. LEE: Well, I think that, as we've  
8 tried to say several times, we think that the  
9 utilization of Part 52 and the approach that we're  
10 talking about here will in fact result in a high  
11 degree, a high level of standardization in these  
12 plants, that the variations from the first, second,  
13 and third units are going to be very small for the  
14 reasons that I think Marc has discussed before. The  
15 hazards of that are very great.

16 And I just have a note that we're talking  
17 really -- and I think Ray Eng was talking beyond the  
18 design situation but into some of the additional areas  
19 of standardization.

20 COMMISSIONER CURTISS: Beyond Part 52  
21 issues.

22 Marc, let me turn to the two-tier  
23 approach, because I have a couple of questions about  
24 that.

25 First, if I understand what you're

1 proposing here, the tier 1 information that would be  
2 submitted both for the design certificate and with a  
3 parallel approach for the COL would be -- could be  
4 modified only through an amendment or an exemption  
5 under Part 52 --

6 MR. ROWDEN: Right.

7 COMMISSIONER CURTISS: -- which would in  
8 turn require the opportunity for a hearing under --

9 MR. ROWDEN: 52.97.

10 COMMISSIONER CURTISS: -- 52.97, right.

11 I guess the first question I have is what  
12 level of detail are you talking about in tier 1? I  
13 read your statement here that the first tier would  
14 contain a description of the certified design based on  
15 SSAR section 1.2 with detail comparable to that in  
16 current SERs. SERs on section 1.2 or the entire SER?  
17 How much are we talking about?

18 MR. ROWDEN: The comparable section of  
19 1.2. When we began to prepare our recommendations  
20 with regard to the specific contents of a design  
21 certification rule, it became clear to us that it was  
22 going to be difficult to deal with this simply in  
23 conceptual terms. We do have in an appendix to the  
24 NUMARC ITAAC report a description in conceptual terms  
25 of what the contents of tier 1 would be. It's based

1 on 1.70. It's based on the contents of the standard  
2 review plan, and it relates to SSAR section 1.2 --

3 COMMISSIONER CURTISS: Right.

4 MR. ROWDEN: -- which we concluded was too  
5 sketchy. We wanted at least a level of detail  
6 equivalent to that in an SER. That's a proposal.  
7 That's not required by Part 52. That's a negotiation,  
8 if I might say, that's going to take place between the  
9 applicants and the staff and the Commission.

10 So basically, what I'm saying is it ought  
11 to be sufficiently detailed to assure the Commission  
12 that we are appropriately applying the very severe  
13 constraints that are contained in 52.63 and 52.97(b)  
14 and appropriately applying to the second tier with a  
15 greater latitude which is allowed by 50.59.

16 We have given, beyond the conceptual  
17 description of level of detail, examples in our report  
18 of how we would deal with level of detail, I believe,  
19 for an aspect of the containment and the RHR, if I'm  
20 correct in that regard, David, of what would be in  
21 level 1 and what would be in level 2. So we've tried  
22 to give that specific content. Beyond that, it's  
23 going to be a matter -- it's going to be an iterative  
24 process between design certification applicants and  
25 the staff --

1 COMMISSIONER CURTISS: If we wanted to get  
2 a representative idea of what kind of level of detail  
3 was contained in tier 1, what you're saying is we'd go  
4 to an SER for chapter 1.2 of the FSAR and that's the  
5 kind of detail we could expect to see?

6 MR. ROWDEN: That's right, as we have  
7 translated that into a specific example in an appendix  
8 to our ITAAC report. But again, as I say, this is not  
9 something that we derive from Part 52.

10 The only guidance, if you're looking for  
11 Commission guidance, I quoted it several times in the  
12 course of my presentation because it's the only  
13 guidance that the Commission has given, that what  
14 would be in the design certification are those  
15 elements of the design that couldn't be changed under  
16 50.59.

17 COMMISSIONER CURTISS: Okay. I guess I  
18 have one other comment. You make a forceful  
19 presentation for the tier 2 approach and, in fact, quoting  
20 from the language of the Commission set forth in the  
21 statement of considerations. What I gather you're  
22 talking -- what I gather you're proposing here is that  
23 true standardization would consist of level one  
24 information or, to put it differently, to the extent  
25 that level two could be changed through a 50.59

1 process. And to the extent that changes in the design  
2 move us away from standardization, in focusing on the  
3 degree of standardization we want to achieve, we ought  
4 to look at the four corners of tier 1 information.

5 MR. ROWDEN: No, sir, that is not my  
6 position.

7 COMMISSIONER CURTISS: He's shaking his  
8 head.

9 MR. ROWDEN: Well, I take respectful  
10 exception to that. I believe one has to look at both  
11 tiers. I tried to make it clear that what the  
12 Commission reviews, what the Commission approves, the  
13 obligations which later applicants for a combine  
14 license and combined license holders accept are the  
15 requirements of both tiers. Both tiers are binding.  
16 There is greater latitude, not unfettered latitude,  
17 greater latitude for change in tier 2, but you cannot  
18 look at the standardization effect of the two-tier  
19 process.

20 Forget about the two-tier process. The  
21 two-tier process simply is a formatting of what the  
22 Commission says in Part 52. You cannot look at that  
23 without looking not only at what the Commission  
24 certifies in the design, but what the Commission  
25 approves in the application and in the total design

1 certification proceeding. That is what you look at  
2 to determine whether you have an appropriate degree of  
3 standardization.

4 MR. REHN: But I think the point you were  
5 making certainly was along the lines that if you have  
6 something in tier 2 that you know is going to be  
7 subjected to the possibility of changes under 50.59  
8 and to the extent that that is not a consideration  
9 that you deem appropriate, then consideration would be  
10 given to move it into tier 1. I think I agree with  
11 what Marc is saying.

12 MR. ROWDEN: That I agree with.

13 MR. REHN: I'm just going, I think, on  
14 what I heard Commissioner Curtiss say.

15 COMMISSIONER CURTISS: All right.

16 That's all I have, Ken.

17 CHAIRMAN CARR: Well --

18 COMMISSIONER CURTISS: That's really not  
19 all I have, but I'll turn it over here. I have more  
20 that I would pursue if we had the time, but I'll  
21 pursue it individually.

22 CHAIRMAN CARR: Nobody's pressed you.

23 COMMISSIONER CURTISS: I'll come back if  
24 we do.

25 CHAIRMAN CARR: As far as commenting on

1 the schedule, with all due respect to my fellow  
2 Commissioner over here, the schedule is not nearly as  
3 important to me as doing it right because what we're  
4 going to do in this particular situation we're going  
5 to have to live with for the next 40 or 50 years for  
6 sure and I don't want it to do like the last 40 or 50  
7 years. So, it's more important to me to make sure  
8 that what we put in place here is what we really want  
9 to put in place than to fret about whether we lose a  
10 month or two months or three months on the schedule.  
11 My experience with schedules and buildings of plants,  
12 two or three months has not been critical in most of  
13 the plants we've built anyway.

14 It seems to me the big question here we're  
15 discussing in all this is -- the numbers may be wrong,  
16 but it costs about \$600 million to get the final  
17 design that somebody can start cutting metal and  
18 building a plant. The question we're arguing about is  
19 who's going to put up the money, whether the guy who  
20 is going to design the plant is going to put it up and  
21 then the utility is going to buy it or whether it's  
22 going to be a cooperative venture or just the buyers  
23 are not saying to me, "I'd buy it if it was  
24 certified." I guess that's what I heard today, "I'd  
25 buy it if it was certified."

1           My question to the vendors is, why don't  
2           you get a plant certified so they can buy it, a  
3           complete, fully equipped design so they know what  
4           they're putting their money out for? That puts it  
5           right where it is today, who's going to put up the  
6           money to buy the design.

7           That's my opinion. Do you want to comment  
8           on that?

9           MR. LEE: Well, I think that is the major  
10          question, Mr. Chairman, as to where do we find the  
11          money to do that. I think it's highly unlikely that  
12          the utilities in today's situation will be able to or  
13          can --

14          CHAIRMAN CARR: But they're going to pay  
15          that bill somewhere. That design doesn't come for  
16          free.

17          MR. LEE: I understand --

18          CHAIRMAN CARR: It's a question of whether  
19          they pay it up front or they pay it at the end.

20          MR. LEE: Oh, I think what Sherwood was  
21          saying, there's a significant difference between  
22          making a commitment before we know that the process  
23          can get something through the design certification and  
24          making it after that in terms of prudence with the  
25          public utility commissions. I think that's -- they've

1 all been burned very badly in that respect.

2 CHAIRMAN CARR: The object of this drill  
3 was to get that design certified before anybody  
4 started spending billions of dollars building a plant.

5 MR. LEE: Well, I understand, but I hate  
6 to sound naive, but hundreds of millions of dollars is  
7 also large amounts of money. I don't think that  
8 the --

9 CHAIRMAN CARR: Let me rephrase the  
10 question. What percent of the total plant engineering  
11 do you expect to be complete at design certification  
12 using your tier 1, tier 2 proposal? How much of the  
13 design engineering is going to be done? What am I  
14 certifying?

15 MR. LEE: Design engineering.

16 CHAIRMAN CARR: Something a guy can build.

17 MR. LEE: Pardon?

18 CHAIRMAN CARR: Something a guy can go out  
19 and start building.

20 MR. LEE: Dave or --

21 MR. REHN: Well, that's a question I know  
22 we've wrestled that and it's been asked to be  
23 quantified in terms of dollars, in terms of numbers of  
24 drawings released, in terms of the size of the  
25 calculations that may back it up or the specifications

1       that are --

2                   CHAIRMAN CARR:   It would mean more to me  
3       if you'd just say percent of drawings that are issued  
4       to the guy who is building.   Let's put it that way.

5                   MR. REHN:   We made the distinction when we  
6       were working through this process of separating what  
7       we call design details and what I would call  
8       construction details.   I'll give you just a real  
9       simple example.

10                   In a fluid system, the piping analysis  
11       itself, there is a certain element of the design which  
12       will be done, and will be done at the design  
13       certification stage, that will complete define the  
14       functional characteristics of this particular system,  
15       the performance requirements of the components, a lot  
16       of detailed documentation, pipe routings.   What won't  
17       be available is the final set of drawings, as an  
18       example, that would contain the details for the  
19       individual pipe supports.

20                   CHAIRMAN CARR:   Well, just take that  
21       example then.   How much design work is involved in the  
22       first part versus how much in the second part?   You  
23       know, my architect gives me his big picture, then he  
24       says, "We turn it over now to the guys who are going  
25       to implement it," and I find out he's got seven more

1 people working twice as hard on that. So, I owe him  
2 ten times as much money as I did to get his original  
3 picture of the house.

4 MR. REHN: Pipe supports have probably  
5 been the extreme example. As a percentage, we  
6 probably have spent more of the total design on a  
7 fluid system in the final specification and detailing  
8 of pipe hangers. Clearly, that's not the case for a  
9 building structure, where I would say typically a  
10 significant portion of all drawings, those necessary  
11 for the design and for the construction, would be  
12 available. But looking at a fluid system, I'd say  
13 there's about a 50/50 split between that which is  
14 necessary to do all the front end design work and the  
15 final issuance of the construction details associated  
16 with the pipe hanger schedules.

17 CHAIRMAN CARR: Do you want to take a  
18 guess at how much engineering -- let's just say  
19 manhours of engineering that are going to have to be  
20 charged off to this design when it's built are going  
21 to be available at the certification stage? Maybe  
22 I'm --

23 MR. REHN: I understand the question.

24 CHAIRMAN CARR: If one of those vendors  
25 wants to take a guess at it, I don't care. Maybe I'm

1 asking the wrong guy.

2 MR. REHN: We've sampled the industry and  
3 we've gotten a variety of responses. A lot is  
4 dependent upon the particular design and the  
5 particular architect engineer, for instance, that  
6 would be designated to complete the balance of plant.  
7 Many of the designs that the major manufacturers are  
8 currently undertaking involve a teaming relationship  
9 with a particular AE or utility or combination of both  
10 to complete a lot of what is essentially complete  
11 design. That's the point and I guess that's the  
12 thoughts that we have, is that the design process  
13 would be essentially complete. Now, the construction  
14 details are the -- or is the portion that would  
15 remain.

16 An estimate that we have, I guess, at the  
17 time that we would be looking at preparing for a COL,  
18 we would probably have about 30 percent, a little  
19 less, of total hours maybe necessary to develop these  
20 construction details and support the procurement  
21 process associated with procuring those individual  
22 components that were defined in the original  
23 specification. That's an element, if you will, of the  
24 engineering aspect that typically does not result in  
25 an issuance of a drawing process.

1                   MR. ROWDEN: Mr. Chairman, if I may, and  
2 I'm very humble on this issue as a lawyer and not an  
3 engineer, but make a suggestion. What you raise is an  
4 important question. I think it's too important to  
5 just wing it. We made it a strong suggestion to the  
6 staff which Byron Lee has reinforced, that the  
7 industry have an opportunity to comment on the  
8 alternatives to the design detail the staff is  
9 presenting. It seems to me in that context a  
10 carefully considered and accurate, or at least more  
11 accurate answer than something that just top of the  
12 head or seat of the pants --

13                   CHAIRMAN CARR: That's fair enough.

14                   MR. ROWDEN: -- would be more helpful to  
15 you. Let me make it one more observation, since I do  
16 have the floor. Although the cost factor is  
17 important, it would be disingenuous to disregard it,  
18 who pays and when, particularly when there's no  
19 particular order that a vendor has on the horizon.

20                   There are other considerations which the  
21 Commission has already considered important in the  
22 past. The Commission was very mindful, as I was  
23 brought to recall when I went over some of the past  
24 statements, policy statements, of the anti-competitive  
25 aspects of having too much design detail certified in

1 terms of the constraints it would place on competitive  
2 procurement. Whether that is still an important  
3 issue, well, this 1978 policy statement was an issue  
4 that was given considerable attention by the  
5 Commission. There was a staff report, there was  
6 discussion with the Department of Justice. This is a  
7 very material consideration, we believe today, if not  
8 from an anti-trust standpoint, at least from the  
9 standpoint of utility procurement. I'll let the  
10 utilities speak to that, but they're certainly not  
11 unmindful of the desire to have competitive sources  
12 apply.

13 All I'm saying is that there are a variety  
14 of factors that go into the question from a policy  
15 standpoint of what is the appropriate level of design  
16 detail. You've talked about one, I've talked about  
17 another. I think we'd like to have an opportunity to  
18 contribute our views on those and others before the  
19 Commission reaches a decision on the proposals or  
20 their --

21 CHAIRMAN CARR: You're asking for delay.

22 MR. ROWDEN: I'm not asking for delay, I'm  
23 asking for an opportunity to be a part of the  
24 decisional process.

25 CHAIRMAN CARR: I think that's proper.

1 MR. LEE: I think I have to add one other  
2 comment also, Mr. Chairman. I think that again we  
3 have to look at, that the program right now, that  
4 there has been hundreds of millions of dollars spent  
5 on already, involves four designs. I think again  
6 consistent with the comments that Marc made, I think  
7 that in this country we do need alternatives, I think  
8 the alternatives in size, the alternatives in designs.

9 After all, if this market or when this  
10 market -- I should be more optimistic -- when this  
11 market comes back, the market in this country is much  
12 bigger than anything any place else. And I think we  
13 do need alternatives. We can't depend on a single  
14 source. That's the whole problem that the utilities  
15 wrestle with all the time.

16 CHAIRMAN CARR: I don't disagree with  
17 that.

18 As I understand, your major piping runs  
19 and cable tray routing will be identified in this  
20 design description that you're planning to put out.

21 MR. REHN: Well, it will be as a part of  
22 the design certification application.

23 CHAIRMAN CARR: Yes. That would be in  
24 tier 1, as I understand it.

25 MR. REHN: Well, to the extent that it's

1 necessary to define those safety issues. Typically,  
2 issues such as separation and what not would require  
3 you to have that level of detail.

4 CHAIRMAN CARR: Once we certify a design,  
5 if I visit plant 2, I'd find the components in the  
6 same location. Would I find the same cable in the  
7 same cable tray?

8 MR. REHN: I would have to say typically  
9 yes, but that's not necessarily an absolute.

10 MR. LEE: But you'd have all the  
11 requirements of separation and all other requirements  
12 met.

13 MR. REHN: Yes. There may be a bank of  
14 trays in a given location and through separation the  
15 other train is existing on another side of a building.  
16 Well, within that bank of specified trays, that cable  
17 would reside on all plants.

18 CHAIRMAN CARR: Piping supports might be  
19 or might not be in the same general location then?

20 MR. REHN: Well, I guess typically we  
21 would expect them to be in the same location.  
22 Certainly there's going to be an economy associated  
23 with utilizing the same analytical techniques that  
24 were used on the first plant. However, piping  
25 analysis again is probably an extreme example where

1 vendor information, specific supplier information has  
2 made perturbations on it, particularly on your seismic  
3 analysis. Changes in valve weights or sizes,  
4 orientations can affect that and can require an  
5 additional support or move it over slightly.

6 CHAIRMAN CARR: Let's look at the tier 1,  
7 tier 2 thing. Both tiers are going to be certified.

8 MR. ROWDEN: No, sir. The first tier will  
9 be certified. The other will be documented in the  
10 design certification rule as matters which were the  
11 basis for the Commission's review and they've formed  
12 the basis for the issues that have been resolved in  
13 the design certification proceeding. Only tier 1  
14 would be certified. That would be the certified  
15 design. The balance, as we've described it, are the  
16 balance of the contents of the application.

17 CHAIRMAN CARR: And industry has the  
18 option of changing that, but I don't have.

19 MR. ROWDEN: Industry, under the  
20 Commission's regulations, is given the latitude to  
21 apply 50.59, which is exactly the way it works now.  
22 The difference is that the Commission, the staff, the  
23 Commission, interveners in the design certification  
24 proceeding, would examine the appropriateness of  
25 50.59's applicability to what we propose.

1 CHAIRMAN CARR: Yes, I understand that.  
2 But we've set Part 52 up pretty specifically to keep  
3 me from making any changes unless they're really  
4 critical to safety.

5 MR. ROWDEN: In tier 1, that is exactly  
6 the case.

7 CHAIRMAN CARR: Well, in the whole design  
8 after it's certified.

9 MR. ROWDEN: Well, tier 1 would be the  
10 only part of the design that is certified. Let me  
11 also point out --

12 CHAIRMAN CARR: Oh, so I can now make  
13 changes in tier 2?

14 MR. ROWDEN: The ability of the Commission  
15 to make changes in tier 2 is not as limited as its  
16 ability under tier 1. Under tier 1, the Commission is  
17 obliged to apply the much more stringent backfit  
18 requirements that they have incorporated in Part 52.  
19 Tier 2 would be subject to 50.109, which provides for  
20 less, significant but nevertheless lesser backfit  
21 constraints. This is another difference.

22 COMMISSIONER CURTISS: Let me clear that  
23 up. What you would get in tier 2, if I understand the  
24 process you've described, is issue preclusion. That  
25 is to say tier 2 issues would be litigated -- could be

1 litigated at the front end and if changed through a  
2 50.59 process, a hearing would not have to precede  
3 that change, and you would get backfit protection  
4 under Part 52 and 50.109.

5 MR. ROWDEN: No, 50.109 would apply only  
6 to tier 2, not Part 52. Part 52, as I read the  
7 literal requirements, and I believe this is the  
8 sensible reading of Part 52, applies the more  
9 stringent backfit requirements contained in 52.63 to  
10 the certified design, which as we have proposed it  
11 would be tier 1.

12 Now, it's not simply a question of issue  
13 preclusion under tier 2. Later combined license  
14 applicants would be obliged to comply, as would later  
15 combined license holders would be obliged to comply  
16 with the contents of what is in tier 2. Now, the  
17 staff similarly or the NRC similarly would be  
18 precluded from making any backfit changes to the  
19 contents of what's described in tier 2 unless they  
20 meet the requirements of 50.109, which I said are  
21 lesser in their severity than the requirements of the  
22 Part 52 backfit.

23 COMMISSIONER CURTISS: Right.

24 MR. ROWDEN: So, there are differences.  
25 We think the differences not only comply with what the

1 Commission has prescribed, but that it's a sensible  
2 differentiation.

3 MR. LEE: There seems to be a real concern  
4 that with the use of 50.59 there's going to be  
5 wholesale changes in the designs and what have you.  
6 Again, I think as Marc had reiterated before, I don't  
7 think that -- there's no doubt in my mind that it's  
8 not in the best interest of the utilities nor the  
9 manufacturers. Secondly, I'll look back at the  
10 existing plants and if you look at the plants in the  
11 terms that I think that you're worrying about, Mr.  
12 Chairman, we haven't seen those kinds of wholesale  
13 plants.

14 CHAIRMAN CARR: Well then, I guess I don't  
15 understand why you need that flexibility that you're  
16 talking about. Why not -- you know, tier 1 -- to me,  
17 the flexibility we afforded, the certified design was  
18 going to have everything in it but site specific  
19 problems.

20 MR. ROWDEN: Mr. Chairman, that's the  
21 flexibility that the Commission afforded. We think  
22 sensibly, but we are --

23 MR. LEE: Well, it's necessary, right.

24 MR. ROWDEN: The Commission specified that  
25 50.59 would apply to what it characterized as the

1       uncertified part of the design and the uncertified  
2       part of the design --

3               CHAIRMAN CARR: Is the site specific part.

4               MR. ROWDEN: No, sir, it's the contents of  
5       the application -- it's the contents of the  
6       application that were not certified.

7               CHAIRMAN CARR: Well, we're arguing about  
8       what the application is going to consist of.

9               MR. ROWDEN: Well, that's true. That gets  
10      down to what the appropriate level of detail is going  
11      to be.

12              MR. LEE: And I might say that 50.59 has  
13      been useful and necessary in the existing process, but  
14      yet has not resulted in these wholesale changes in the  
15      plant that seem to be of concern.

16              MR. ROWDEN: We have to have a flexibility  
17      mechanism, Mr. Chairman.

18              CHAIRMAN CARR: Give me an example of the  
19      flexibility that you're going to use.

20              MR. REHN: Well, we talked about several  
21      potential issues that may come up. I guess focusing  
22      on pre-operational testing issues that may be  
23      identified in the early phases of the maintenance  
24      aspects associated with a piece of equipment, may  
25      define a need to modify locally part of that

1 component. To the extent that all of those details  
2 are defined in tier 1 and if we need to make that  
3 change, we would then have to go through the exemption  
4 or change process associated --

5 CHAIRMAN CARR: Well, what's wrong with  
6 that?

7 MR. REHN: I don't know that there's  
8 significant concerns, but the potential is there to  
9 have a series of hearings every time we encounter one  
10 of those situations. And to the extent that we're  
11 arguing about a small change to a design --

12 MR. ROWDEN: Not safety significant.

13 MR. REHN: Not safety significant, we  
14 believe is going to be unworkable.

15 MR. ROWDEN: Yes, Mr. Chairman, I said we  
16 shouldn't be disingenuous on the industry side about  
17 the cost factor. I think that we also have to be  
18 realistic in facing up to the practical consequences  
19 of procedural obstacles. The fact of the matter is  
20 52.97(b) poses a very substantial procedural hurdle, a  
21 daunting one, to anyone who is constructing a facility  
22 in terms of making a change that constitutes an  
23 amendment. We're very sensitive to that in devising  
24 the implementation approach which we are proposing to  
25 the Commission, and I think appropriately so.

1                   CHAIRMAN CARR:     Well, I agree. I  
2 understand that. What I'm trying to get -- fix in my  
3 mind is what kind of a flexibility do you suddenly  
4 find you need? If you're already in the test phase  
5 after you've built the plant, you're telling me that  
6 we certified a design that didn't work very well. Is  
7 that standard? I mean, you know, I don't have a  
8 practical example, I guess, of what you're thinking  
9 about.

10                   COMMISSIONER REMICK:   Would changes due to  
11 obsolescence be --

12                   MR. LEE:     Yes, I was just going to say  
13 that in the whole process it may be that the equipment  
14 that you consider initial --

15                   CHAIRMAN CARR:   But we don't certify the  
16 nameplate on the equipment. That's outside the  
17 certification. The equipment itself is not part of  
18 the certification. We've agreed to that, I think.

19                   MR. LEE:     Well, that's a major  
20 clarification, if in fact that's --

21                   CHAIRMAN CARR:   I mean that's what your  
22 thing says here.

23                   MR. LEE:     Yes. Yes, that's our position.

24                   CHAIRMAN CARR:   If they want to update the  
25 equipment, that's not part of the certified --

1 MR. LEE: But when you do that, you have  
2 to make some changes in design that Dave was talking  
3 about. If I now have a different -- slightly  
4 different configuration on that component, then I may  
5 have to make some changes. Or if, in fact, for some  
6 reason or other I do not meet one of the acceptance  
7 criteria, I have to make some changes, that fits in  
8 the same category rather than having that opportunity,  
9 as long as it is not a safety-significant issue.

10 COMMISSIONER REMICK: But suppose you  
11 needed to change cabling at some future time and there  
12 was a new insulation out, would that be one of the  
13 cases you would use the 50.59?

14 MR. REHN: If that level of detail was  
15 specified in our application and contained as part of  
16 tier 2, then the answer would be yes. Furthermore, if  
17 that level of detail had been provided and was  
18 contained within tier 1, then that would require us to  
19 get into the hearing and exemption or amendment  
20 process.

21 COMMISSIONER CURTISS: It seems to me the  
22 key question is what's the difference between tier 1  
23 and tier 2. I guess my question, we've got 50.59s  
24 today where we change out steam generators under  
25 50.59. I'm not concerned with the interferences that

1       you're talking about where the cable tray runs up  
2       against the pipe and you have to move it six inches.  
3       But if I recall correctly, didn't we 50.59 the Diablo  
4       Canyon containment under that procedure?

5               What I'm looking for is a way to -- I  
6       think the Chairman is picking up on this, to address  
7       the legitimate kind of interferences that you would  
8       encounter in construction without seeing 50.59 applied  
9       in the way, frankly, that it is today. I'm not  
10      objecting to the way it's applied. I'm not suggesting  
11      that there's anything improper about 50.59 in steam  
12      generator replacements, but doing that in the context  
13      of a custom-built plant versus doing it in the context  
14      of a Part 52 certified design it seems to me involves  
15      different questions.

16             Additionally, the safeguards mark that you  
17      referred to that attach up to the point of the COL, I  
18      don't think, if I understand the ones that you  
19      enumerated, have the same kind of force after issuance  
20      of the COL and where 50.59 for the same reasons could  
21      be used to -- well, take Wolf Creek and Callaway, for  
22      instance, which were two identical plants at the time  
23      of licensing but with the 50.59 process look  
24      significantly different today.

25             MR. ROWDEN: I understand our proposal,

1 but also as I understand the Commission's regulations,  
2 Part 52, 50.59 would not be applicable until a COL is  
3 issued. The Commission has said that a licensee may  
4 utilize 50.59 to make changes to the uncertified  
5 portion of the design. 50.59 is not applicable before  
6 a combined license is issued.

7 COMMISSIONER CURTISS: I understand that.

8 MR. ROWDEN: Now, in terms of the concern  
9 that you've expressed, we've attempted to be very  
10 forthright in stating that this is a matter which is  
11 legitimately going to occupy the staff, assuming the  
12 two-tier approach is acceptable, legitimately going to  
13 occupy the staff and the design certification  
14 component in determining, proposing on one part and  
15 determining on the other what will be in tier 1 and  
16 what will be in tier 2. I can't give you anything  
17 more definitive than that. It's going to be an  
18 iterative process that's going to have to proceed  
19 under general guidelines.

20 CHAIRMAN CARR: What would you think of a  
21 two-tier approach for the first plant only and then  
22 that design is certified as built, except for the  
23 component you can buy from some other supplier?

24 MR. LEE: Then you truly run --

25 CHAIRMAN CARR: I mean I can see -- then

1 at the end of that period, I'd know exactly what you  
2 were talking about that needed to be changed during  
3 construction, but those problems are behind us.

4 MR. LEE: But then you truly run into the  
5 obsolescence or unavailability, not obsolescence in  
6 the sense that the manufacturer decides not to build  
7 it anymore.

8 CHAIRMAN CARR: But you don't have to buy  
9 it from the same manufacturer. You want that  
10 flexibility.

11 MR. LEE: Yes, but then you'd have to make  
12 some of the other changes we're talking about.

13 CHAIRMAN CARR: I'm not certifying the  
14 manufacturer.

15 MR. LEE: I understand that. But I  
16 believe you would then have to make some of the other  
17 changes that Dave was referring to to accept this new  
18 pump or heat exchanger or whatever it happens to be,  
19 very minor maybe in some -- in most cases, I believe.  
20 I mean you're certainly not going to change the  
21 general configuration or layout of the whole room.

22 MR. ROWDEN: If standardization means  
23 generic pre-approval of designs, I certainly would say  
24 that we ought to stick with the concept and the  
25 program of generic pre-approval of design and that

1       these issues ought to be confronted at the outset to  
2       determine the viability of what we're -- we call it  
3       two tier. That's just our way of formatting the way  
4       it's going to operate.

5               It would operate the same way as the  
6       Commission has described it, but perhaps under a  
7       different guise. But I think the same issues would  
8       have to be addressed, the extent to which you're going  
9       to apply 52.97(b) to the parts of the design, the  
10      extent to which you're prepared to see 50.59 applied  
11      to the balance of the design.

12             Our view is that that ought to be  
13      addressed up front in the applications that are  
14      pending before the Commission now and we believe you  
15      have a viable framework for doing that.

16             CHAIRMAN CARR: Commissioner Remick?

17             COMMISSIONER REMICK: Just one response.  
18      You indicate that we should do it right and I surely  
19      agree. That's part of my concern. To do it right, it  
20      requires good people and a number of them to do it.  
21      I'm very much in favor of doing it right. I'm not  
22      schedule-driven.

23             CHAIRMAN CARR: I knew you weren't.

24             COMMISSIONER REMICK: I like the fact of  
25      predictability.

1 Thank you.

2 CHAIRMAN CARR: Commissioner Rogers?

3 COMMISSIONER ROGERS: Nothing.

4 CHAIRMAN CARR: Commissioner Curtiss?

5 COMMISSIONER CURTISS: No more.

6 CHAIRMAN CARR: Well, I'd like to thank  
7 NUMARC for providing your views on the essentially  
8 complete design issue. I can assure you the  
9 Commission will give appropriate consideration of the  
10 need for flexibility in plant designs as we pursue  
11 the goals of preserving public health and safety and  
12 achieving standardization for the next generation of  
13 plants built in this country.

14 The Commission will consider your views as  
15 it develops a reasoned approach to divining the level  
16 of design detail necessary for design certification.

17 As I've said before, we shouldn't build  
18 the next generation of plants like we built the first  
19 hundred. Among other potential problems, excessive  
20 diversity on design can increase the complexity of  
21 maintenance, can exacerbate the potential for human  
22 error and can make the supply and availability of  
23 spare components more difficult.

24 Providing the right mechanism for  
25 achieving standardization in the next generation of

1 plants is one of my highest priorities. In my view,  
2 Part 52 provides a sensible and stable framework to  
3 ensure safety and achieve standardization.

4 Are there any other comments from my  
5 fellow Commissioners?

6 If not, we stand adjourned.

7 (Whereupon, at 4:01 p.m., the above-  
8 entitled matter was adjourned.)  
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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 ESSENTIALLY COMPLETE  
DESIGN ISSUE FOR PART 52 SUBMITTALS

PLACE OF MEETING: ROCKVILLE, MARYLAND

DATE OF MEETING: JULY 16, 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

7/16/90

SCHEDULING NOTES

Title: Briefing by NUMARC on Essentially Complete Design  
Issue for Part 52 Submittals

Scheduled: 2:00 p.m., Monday, July 16, 1990 (OPEN)

Duration: Approx 1-1/2 hrs

Participants: NUMARC

- Byron Lee, Jr. 5 mins  
President & CEO  
NUMARC
- Sherwood H. Smith, Jr. 15 mins  
Chairman and President  
Carolina Power and Light
- David L. Relin, Division Manager 25 mins  
Catawba Engineering Division  
Duke Power
- Marcus A. Rowden 10 mins  
Fried, Frank, Harris, Shriver  
and Jacobson  
Chairman, NUMARC Lawyers Committee

**NUCLEAR INDUSTRY'S PRESENTATION TO THE  
NUCLEAR REGULATORY COMMISSION  
ON  
DESIGN CERTIFICATION LEVEL OF DETAIL  
&  
THE ROLE OF THE NUMARC INSPECTIONS,  
TESTS, ANALYSES AND  
ACCEPTANCE CRITERIA DOCUMENT**

## **NUMARC DESIGN CERTIFICATIONS, LEVEL OF DETAIL**

### **SPEAKERS**

**BYRON LEE, JR.....PRESIDENT & CEO  
NUMARC**

**SHERWOOD H. SMITH, JR.....CHAIRMAN &  
PRESIDENT OF CAROLINA POWER & LIGHT**

**MARCUS A. ROWDEN, ESQ.....FRIED, FRANK,  
HARRIS, SHRIVER & JACOBSON.....CHAIRMAN  
OF THE NUMARC LAWYERS' COMMITTEE**

**DAVID L. REHN.....DIVISION MANAGER, CATAWBA  
ENGINEERING DIVISION.....DUKE POWER**

## **OBJECTIVES OF INDUSTRY'S APPROACH**

- 0 IMPLEMENT PART 52 BUILDING ON ESTABLISHED PRACTICES**
- 0 REALIZE THREE GOALS**
  - PRESERVATION OF STANDARDIZATION DESIGNS**
  - EARLY DEFINITIVE RESOLUTION OF ISSUES**
  - PRACTICAL IMPLEMENTATION OF DESIGN CERTIFICATION FROM CERTIFICATION THROUGH TO OPERATION**

## **DESIGN CERTIFICATION APPLICATION**

- 0 APPLICATIONS WILL CONTAIN MORE INFORMATION THAN UNDER PART 50**
  - ANALOGOUS TO FSAR MINUS AS BUILT NAME PLATE AND SITE SPECIFIC DETAILS**
  - DELINEATION OF INSPECTION, TESTS ANALYSIS AND ACCEPTANCE CRITERIA**
  - PROBABILISTIC RISK ASSESSMENT STUDY**

## **LEVEL OF DETAIL**

### **0 DESIGN MUST BE SUFFICIENTLY DETAILED TO:**

- DEFINE SYSTEMS, STRUCTURES, AND COMPONENTS THAT CAN AFFECT PLANT SAFETY**
- DEFINE INTERFACE REQUIREMENTS**
- PREPARE PROCUREMENT, CONSTRUCTION AND INSTALLATION SPECIFICATIONS**

**DESIGN MUST BE SUFFICIENTLY DETAILED TO ENABLE NRC TO:**

- COMPLETE SAFETY EVALUATION**
- ASSURE CONSTRUCTION CONFORMANCE**
- PREPARE INSPECTION PLANS AND SCHEDULES**

## **EXAMPLES OF LEVEL OF DETAIL FOR DESIGN CERTIFICATION**

- o CONTAINMENT**
- o HVAC**

## **CONTAINMENT EXAMPLE**

- 0 DESIGN BASES AND CRITERIA**
- 0 FUNCTIONAL DESIGN DESCRIPTION**
  - BUILDING**
  - INTERNAL STRUCTURES**
  - SUBCOMPARTMENTS**
- 0 LOADS & LOAD COMBINATIONS**

## **CONTAINMENT EXAMPLE (CONT'D)**

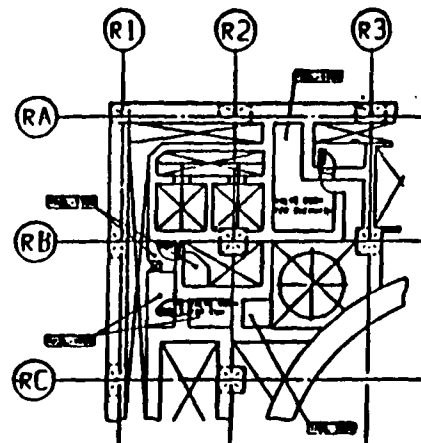
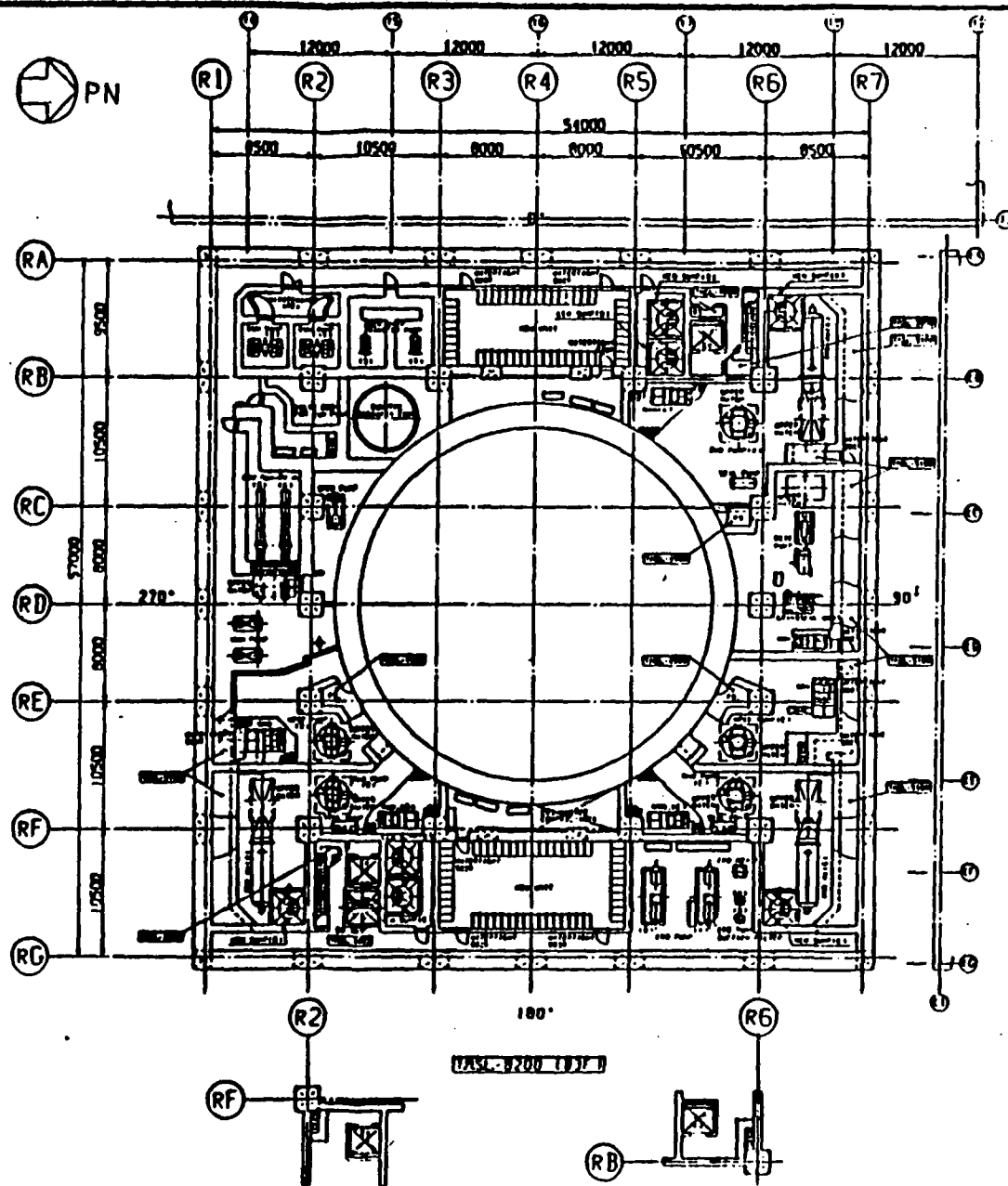
- 0 BUILDING LAYOUT**
- 0 SLAB SIZES**
- 0 TYPICAL REBAR CONFIGURATIONS**
- 0 CODES & STANDARDS**
- 0 ANALYSIS METHODOLOGY**
- 0 ITAAC**
- 0 ACCIDENT ANALYSES**

**Table 6.2-2**  
**CONTAINMENT DESIGN PARAMETERS**

	<b>A. <u>Drywell and Wetwell</u><sup>(1)</sup></b>	<b><u>Drywell</u></b>	<b><u>Wetwell</u></b>
	1. Internal Design Pressure (psig)	45	45
	2. Negative Design Pressure (psid)	-2.0	-2.0
	3. Design Temperature (°F)	340	219
	4. Net Free Volume (ft <sup>3</sup> )	259, 563	210, 475
430.15	5. Maximum allowable leak rate <sup>(2)</sup> (%/day)	0.5	0.5
	6. Minimum Suppression Pool Water Volume (ft <sup>3</sup> )	--	126,427
	7. Suppression pool depth (ft)		
	Low Level	--	22.97
	High Level	--	23.29
	<b>B. <u>Vent System</u></b>		
	1. Number of Vents		30
	2. Nominal Vent Diameter (ft)		2.3
	3. Total Vent Area (ft <sup>2</sup> )		125
	4. Vent Centerline Submergence Low Level), (ft)		
	Top Row		11.48
	Middle Row		15.98
	Bottom Row		20.48
	5. Vent Loss Coefficient (Varies with number of vents open)		2.5 - 3.5
	(1) Item A.1, A.2, A.3 and A.5 apply to related structures including lower drywell access tunnels, drywell equipment hatches, drywell personnel locks and drywell head.		
430.15	(2) Corresponds to calculated peak containment pressure related to the design basis accident conditions.		

# ABWR Standard Plant

13A6100AC  
REV. C



TASL-B200 (10/7/7)

REMARKS (ROOMS)	
1.	CEILING HEIGHT IS 800mm IN CASE OF ROOF REMAIN.
2.	THIS ONE, CORRESPOND WITH JAPANESE VERSION ONE, NO. 110011-100.
3.	EACH SYMBOL MARKS MEAN AS FOLLOWS.
(1)	GRATING
(2)	CHECKED PLATE
(3)	CONCRETE BLOCK
(4)	FIREPLUG
(5)	FRONT OF PANEL AND RACE
(6)	PROXY
(7)	FULL SPACE FOR MAINTENANCE
(8)	HANDRAIL
(9)	ROOFRAIL
(10)	ELEVATOR
(11)	PIPE SPACE
(12)	OVAC DUCT SPACE
(13)	CABLE TRAY SPACE
(14)	NORMAL LOCK DOOR
(15)	STEEL SHIELDING DOOR
(16)	COOR

Figure 1.2-4 REACTOR BUILDING, ARRANGEMENT PLAN AT FLOOR ELEVATION (-) 8200mm

Amendment 4

13-70

**Table 3H.3-1**

**REBAR RATIOS USED IN THE DESIGN EVALUATION**

<b>SECTION NO</b>	<b>LOCATION</b>	<b>REINFORCING STEEL (%)</b>		<b>SHEAR TIES</b>
		<b>MERIDIONAL RADIAL (Each Face)</b>	<b>CIRCUM- FERENTIAL (Each Face)</b>	
1	Containment wall near the foundation mat (W/W)	1.09	0.860	0.50
2	Containment Wall near mid height of W/W	1.09	0.939	0.50
3	Containment wall below D/F slab W/W	1.09	1.291	0.50
4	Containment wall above D/F slab (D/W)	1.09	1.721	0.30
5	Containment wall near mid height of D/W	0.852	1.143	0.30
6	Containment wall below top slab (D/W)	0.852	1.143	0.30
23	Containment top slab near containment wall	0.877 (1)	0.877 (2)	0.56
41	Containment top slab under reactor well pool	0.605 (1)	1.21 (2)	0.56
13	Foundation mat near inside face of containment wall	0.457	0.407	0.42
14	Foundation mat near mid span between the containment wall and the reactor pedestal	0.457	0.407	0.42
15	Foundation mat near the reactor pedestal O.D.	0.631	0.300	0.50

**Notes:**

- (1) Parallel to fuel pool girder  
 (2) Normal to fuel pool girder

Table 3H.3-5

# REBAR AND CONCRETE STRESSES IN THE CONTAINMENT STRUCTURE TOP SLAB AT SECTIONS 23 & 24

(Continued)

Section: 41

Location: CONTAINMENT TOP SLAB UNDER REACTOR WELL POOL

LOAD COMB	ELEMENT NUMBER	AZIMUTH (degrees)	REINFORCING STEEL CALCULATED STRESSES (ksi)				SHEAR TIES	ALLOWABLE STRESS (ksi)	CONCRETE		REMARKS
			INSIDE FACE MERID.	CIRCUM	OUTSIDE FACE MERID	CIRCUM			CALCULATED STRESS (ksi)	ALLOWABLE STRESS (ksi)	
15	3841	180	10.23	12.17	1.36	7.98	20.00	54.0	-0.65	-3.4	
15	3849	90	1.32	-10.67	5.64	-6.83	7.86	54.0	-1.50	-3.4	
15a 15b	3841	180	10.47	1.43	2.21	-6.28	8.32	54.0	-1.02	-3.4	
15a 15b	3849	90	4.53	-10.00	-1.83	-11.62	3.30	54.0	-1.64	-3.4	

## GENERAL NOTES:

1. The load components Ra and Y are not significant to the global structure behavior and therefore are not considered in these calculated stresses. The detailed final design shall include the effects of Ra and Y. If necessary, additional rebar shall be provided in the local areas.

2. The reference axes are as follows:

X is the direction parallel to the R/B fuel pool girders

Y is the direction normal to the R/B fuel pool girders.

## **HVAC EXAMPLE**

- 0 DESIGN BASES AND CRITERIA**
- 0 FUNCTIONAL DESIGN DESCRIPTION**
- 0 FUNCTIONAL OPERATION DESCRIPTION**
- 0 ACCIDENT ANALYSIS**
- 0 FAILURE MODES AND EFFECTS**
- 0 MAJOR COMPONENT LOCATIONS**
- 0 ITAAC**
- 0 P & IDs (DRAWINGS)**

## **CODES & STANDARDS**

- FAN ROUTINGS**            -    **AIR MOVING AND CONDITION ASSOCIATION**
- FAN MOTORS**            -    **NATIONAL ELECTRIC MANUFACTUREERS ASSOCIATION (NEMA, IEEE)**
- EQUIPMENT MANUFACTURING**    -    **ASME/ANSI AG-1-1988**
- DUCT WORK**            -    **SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION (SMACNA)**
- WATER-COOLING & HEATING COIL RATINGS**    -    **AIR CONDITIONING AND REFRIGERATION INSTITUTE (ARI)**

## **CODES AND STANDARDS (CONT'D)**

- COOLING COILS** - **ASME B & PV CODE, SECTION III, CLASS 3**
- HEPA FILTERS** - **ORNL - NSIC-75**
- CARBON FILTERS** - **INSTITUTE FOR ENVIRONMENTAL SCIENCES**
- CONTROL COMPONENTS** - **IEEE, NEMA, AND UNDERWRITERS LABORATORIES**

## **FAN SPECIFICATION**

- 0 FAN TYPE - AXIAL FLOW**
- 0 MOUNTING ORIENTATION - VERTICAL**
- 0 FLOW RATE (CFM) - 100,000**
- 0 FLOW HEAD (INCHES WG) - 4**
- 0 MOTOR TYPE - TEFC**
- 0 MOTOR SIZE (HP) - 75**
- 0 SERVICE ENVIRONMENT**

## **SYSTEM PERFORMANCE**

- O HEAT LOAD (BTU/HR) -  $12 \times 10^6$**
- O AIR FLOW RATE (CFM) - 300,000**
- O COOLING WATER FLOW RATE (GPM) - 2400**
- O COOLING WATER TEMPERATURE (°F PEAK) - 45**
- O NUMBER OF UNITS - 4**
- O % CAPACITY PER UNIT - 33**
- O POWER SUPPLY - 120V & 460V**

## **LEVEL OF DESIGN DETAIL**

**UTILIZING A SPECIFIC ROOM WITH A PUMP, HEAT EXCHANGER AND VALVE AS AN EXAMPLE, A CERTIFIED DESIGN APPLICATION WOULD:**

- 0 DEFINE SAFETY FUNCTIONS AND PERFORMANCE REQUIREMENTS OF EACH COMPONENT AND ITS RESPECTIVE SYSTEM**
  - 0 SPECIFIC LOCATION OF ROOM AND GENERAL ARRANGEMENT OF MAJOR COMPONENTS**
  - 0 RESOLVE GENERIC SAFETY ISSUES SUCH AS: FIRE PROTECTION, SEISMIC, SECURITY AND ENVIRONMENTAL QUALIFICATION**
  - 0 SPECIFIC LOCATION OF MAJOR PIPING, HVAC DUCTWORK AND CABLE TRAY IN THE ROOM**
- LEVEL OF DESIGN DETAIL - DIFFERENCES**

## **LEVEL OF DESIGN DETAIL - DIFFERENCES**

**THE ONLY DIFFERENCES THAT WOULD BE  
OBSERVED AT DIFFERENT PLANTS ARE:**

- 0 DIFFERENCES IN APPEARANCE DUE TO THE  
POTENTIAL FOR DIFFERENT COMPONENT  
VENDORS**
- 0 DIFFERENCES IN LOCAL PIPE AND CABLE  
ROUTING TO SUPPORT VENDOR-SPECIFIC  
COMPONENT CONFIGURATIONS**

## **PRACTICAL IMPLEMENTATION ISSUES OF DESIGN CERTIFICATION**

- o AS BUILT DEVIATIONS**
- o START-UP, OPERATING AND MAINTENANCE**
- o OBSOLESCENCE**
- o EQUIPMENT IMPROVEMENTS**

**ITAAC**  
**(INSPECTIONS, TESTS, ANALYSES AND ACCEPTANCE CRITERIA)**

- 0 INSPECTIONS, TESTS, ANALYSES AND  
ACCEPTANCE CRITERIA, WHICH PROVIDE  
REASONABLE ASSURANCE THAT THE PLANT HAS  
BEEN CONSTRUCTED AND WILL OPERATE AS  
STATED IN THE COMBINED LICENSEE.**
- 0 NOT A SUBSTITUTE FOR DESIGN DETAIL OR  
UNRESOLVED SAFETY ISSUES**

## **IMPLEMENTATION CONSIDERATIONS**

- 0 BUILD ON EXISTING PRACTICES (REGULATORY AND INDUSTRY)**
- 0 ACCEPTANCE CRITERIA INTERWOVEN WITH PLANT SAFETY**
- 0 INCORPORATE A "SIGN AS YOU GO" PROCESS PATTERNED ON REGIONAL READINESS REVIEW PROCEDURE**
- 0 INCORPORATE INDUSTRY OPERATION AND CONSTRUCTION EXPERIENCES**

## **ACCEPTANCE CRITERIA**

- 0 CRITERIA SHALL BE VERY SPECIFIC AND QUANTITATIVE**
- 0 CONFORMANCE WILL BE DEMONSTRATED BY INSPECTION, TESTS OR ANALYSIS**
- 0 CRITERIA DERIVED FROM REGULATORY GENERAL DESIGN CRITERIA OR SIMILAR SAFETY/REGULATORY REQUIREMENTS**
- 0 NON-CONFORMANCES ARE UNACCEPTABLE, ABSENT NRC APPROVAL**

## **INSPECTIONS, TESTS, AND ANALYSES (ITA)**

- 0 ITA BASED UPON EXISTING NRC/INDUSTRY REQUIREMENTS AND EXPERIENCE**
- 0 SUPPLEMENTS EXISTING QUALITY ASSURANCE PROGRAM**
- 0 MEETS PART 52 REQUIREMENTS TO PROVE AS BUILT PLANT CONFORMS TO THE OBLIGATIONS IN COMBINED LICENSE**
- 0 SCHEDULE DRIVEN BY CONSTRUCTION PLAN**
- 0 PERIODICALLY DOCUMENTED IN FEDERAL REGISTER**

## **VALIDATION ATTRIBUTES**

- 0 USED TO VERIFY PHYSICAL PLANT ASSUMPTIONS OR INPUTS USED IN PRE-APPROVED ANALYSIS TO DEMONSTRATE CONFORMANCE**
- 0 VERY SPECIFIC AND QUANTITATIVE**
- 0 DEMONSTRATED BY TEST OR INSPECTION**
- 0 NONCONFORMANCES UNACCEPTABLE EXCEPT WHEN PERMITTED BY 50.59 PROCESS**

## **TWO TIER STRUCTURE OF DESIGN CERTIFICATION RULE**

- 0 BASED ON PROVISIONS OF THE PART 52 RULE THAT DISTINGUISH BETWEEN CONTENTS OF DC THE APPLICATION AND THE DESIGN CERTIFIED BY THE RULE**
- 0 CENTRAL TO INDUSTRY APPROACH FOR DEVELOPMENT AND PRACTICAL IMPLEMENTATION OF ITAAC AND DESIGN CERTIFICATION/COMBINED LICENSE (DC/COL)**

## **DESIGN CONTENT OF DC RULE**

**"...THERE WILL BE LESS DETAIL IN A  
CERTIFICATION THAN IN AN APPLICATION FOR A  
CERTIFICATION (AND) A RULE CERTIFYING A  
DESIGN IS LIKELY TO ENCOMPASS ROUGHLY THE  
SAME DESIGN FEATURES THAT SECTION 50.59  
PROHIBITS CHANGING WITHOUT PRIOR NRC  
APPROVAL." (54 F.R. 15377)**

## **DESIGN CHANGES**

### **o NRC DID NOT ADOPT:**

- PROPOSED INDUSTRY POSITION - 50.59  
APPLIES TO CERTIFIED DESIGN**
- OTHER PROPOSALS... - NO CHANGES  
ALLOWED TO CERTIFIED DESIGN**

### **o NRC FINAL POSITION - RULE**

- NO CHANGES TO CERTIFIED DESIGN  
UNLESS EXEMPTION GRANTED UNDER  
50.12**
- "WHILE 50.59 WILL CONTINUE TO APPLY  
TO THE UNCERTIFIED PORTION" (54 FR  
15377)**

## **LEVEL OF DETAIL - CERTIFIED AND NONCERTIFIED DESIGN**

- o "HOW MUCH DETAIL...IN A DESIGN CERTIFICATION"**
  - "AN ISSUE THAT WILL HAVE TO BE RESOLVED IN EACH CERTIFICATION RULE MAKING"**
  - "COMMISSION EXPECTS LESS DETAIL IN A CERTIFICATION THAN IN AN APPLICATION FOR CERTIFICATION"**

**LEVEL OF DETAIL -  
CERTIFIED AND NONCERTIFIED DESIGN (CONT'D)**

- O "A RULE CERTIFYING A DESIGN IS LIKELY TO ENCOMPASS ROUGHLY THE SAME DESIGN FEATURES THAT 50.59 PROHIBITS CHANGING WITHOUT PRIOR NRC APPROVAL. MOREOVER, THE LEVEL OF DESIGN DETAIL IN CERTIFICATIONS SHOULD AFFORD LICENSEES AN OPPORTUNITY TO TAKE ADVANTAGE OF IMPROVEMENTS IN EQUIPMENT" (54F.R.15377).**

## **FUNCTION OF TWO-TIERS**

- 0 PROVIDES A MEANS FOR FORMATTING AND DOCUMENTING**
  - THE CERTIFIED AND NON-CERTIFIED PARTS OF THE DESIGN**
  - THE CHANGE MECHANISMS THAT GOVERN THE CERTIFIED AND NON-CERTIFIED PARTS OF THE DESIGN IN ACCORDANCE WITH PART 52 REQUIREMENTS**

## **CONTENTS OF FIRST TIER**

- 0 DESIGN DESCRIPTION OF CERTIFIED DESIGN  
BASED ON SSAR SECTION 1.2 WITH DETAIL  
COMPARABLE TO THAT IN CURRENT SER**
- 0 FULL ARRAY OF INSPECTIONS, TESTS,  
ANALYSES AND ACCEPTANCE CRITERIA  
(ITAAC) WHICH PART 52 REQUIRES**
- 0 ANY INFORMATION WHICH THE NRC HAS  
DETERMINED SHOULD NOT BE SUBJECT TO  
CHANGE UNDER 50.59**

## **CONTENTS OF SECOND TIER**

- 0 SSAR DESIGN DESCRIPTION (BY REFERENCE)**
- 0 THE QUALITY ASSURANCE PLAN (QAP) (BY REFERENCE)**
- 0 CHAPTER 16 SSAR TECH SPECS. (BY REFERENCE)**
- 0 SPECIFICATION OF "VALIDATION ATTRIBUTES" WHICH ARE A BRIDGE TO DEMONSTRATING COMPLIANCE WITH FIRST TIER ACCEPTANCE CRITERIA NOT CAPABLE OF DIRECT VERIFICATION**

## **CONTENTS OF SECOND TIER (CONT'D)**

- 0 SECOND TIER SPECIFICALLY DOCUMENTS  
FEATURES AND COMMITMENTS IN APPLICATION  
THAT WERE BASES FOR:**
  - NRC REVIEW AND APPROVAL OF  
APPLICATION**
  - "MATTERS...RESOLVED IN CONNECTION  
WITH THE ISSUANCE...OF A DESIGN  
CERTIFICATION" (10CFR52.63(A)(4))**

## **TWO TIER RIGHTS AND OBLIGATIONS**

- o DC RULE MAKING CONSIDERS AND RESOLVES ALL ISSUES COVERED BY BOTH TIERS, INCLUDING DESIGN DETAIL TO BE INCLUDED IN EACH TIER.**
- o ISSUE RESOLUTION BINDS COL APPLICANTS/LICENSEES, NRC AND INTERVENORS IN COL AND PREOPERATIONAL PROCEEDINGS**
- o COMBINED LICENSE APPLICANTS/LICENSEES OBLIGATED TO COMPLY WITH ALL PROVISION IN BOTH TIERS ABSENT EXEMPTION, AMENDMENT OR OTHER PERMITTED CHANGE**

## **TWO TIER RIGHTS AND OBLIGATIONS (CONT'D)**

### **O CHANGES**

**TIER ONE - EXEMPTION OR AMENDMENT  
PRECEDED BY HEARING OPPORTUNITY  
(10CFR52.63 (B)(1) AND 52.97 (B))**

**TIER TWO - CHANGE ONLY IF MEETS 10CFR  
50.59 REQUIREMENTS (10CFR 52.63(B)(2))**

## **COMBINED LICENSE (COL) CONSIDERATIONS**

- 0 TWO-TIER INCORPORATED IN COL BY  
REFERENCE**
- 0 COL CONTAINS COMPARABLE TWO-TIER  
DESCRIPTION OF SITE-SPECIFIC PLANT  
FEATURES AND OF OPERATION-RELATED  
MATTERS (INCLUDING THE EPP) AND THEIR  
CONFIRMATORY SPECIFICATIONS**
- 0 COL CHANGES GOVERNED BY EARLIER-  
DESCRIBED REGIME**
- 0 GENERAL COL FORMAT VERY SIMILAR TO  
PRESENT-DAY OPERATING LICENSES**

**INDUSTRY'S TWO TIER APPROACH TO  
IMPLEMENTING 10CFR PART 52**

**STATEMENT BY  
MARCUS A. ROWDEN, ESQ.  
FRIED, FRANK, HARRIS, SHRIVER, JACOBSON  
CHAIRMAN, NUMARC LAWYERS' COMMITTEE**

**JULY 16, 1990**

## ROWDEN PRESENTATION

- The two-tier approach to the structure of the Design Certification Rule is based on the specific requirements of Part 52 (as explained by the Commission's Statements of Consideration) which distinguish between what will be submitted for NRC review in the design certification application and what will be contained in the Design Certification Rule itself.
- The two-tier structure is central to our report's recommendations, providing the framework for certified design and related ITAAC development and their DC and COL implementation.
- As to the design content of a DC Rule, the Commission explained that:
  - "... there will be less detail in a certification than in an application for a certification [and that] a rule certifying a design is likely to encompass roughly the same design features that Section 50.59 prohibits changing without prior NRC approval." (54 F.R. 15377).
- Regarding the ability of a COL licensee (or applicant) to make design changes, the Commission first explained that it would not adopt an industry proposal that §50.59 be made applicable for facility-specific changes from the certified design; and that it also

would not adopt recommendations by other commenters that no changes from the certified design be allowed. Instead, the Commission stated:

- "... the final rule ... prohibits a licensee of a plant built according to a certified design from making any change to any part of the plant which is described in the certification unless the licensee has been granted an exemption under 10 CFR 50.12"; however, "50.59 will continue to apply to the uncertified portion". (54 F.R. 15377).

- After recognizing these distinctions, the Commission went on to state: "[H]ow much detail is present in a design certification ... will be an issue which will have to be resolved in each certification rulemaking". And, as earlier stated, "the Commission expect(s) that there will be less detail in a certification than in an application for certification, and that a rule certifying a design is likely to encompass roughly the same design features that §50.59 prohibits changing without prior NRC approval." The Commission then added: "Moreover, the level of design detail in certifications should afford licensees an opportunity to take advantage of improvements in equipment." (54 F.R. 15377).

- The two-tier structure which industry recommends is simply a means for formatting and documenting in the DC Rule the certified and the non-certified parts of the design, and specifying the change mechanisms governing each -- all in accordance with the above-described Part 52 requirements.
- The first tier would contain:
  - a description of the certified design based on SSAR section 1.2, with detail comparable to that in current SERs; and
  - the full array of inspections, tests, analyses and acceptance criteria which Part 52 requires
- The second tier would:
  - Reference the entire SSAR design description. The SSAR is the primary technical document of the design certification application and will be the basis for the NRC's Final Design Approval and Design Certification reviews. By referencing the SSAR in the DC Rule's second tier, the NRC would document the features and commitments that were the basis for NRC approval (beyond those certified in the first tier) and document the "matters ... resolved in connection with the issuance ... of a design certification" (per §52.63(a)(4)).
  - The second tier would also contain the

"validation attributes", which the NUMARC report proposes as a bridge to demonstrating compliance with those first-tier acceptance criteria that are not readily measurable or otherwise verifiable by direct field inspection or test.

[Rehn to deal with this later in greater detail]

- The DC rulemaking would consider and resolve all issues covered by both tiers -- including the design detail to be included in each tier -- for purposes of later COL and preoperational proceedings (per Section 52.63(a)(4)). This resolution of issues will be binding on later COL applicants and licensees, the NRC and any intervenors in subsequent COL and preoperational proceedings.

- As to the two-tiered design description in the DC Rule, COL applicants and licensees will be obligated to comply with all provisions in both tiers, absent an exemption, amendment or other permitted change. More specifically

- Matters covered by the first tier (that is, the design described in that tier and the ITAAC) can only be changed through an NRC-approved exemption or amendment, preceded by a hearing opportunity (per Sections 52.63(b)(1) and 52.97(b)).

- Second tier matters can be changed without NRC approval only if a change meets the requirements of Section 50.59 (per Section 52.63(b)(2)).
- The two-tiers of the DC Rule would be incorporated by reference in any COL utilizing that certified design.
- The COL would also contain a comparable two-tier description of the site-specific plant features and of operation-related matters (including the Emergency Planning Program) and their corresponding confirmatory specifications.
- Overall, the COL format would be very similar to present-day OLs.
- NUMARC believes that the two-tier format, with contents as described, produces a result fully consistent with the specific requirements of Part 52; further, we have tried hard to meet our understanding of the standardization, issue preclusion, and workability objectives inherent in the Commission's Part 52 regulations.

**ELECTRIC POWER SUPPLY AND DEMAND**  
**NEW NUCLEAR ORDERS**

**JULY 16, 1990**

**STATEMENT BY**  
**SHERWOOD H. SMITH, JR.**  
**CHAIRMAN, NUCLEAR POWER OVERSIGHT COMMITTEE**  
**AND**  
**CHAIRMAN AND CHIEF EXECUTIVE OFFICER**  
**CAROLINA POWER AND LIGHT COMPANY**  
**BEFORE THE NUCLEAR REGULATORY COMMISSION**

Mister Chairman, members of the Commission: I appreciate the opportunity to be here today to discuss one of the most important issues facing this country -- the task of supplying the electricity that will be needed in the 1990s and beyond to sustain our economic growth. In one way or another for the last 25 years, I have been involved in planning, siting, licensing, financing, rate making, and managing of organizations with nuclear power plants. My Company was the first to have a commercial nuclear power plant in the Southeastern United States. Today, we have four nuclear units and operate both BWRs and PWRs. Over the years, I've been involved in many national questions about nuclear power having served as Chairman of the American Nuclear Energy Council, the Edison Electric Institute, and on the Boards of the Institute of Nuclear Power Operations, Electric Power Research Institute, American Nuclear Society, and United States Council for Energy Awareness. All of my experience manifests concern about the disastrous effects which can be caused by delays in the planning, design, licensing and construction of nuclear plants.

Providing the new electric supply that will be needed by our country is a complex business involving the balancing of many risks, many uncertainties and many competing interests. No single fuel can satisfy all circumstances, and the U.S. will need all three -- nuclear, coal and natural gas -- in the next 10-15 years. Fuel diversity is one of the great strengths of the U.S. electric supply system.

The electric utility industry wants -- and needs -- to be able to include nuclear energy in its planning for new baseload capacity. America's electric consumers -- for economic and environmental reasons -- need this option and opportunity. Specifically, our industry would like to be able to

plan for, and order, new nuclear plants within the next several years and start construction on them in the 1990s, so they can be on-line by, or very soon after, the end of the decade. In my opinion, we need to be able to place a new order in the mid-1990s. To do this, many issues need to be resolved. Unfortunately, we cannot consider realistically ordering new nuclear units until new designs are certified by the Nuclear Regulatory Commission. Design certification is an essential first step toward creating the regulatory predictability needed for new nuclear plant construction. Any delay in certification will probably be a delay in the time when utilities can order plants.

Let me seek to provide some perspective on electricity supply and demand in the 1990s. I have recently completed a two-year term as Chairman of the Southeastern Electric Reliability Council (SERC) and as a Trustee of the North American Electric Reliability Council (NERC). While our industry has embraced conservation, load management and energy efficiency, still all the data shows that we have a strong growing need for new electric supply. No one knows "exactly" how much new electric capacity we'll need in the next 10 years but it will be substantial. We do know that if our economy grows by 2-3 percent a year then demand for electricity will probably grow at about the same pace -- 2-3 percent a year. That works out to between 100,000 and 200,000 megawatts of new capacity -- in only 10 years. Some of this will need to be peaking capacity; but as we reach the mid 1990s more and more new baseload capacity will need to be in our plans and orders.

The electric industry has plans and commitments for new capacity of various types over the next 10 years, which plans take into account a significant amount of conservation, and demand management by electric

utilities. The annual 10-year assessment by the North American Electric Reliability Council (NERC) published late last year identifies about 72,200 megawatts of new generating capacity planned to be completed for the 1989-98 period, although there are completion risks associated with elements of this planned amount of capacity. Some additional unannounced peaking and new fossil baseload capacity might be added at other locations in a short time frame, but there is growing pressure on utilities to develop more new baseloads capacity than is presently scheduled. As in the past, our utility industry is committed to meeting this growing demand, but there are many challenges.

- o About 41 percent of the planned additions are utility-owned units that are not yet under construction. Given the amount of time it takes to site, secure permits for and build new power plants, it is possible that some of this capacity will not be completed on schedule.
- o About 25 percent of the planned capacity additions are projected to be built by non-utility generators. This raises additional concerns because utilities then will not have direct control over the scheduling and construction of those projects. These units are not being built by utility organizations obligated to serve the public and thus are more subject to schedule changes because of economic, financial and other causes.
- o About 11 percent of the planned capacity is under construction but less than 50 percent complete.
- o Only 23 percent of planned capacity additions are under construction and more than 50 percent complete. But even this

capacity has some risk: it includes a number of nuclear units - including Watts Bar and Bellefonte - whose future schedules and operating status are uncertain.

- o Future fossil plant costs and schedules are subject to substantial adverse impacts under pending air quality legislation and global climate change concerns.

There are other uncertainties, too. The NERC assessment relies on the utilities' current estimates of growth in peak electricity demand. For several years running, actual demand in some areas has exceeded the forecasts - largely because of unpredicted extreme changes in weather conditions. If growth in peak demand continues to exceed the forecasts, NERC sees supply problems in the early 1990s in the eastern half of the U.S. and Canada, unless more new capacity is added. We've already seen the early signs of problems at times of rapid increases in peak demand with voltage reductions and service interruptions in several areas.

To meet this load growth in the 1990s and beyond, the electric utility industry needs and wants to be able to include new nuclear capacity in its plans. It is very much in the public's interest to do so. As stated by President Bush in his letter of May 18, 1990, to the Nuclear Power Assembly:

"Just as America gave birth to nuclear technology in the 1940s, we can lead the world into a new era of safe, reliable, economical, and environmentally clean nuclear power in the 1990s. This clean, domestic source of power lessens the risk of energy dependence on foreign sources. At the same time, environmentally harmful emissions are reduced and economic growth is fostered."

What do we need -- particularly from this Commission -- in order to be able to consider nuclear?

In simple terms, we need a stable, predictable regulatory process. We strongly endorse the Commission's work in this direction. We believe that new nuclear plants, built under stable regulatory conditions, can compete with new coal-fired power plants and should be able to produce lower-cost electricity over their lifetimes than oil-fired or gas-fired capacity. But at the same time we cannot risk repeating the problems of the late 1970s and 1980s -- when construction schedules stretched out to 10, 12 and 14 years and when costs escalated two, three and four times original estimates. We cannot expect state regulators to authorize such projects, or our customers to pay unnecessarily higher costs, and we cannot expect our investors to accept the risk of not being able to recover those higher costs. We are all accountable, in various ways, for the problems of the past and we must learn much from that past experience and take maximum advantage of new improved designs and achieve shorter schedules.

This Commission's April 1989 rule making should go a long way to solving some of the problems we faced in the 1980s. Early site approval, designs that are certified as meeting all requirements before construction begins, combined construction/operating permits -- all these are necessary steps in the right direction.

Let me focus briefly on certification of standardized designs. The electric power industry must have certified designs before we can consider nuclear energy again. We are concerned at the schedule uncertainties we've seen building over the last year, and we are concerned by the prospect of significant new delays.

To be specific:

- o The industry agrees with NRC on the need for parallel review of the EPRI-ALWR Utility Steering Committee Requirements Document and the two evolutionary ALWR plant design certifications.
- o For the passive designs, we agree that the EPRI-ALWR Utility Steering Committee Requirements Document should have the highest priority and should be the mechanism to resolve major technical and policy issues.
- o We also agree with the Commission that the NRC staff should keep abreast of information and activities related to specific passive designs that could be useful in conducting the EPRI review and in preparing for the review of the specific designs.

Design certification on a timely basis is the linchpin of all the other issues before our industry as we seek to re-establish the nuclear option.

We agree with you, Mr. Chairman, that this time we must "get it right." The process of design certification must be thorough, painstaking and impervious to challenge. But it should also proceed on a rapid and timely schedule. The speed and efficiency with which the NRC reviews and approves the advanced nuclear plant designs will make an enormous difference. It will tell the public, the electric utilities, the financial community, and state regulatory commissions a lot about whether there is a future for nuclear power.

It's up to all of us to ensure that we'll have the electric capacity we'll need. To do so, I believe, we must overcome the obstacles that stand in the way of new nuclear plant orders. In a recent poll, 80 percent of the American people recognized that nuclear energy should play an important role

in the National Energy Strategy now being developed by the Department of Energy. The American people are counting on us to do what's necessary to continue to provide an adequate amount of electric power for this country in a way that is safe, economic, and compatible with our environment. To do so, nuclear energy should be a substantial part of our new electricity supply, and we must make it so.

**OPENING AND CLOSING REMARKS BY**

**BYRON LEE, JR.**

**PRESIDENT AND CHIEF EXECUTIVE OFFICER**

**NUCLEAR MANAGEMENT AND RESOURCES COUNCIL**

**BEFORE THE NUCLEAR REGULATORY COMMISSION**

**JULY 16, 1990**

## Opening Remarks

Thank you, Mr. Chairman, for giving NUMARC the opportunity to discuss another segment of the industry's Advanced Light Water Reactor Program. You heard from the EPRI-ALWR Steering Committee about its Requirements Document several weeks ago. Today we want to discuss the utilities' view of future electricity needs and what they believe needs to be done for nuclear power to play a role in those needs. We will also cover the NUMARC Standardization Working Group efforts to develop guidance on implementing the requirements of your new Part 52 Rule. Let me begin by introducing the other speakers who are with me today:

- o Sherwood Smith ... Chairman, President, and CEO of Carolina Power & Light ... and Chairman of the industry's Nuclear Power Oversight Committee (NPOC). He'll discuss projected future electricity demand and capacity and where the nuclear utilities stand on the future of the nuclear option.
- o David Rehn ... Division Manager, Duke Power ... and Chairman of our Task Group on the Inspections, Tests, Analyses and Acceptance Criteria (ITAAC) established by our Working Group. Dave will describe the result of his Task Group's efforts to develop an industry approach to the implementation of Part 52, including level of detail required for design certification and the role of the NUMARC ITAAC Report.

- o And Marcus Rowden ... Chairman of the NUMARC Lawyers Committee and a member of the NUMARC Standardization Oversight Working Group and Task Group. Marc will explain the industry's two-tier approach and how it relates to Part 52 based on our active involvement in the rulemaking process for many years.

Before we begin these presentations, I have a few introductory comments on the design certification process in general.

The industry's approach to implementation of Part 52 supports the three goals we believe are embedded in the rule and desired by the industry:

- o One: Preserve standardization of designs;
- o Two: Assure that issues raised at the design certification stage are resolved and thereby precluded from being reconsidered at the COL and pre-operational stages; and
- o Three: Assure the practicality of the design certification rule at the time of COL issuance, during facility construction, and at the pre-operational stage. In other words, it must take into account the realities of a large complex construction process.

The ALWR design work undertaken by the industry ... EPRI, DOE and the individual suppliers ... is moving along very well. The certification reviews, however, appear to be following the course of the past: Uncertainty. This observation deepens the

industry's fear that we won't have the predictable licensing process needed to support future nuclear plant orders. We hope that as a result of our briefing today we will be able to reduce that uncertainty.

At this point, I'd like to turn the meeting over to Sherwood Smith.

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## Closing Remarks

In closing, Mr. Chairman, I want to thank you and your fellow commissioners for giving us this opportunity to discuss the industry's interest in the future of nuclear power and the implementation approach we believe is consistent with the new Part 52 Rule.

The industry shares the Commission's desire to avoid building future generations of one-of-a-kind plants. The industry believes that the NRC's Part 52 Rule coupled with the implementation approach we've described will provide the needed level of safety and provide the predictable regulatory process also needed to allow utilities to include the nuclear option in their near term planning. We also believe it will produce a high level of standardization.

As you've heard this afternoon, the industry believes timely completion of the design certification process is a necessary prerequisite to a new order for a nuclear unit in this country. It has been suggested that there's no urgency to completing this process because no U.S. utility has stepped forward to order a new nuclear plant. From the U.S. utilities perspective, the situation is just the opposite: As Sherwood Smith said, the utilities have a real need to begin planning new baseload generating capacity, but they feel unable to consider nuclear plants until we've demonstrated that the design certification process works. Until then the regulatory uncertainty makes the financial risks too great. I hope we have helped you understand the utilities' position and their strong desire to move ahead steadfastly.

To do that, the industry and the NRC staff needs policy decisions from the Commission soon in two areas:

- o One: the viability of our approach, especially the two-tier concept; and
- o Two: the level of design detail the Commission believes is necessary to meet the Part 52 Rule.

For nuclear power to figure in utilities' planning in the 1990s for units in the first decade of the next century, we must set tough schedules. The industry urges the Commissioners to make meeting schedules a high priority ... and to apply the necessary resources to do so.

We conclude by stressing the need for parallel review of the EPRI-ALWR Utility Steering Committee Requirements Document and the two evolutionary ALWR plant design certifications. We believe that can be completed by the end of 1992. For passive plants, we concur with the Commissioners' position that the passive Requirements Document review should be given the highest priority to formally resolve the major technical and policy issues prior to specific design reviews. At the same time, to expedite the schedule, there should be interaction between the staff and the specific passive plant suppliers throughout that period. As stated in your SRM of June 6, 1990:

"... the staff should not be precluded from keeping abreast of information and activities related to a specific design which could prove useful in conducting the EPRI review and in preparing for review of that specific design. Additionally, in conducting its review of the EPRI Requirements Document and then specific designs, staff may continue with its review activities on any matters which are

unaffected by technical or policy issues awaiting ACRS review and comment or Commission decision."

We believe it is possible to learn from the evolutionary plan experience and complete both passive plant design certifications by 1995.

We ask that the NRC staff SECY paper on level of design detail, which will be discussed at your Staff Briefing on Wednesday, be made public as soon as possible. The industry should have an opportunity to comment on this paper because it is of critical importance to our large ongoing efforts.

And now, we'll be happy to respond to any questions the Commissioners may have.

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