

1 UNITED STATES OF AMERICA

2 NUCLEAR REGULATORY COMMISSION

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4 BRIEFING ON THE REVISIONS TO THE REGULATORY  
5 FRAMEWORK FOR STEAM GENERATOR TUBE INTEGRITY

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7 ROCKVILLE, MARYLAND

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9 THURSDAY, MAY 29, 2003

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11 The Commission met in open session at

12 9:30 a.m., at the Nuclear Regulatory Commission, One

13 White Flint North, Rockville, Maryland, the Honorable

14 Nils J. Diaz, Chairman of the Commission, presiding.

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16 COMMISSIONERS PRESENT:

17 NILS J. DIAZ, Chairman of the Commission

18 EDWARD MCGAFFIGAN, JR., Member of the Commission

19 JEFFREY S. MERRIFIELD, Member of the Commission

20

21 (This transcript was produced from electronic caption

22 media and audio and video media provided by the

Nuclear Regulatory Commission.)

1 STAFF AND PRESENTERS:

2 RICHARD BARRETT, NRR

3 CHUCK DUGGER, NEI

4 WILLIAM KANE, DEDR

5 MICHAEL MAYFIELD, RES

6 ALEX MARION, NEI

7 JAMES RILEY, NEI

8 BRIAN SHERON, NRR

9 KENNETH KARWOSKI, NRR

10 WILLIAMS TRAVERS, EDO

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

2 >> CHAIRMAN NILS DIAZ: Good morning.

3 Again, welcome. Good morning. We are meeting today

4 to hear about one of our old standing issues, steam

5 generators. They don't seem to go away. Is it old

6 soldiers just fade, but steam generators don't fade.

7 They keep coming back.

8 We are being concerned with the issue of

9 tube integrity and the steam generator impact on

10 potential safety of the plants. We know that you all

11 work very hard at it. We want to hear what your

12 opinions are.

13 We know that steam generator replacements

14 have been an issue, but there are many of them that

15 are still around. We want to know what are your

16 opinions about the different issues that confront us.

17 And of course the Commission has been long interested

18 in how we close some of these issues.

19 And without any further adieu, unless my

20 fellow Commissioners have a comment, please, I

21 don't know what the order is, let me see, I guess

22 you go first. Thank you for coming.

1 CHUCK DUGGER: Well, thank you very much.

2 It is really a pleasure for the industry to

3 be able to brief you on the steam generators and the

4 progress that we have made on getting a generic tech spec for steam generators.

5 With me today are Alex Marion and Jim Riley

6 and they are here to keep me out of trouble so that I

7 don't stumble over something.

8 COMM. JEFFREY MERRIFIELD: Mr. Chairman, if I may. I think if I'm

9 not correct-- I may be correct -- I think Mr. Dugger, this is your first

10 appearance before the Commission?

11 CHUCK DUGGER: Yes, sir, it is.

12 COMM. JEFFREY MERRIFIELD: Well, welcome in

13 that regard. We'll try to treat you gingerly, as we

14 do with everyone else.

15 COMM. EDWARD MCGAFFIGAN: Are you the new

16 Ralph Beetle?

17 CHUCK Dugger: I'm the new 50% of Ralph Beedle.

18 COMM. EDWARD MCGAFFIGAN: 50% of Ralph Beedle -- it took

19 two of you to replace him?

20 COMM. JEFFREY MERRIFIELD: Marion is the other half.

21 CHAIRMAN NILS DIAZ: I think Commissioner

22 Merrifield was speaking for himself when he said he

23 was going to treat you right.

24 COMM. JEFFREY MERRIFIELD: With the same

25 velvet glove steel hand that we normally do, right, Mr. Chairman?

1 CHAIRMAN NILS DIAZ: Absolutely.

2 Well, I appreciate that you mentioned that  
3 you are now going to be taking these responsibilities  
4 and I'm happy to hear from you.

5 CHUCK DUGGER: Thank you very much,  
6 Mr. Chairman. I will be presenting material on the  
7 following topics the steam generator program  
8 initiative, tech spec improvements and then we'll do  
9 a little summary.

10 And if we are not in alignment on slides,  
11 that was the topics slide and go to the next slide,  
12 please.

13 When I looked at the program and when we  
14 were talking about progress, we're so far along in  
15 this progress that, you know, it would be really nice  
16 just to walk in and say we're done, to the  
17 Commissioners. We are not quite done, but we are  
18 getting very close. But let me talk a little bit  
19 about the steam generator initiative.

20 In December of 1997, the industry committed  
21 to NEI 97-06. This is the 18th such commitment that  
22 has been taken since 1987.

1       And these initiatives are requiring 80%  
2 vote of the oversight committee of NEI. The vote was  
3 taken in December of 1997 and called for the  
4 development of steam generator programs consistent  
5 with NEI 97-06 by January of 1999.

6       NEI 97-06 is a living document with  
7 Revision 2 expected out this year, this fall.

8       Revision II will be addressing operating  
9 experience and comment resolution from the generic  
10 license change package effort. Next slide, please.

11       Where NEI 97-06 provides the framework of  
12 the steam generator program, the EPRI inspection  
13 guidelines provide the details for the inspections.

14       These guidelines include inspection,  
15 integrity, assessment, pressure testing, and water  
16 chemistry guidance. And 100% of the pressurized  
17 water reactor plants have committed to these  
18 guidelines. Next slide, please.

19       Let me say that the industry is not seeking  
20 NRC endorsement of NEI 97-06. Resolution of NRC  
21 comments as the program changes and new technology is  
22 brought forward would be a long process.

1           This would also raise questions about a  
2 review of the EPRI guidelines and the EPRI guidelines  
3 of course were not developed as a regulatory  
4 compliance issue. The industry thinks this would be  
5 an unnecessary restrictive process and could inhibit  
6 or at least delay improvements in steam generator  
7 initiatives. Next slide, please.

8           The EPRI steam generator management project  
9 has provided a forum for the industry since 1977.

10          With the frequency of these meetings at  
11 three times per year, the industry has the  
12 opportunity to share operating experience and changes  
13 to technology.

14          A realtime application of changes provides  
15 the flexibility for the industry to perform the best  
16 inspections possible as we learn more and more about  
17 materials and aging.

18          All utilities with operating PWR's are  
19 members of the steam generator management project  
20 with EPRI.

21          Next slide, please.

22          This realtime OE is particularly important,

1 that realtime operating experience. Each plant has  
2 the chance to roll new experiences into their  
3 planning effort for their next steam generator  
4 inspection. This helps us not to learn the same  
5 things over and over.

6       And, of course gives the industry an  
7 opportunity as a group to study problems and try  
8 various technical solutions through interim guidance  
9 and eventual revisions to the guidelines.

10       Next slide, please.

11       The Institute of Nuclear Power Operations  
12 has been an active player in the effort to improve  
13 steam generator performance.

14       Pilot plants were selected to refine this  
15 review visit format. The pilot plants included Perry  
16 Island, Farley, Surry, Comanche Peak, and  
17 several others. Once the format was established, 100  
18 percent of the PWR's have now been through this  
19 process.

20       The collective findings have been reviewed  
21 and revisions proposed to the steam generator  
22 management program and as stated, this is a



1 continuing process of improvement.

2        Now, I don't know how familiar you are with  
3 the INPO review visit process. But let me give you a  
4 little background on that for just a moment.

5        Just as INPO plan evaluations are not an  
6 audit of compliance with the station technical  
7 specifications, an INPO steam generator review visit  
8 goes beyond determining how a station is implementing  
9 industry guidelines in NEI 97-06.

10       The review visits teams recommendations are  
11 based on apparent plant needs and best industry  
12 practices, rather than on minimum acceptable  
13 standards or requirements. Areas where improvements  
14 are recommended are not necessarily indicative of  
15 unsatisfactory performance. However, the EPRI  
16 guidelines are the embodiment of steam generator  
17 operating experience and best industry practices and  
18 are therefore heavily relied upon as a technical  
19 basis for the review visit teams recommendation.

20       The review visit team needs to thoroughly  
21 understand how rigorously the station is meeting NEI  
22 97-06.

1        Furthermore, if the station is deviating  
2 from industry accepted practices, it is the review  
3 visit's team responsibility to manage the base -- to  
4 review the basis and technical justification for the  
5 deviation, and work with station management to  
6 determine if the deviation is prudent or justifiable.

7        Now, this all came about from a 1995  
8 industry request of INPO.

9        In 1995, INPO was approached by the industry  
10 and asked to help improve and prevent steam generator  
11 degradation because in the previous 15 years or so  
12 before that, we have seen a lot of degradation and  
13 derating of units and problems of steam generators  
14 that we just had to get on top of.

15       As a result of that meeting with the  
16 industry and INPO, the INPO became a part of the steam  
17 generator review visit program. Just a little  
18 background of where that came from.

19       And of course INPO does help us in our  
20 continuing process for improvement and marching  
21 toward excellence.

22       Next slide, please.

1        So how are we doing as an industry? You  
2 can look at this data and there are several  
3 conclusions that can be drawn from this data.

4        And I think the most startling is the  
5 improvement in steam generator tube leaks causing  
6 forced outage from 1994 to 2002.

7        The improvements can be attributed to many  
8 things that include better inspection techniques,  
9 steam generator replacements and better chemistry  
10 controls as well as the impact of NEI 97-06.

11       The source of this information is the EPRI  
12 steam generator degradation database which is managed  
13 by the steam generator management program, of which  
14 all pressurized water reactors are a part of.

15       Next slide, please.

16       Let's talk a little bit about the tech spec  
17 improvement aspect of this. The proposed technical  
18 specification changes that the staff and industry have been  
19 working on we believe have the right components for a  
20 successful steam generator program.

21       The components are a blend of  
22 performance-based and prescriptive elements, a

1 reference to the industry steam generator program  
2 documents and the flexibility needed as inspection  
3 methods and technology continue to improve.

4       Next slide, please.

5       The changes in the tech spec standardize  
6 the way we address tube integrity and mandate  
7 conformance with defined steam generator performance  
8 criteria and to following NEI 97-06.

9       By limiting the technical details, the  
10 program encourages innovation in both the industry  
11 and vendors as they address new technology. And this  
12 is particularly important to us.

13       I know when I was the site VP at Waterford  
14 from 1996 through 2000, we saw tremendous changes in  
15 the technology for steam generator inspections just  
16 during that period. And of course over a longer  
17 period, there's been tremendous change.

18       The ability to have that flexibility and  
19 for the vendors to be able to come forward with new  
20 products, I think will create better inspections,  
21 more comprehensive inspections and certainly give us  
22 better performance on the steam generators going

1 forward.

2       Next slide, please.

3       These tech spec improvements would allow  
4 extended inspection intervals as a function of tubing  
5 material and time in the steam generator life, as  
6 well as steam generator performance.

7       Extended intervals would not be allowed for  
8 alloy 600 mill-annealed tubing or if active degradation is present  
9 in the steam generator tubes.

10       Overall, this is a disciplined approach to  
11 steam generator inspections based on plant specific  
12 experience, industry experience, and potential  
13 degradation based on a review of this operating  
14 experience; meaning if we have degradation going on  
15 in one steam generator that is similar to other steam  
16 generators, then it would drive the inspection  
17 process for those other steam generators, to ensure  
18 that we didn't have the same degradation process  
19 ongoing.

20       Next slide, please.

21       The lead plant submittal for this tech spec  
22 change was February 25th of this year, followed

1 closely by the generic tech spec on March 14th.  
2 These were prepared not as a single entity, but as an  
3 industry effort to ensure consistency with general  
4 industry positions.

5 We have requested a concurrent review of  
6 these submittals and are getting a concurrent review.

7 Next slide, please.

8 We have met with the staff and have  
9 received quite a few RAI's and have been addressing  
10 these issues going forward as we have been meeting.

11 There are a few known items outstanding and  
12 we believe those are coming to closure and we should  
13 be closing those out shortly.

14 Next slide, please.

15 Our revised responses to our submittal will  
16 be done in June, and then following staff approval,  
17 we will encourage the remaining pressurized water  
18 reactors to submit their changes in the following 12  
19 months.

20 We think this is a great opportunity to use  
21 the clip process, which would be an efficient and  
22 effective use of staff and industry resources to

1 complete the implementation for the industry.

2 Next slide, please.

3 Let me summarize what we have covered here

4 this morning. This has been a long effort on the

5 part of the staff and industry. The product will be

6 a significant improvement and will provide the

7 necessary regulatory framework to give reasonable

8 assurance of steam generator tube integrity.

9 We stand as an industry, ready to implement

10 the new technical specifications. Once again, I

11 would like to thank you for the opportunity to

12 address our progress on this issue, and we're ready

13 to answer any questions that you have.

14 CHAIRMAN NILS DIAZ: Thank you very much,

15 Mr. Dugger. Commissioner Merrifield?

16 COMM. JEFFREY MERRIFIELD: Yes, thank you

17 very much, Mr. Chairman. This has been quite a task

18 for all of us over the course of the last years. I'm

19 going to ask more in detail of our staff. I was

20 looking through a director's quarterly status report

21 that accounts that we spent some -- the agency spent

22 some 43,000 hours working on this issue since the mid

1 90's, which is an extraordinary amount of effort.

2 And I know that NEI for its part has also spent  
3 significant resources along with its members. I want  
4 to turn to slide 10.

5 On this slide, you talk about the fact that  
6 the developed technical specifications allow for  
7 improvements in inspection methods in technology in  
8 your last bullet. And I'm wondering if you could  
9 explain little bit more in a little bit more detail  
10 how this is going to be accomplished?

11 CHUCK DUGGER: I think I'm going to turn  
12 that over to one of my counterparts here, Alex Marion or  
13 Jim.

14 JAMES RILEY: This is Jim Riley. The point  
15 we are trying to make here is by taking the  
16 prescription out of the technical specifications, it  
17 allows us to make use of improvements in technology  
18 and inspection techniques as they become available  
19 and are proven to use in the field.

20 We don't need to go in and get a technical  
21 specification amendment in order to make the kind of  
22 changes that we might like to make.



1       The current tech specs are very  
2 prescriptive in terms what you need to do in terms of  
3 inspections. That's the point we are trying to make.

4       COMM. JEFFREY MERRIFIELD: It's my  
5 understanding that one of the remaining issues that  
6 we have at this point that needs to be addressed  
7 involves structural integrity performance standard  
8 and what appears to be a difference of opinion  
9 between the staff and industry on the appropriate  
10 safety factor.

11       Without getting too far into the weeds on  
12 the technical details, I'm wondering if you can  
13 elucidate a little bit better, what some of the  
14 implications are of this difference?

15       ALEX MARION: Well, that's -- this is Alex  
16 Marion. That's a point that's currently under  
17 discussion and hopefully we will achieve resolution  
18 between industry and the NRC staff. We are looking  
19 at that issue right now in terms of its practical  
20 impact if you will on the operational assessments and we don't  
21 have a specific answer to that yet. But we will, something that  
22 was just identified recently.

1        COMM. JEFFREY MERRIFIELD: Recently?

2        ALEX MARION: Yeah.

3        COMM. JEFFREY MERRIFIELD: There is nothing

4 that would indicate that it is an unbreachable divide

5 or is that not the case?

6        ALEX MARION: Well, it's currently under

7 review and it would be premature for me to draw any

8 conclusion at this particular time. Duke Energy is

9 looking at it from the standpoint of impact. We just

10 don't have the answer yet. We would be more than happy

11 to follow up. We should have an answer in about a week or so.

12        COMM. JEFFREY MERRIFIELD: I would

13 certainly like to keep on top of that one. Turning

14 to Slide 7, enhanced industry response to operating

15 experience: The issue of sharing and I know NEI and

16 INPO as we are, are committed to rapidly communicating

17 operating experience. And without eliciting them,

18 obviously some of the problems that we have

19 encountered over the years, even up to today have

20 been as a result of failure to do that, you try to

21 communicate, but in the end it doesn't happen.

22        I would like you to talk a little bit more

1 about your mechanisms for communicating here and  
2 whether this is a process in this initiative which is  
3 used just for the steam generators, or it is a model  
4 that you are using across the board?

5 CHUCK DUGGER: Let me address just the  
6 general operating experience venue and then one of  
7 these gentlemen can talk about the specifics to steam  
8 generators. But in the general venue, operating  
9 experience is shared on a daily basis through the  
10 Institute for Nuclear Power Operations. And that  
11 information is provided to all utilities daily as new  
12 information comes forward.

13 We also screen through the NRC operating  
14 experience reports that come through on a daily  
15 basis.

16 So each plant's operating experience  
17 organization, whether it's called that or some other  
18 name, reviews these on a daily basis and the  
19 information is then distributed to the  
20 applicable organization, whether it's operations or  
21 maintenance or engineering.

22 Now, there are many meetings that are

1 established in the industry that include of course  
2 the steam generator management program through EPRI  
3 that meets three times a year.

4 And that's probably at the right frequency  
5 given the frequency of outages for refueling and  
6 therefore steam generator inspections.

7 And certainly through NEI, we have other  
8 forums where the people are allowed to come together  
9 and share their operating experience.

10 And Jim, maybe you could fill in where  
11 steam generator operating experience is specific.

12 JAMES RILEY: Certainly. The SGMP is crucial to the  
13 operating experience aspect of what we are talking about here.

14 We indicated that all the PWR's are members  
15 of the SGMP.

16 COMM. JEFFREY MERRIFIELD: You say all the PWRs,  
17 you mean all the domestic PWR's?

18 JAMES RILEY: That's correct, yes. And  
19 actually some international. You're right, all  
20 domestic is what I meant. We have meetings three  
21 times a year.

22 There are representatives that come to the

1 meetings and an important part of that meeting is that  
2 each of the steam generator engineers stands up and  
3 talks about what the experience has been in his or  
4 her plant, lessons learned, things they have  
5 experienced, et cetera. There's questions and  
6 answers that are thrown around.

7       In addition to that as operating  
8 experiences is identified, the USGMP organization  
9 evaluates those things and if necessary, issues interim  
10 "guidance" for the industry to use to address similar  
11 situations at other plants. And that's handled on a  
12 case-by-case basis.

13       And then finally, there is a requirement  
14 within SGMP that at the completion of each utility  
15 steam generator inspection, they enter information  
16 into what's called a steam generator degradation  
17 database that's maintained by SGMP and available to  
18 all the members online where they can take a look at  
19 what each plant has seen, if their steam generator  
20 inspection with tubes or plug degradation mechanism  
21 are in place, et cetera.

22       So through all these different means, I

1 think we do a pretty good job at spreading out the  
2 information that is obtained during inspections and operating --

3       COMM. JEFFREY MERRIFIELD: So the last part  
4 is in fact a reporting mechanism? There is an  
5 activity that has to be undertaken by the individual licensees?

6       JAMES RILEY: Correct. That's internal of  
7 course to our SGMP organization, but available to  
8 all the SGMP members.

9       COMM. JEFFREY MERRIFIELD: Well, that seems  
10 to be an important element of a successful program.  
11 If you look at -- it's one thing to provide all kinds  
12 of information. We have our recent example with  
13 Davis Besse, all kinds of information being available  
14 but not being utilized the way it should.

15       So to the extent to which there is a more  
16 active feedback seems to me to make a lot of sense.

17       I am curious, though -- I mean, obviously  
18 by means of analogy, there is significant  
19 international experience and involvement out there  
20 with steam generators as well, and I'm curious that  
21 this program seems to be focused principally on the  
22 domestic operating experience, whereas there seems to

1 me, things to be gained from understanding where our  
2 international partners are in this area as well. Any  
3 thoughts in that regard?

4       ALEX MARION: Well, there are international  
5 utilities that are members of the Steam Generator  
6 Management Program and they participate in the  
7 process as well. Our primary focus is on the U.S.  
8 utilities.

9       JAMES RILEY: They come to all the SGMP  
10 meetings. We have representative from international  
11 utilities overseas and provide operating experience  
12 at the meetings I was talking about, the SGMP, and  
13 tie us in with what's going on over there. So there  
14 is some assessment.

15       COMM. JEFFREY MERRIFIELD: It seems to me  
16 -- and I'll stop here, but, you know, the industry I  
17 think as a whole -- and I'm not criticizing the  
18 effort that has been undertaken -- but it seems to me  
19 with all the involvement that you guys have in WANO  
20 and it may not be appropriate for this  
21 program, but it seems to me that that's a perfect  
22 avenue of approach to gain some of that international

1 experience as well and merely sort of inviting people  
2 into this one program is great, but is there more and  
3 is there a better way of reaching into and  
4 understanding that international experience and  
5 sharing what you have derived with those  
6 international partners as well? Seems to me to be a  
7 two-way street that you may want to explore some  
8 more.

9       CHUCK DUGGER: I think we really just kind  
10 of scratched the surface of information flow.

11       Certainly, there is the internal operating  
12 experience, external operating experience to  
13 accompany and then there is through INPO operating experience  
14 which encompasses what goes on in WANO. So that's very well  
15 tied into the operating experience.

16       And I can tell you from just my personal  
17 experience at various units that through the owners  
18 groups that exist, we get the international feedback  
19 on steam generator performance or vessel performance,  
20 whatever the topic happens to be within that group of  
21 type of reactors.

22       And I know that one of the chemical



1 cleanings that we did on a steam generator at  
2 Waterford was driven by operating experience that we  
3 got from overseas and was a fairly successful  
4 process.

5       COMM. JEFFREY MERRIFIELD: Well, I  
6 appreciate that, and I guess just to close out, you  
7 know, you never want to be -- you know, when I speak  
8 to our staff and I think others do as well, we want  
9 to make sure that we are incorporating international  
10 experience in the work that we do. That's one of the  
11 principal reasons why we are involved  
12 internationally.

13       You never want to be in a circumstance  
14 where at some point down the line someone can point  
15 to an international operating experience and say,  
16 gee, it was there if only you had taken advantage of  
17 it and known of it and that is something that I think  
18 none of us as a regulator or as a regulated entity  
19 want to be in a position as having to respond. Thank  
20 you, Mr. Chairman.

21       CHAIRMAN NILS DIAZ: I'm sure that you know  
22 that the Commission has a very strong interest in

1 closing some of these issues, especially all of those  
2 that could have or have had some safety impact.

3 But I think some time ago, we keep bringing  
4 to the forefront that steam generator tube failures are  
5 going to take place, that these programs are not  
6 going to eliminate them.

7 It's our interest to make sure that they  
8 are minimized and if they happen, all possible  
9 actions have been taken to prevent this tube failures  
10 to have any safety impact.

11 And would you comment on that, is this  
12 program, you know, doing both of those things as far  
13 as the industry is concerned?

14 CHUCK DUGGER: Well, I think the overall  
15 makeup of the tech spec addresses just exactly that.

16 It enhances the safety aspect of the steam  
17 generators as a primary boundary, pressure boundary.

18 It gives us the opportunity to do very  
19 comprehensive inspections and it allows us the  
20 flexibility as it exists right now to be able to go  
21 with improved technology as we go forward as an  
22 industry.

1           And, of course, the industry has tremendous  
2 interest in making sure that we have the right safety  
3 margin in the steam generators. That's the primary  
4 focus here.

5           CHAIRMAN NILS DIAZ: All right. We look at  
6 the tech spec work which I think is really going very  
7 well and I hope any differences will quickly converge  
8 to it.

9           Do you find any significant areas of  
10 disagreements between the plant specific and the  
11 generic tech spec? Is that going to be a problem for  
12 some of your licensees? Are 100% of the PWR's going  
13 to go for the new tech spec? Do you have any  
14 impressions on that issue?

15          ALEX MARION: Well, this is Alex Marion.

16          We are going to encourage all the PWR  
17 utilities to take advantage of the opportunity of a  
18 more effective -- effectively developed technical  
19 specification. And we have no indication at this  
20 particular point that any utility is unwilling to do  
21 that. But we intend to strongly encourage that type  
22 of action.

1           And we don't see any significant problems  
2 or difficulties between the plant specific  
3 application and the generic. But you must recognize  
4 that on a plant specific level, that you have  
5 different steam generators and you also have  
6 different degradation mechanisms.

7           So the plant specific approach has to take  
8 into account the difference in steam generator design  
9 and the actual experience with degradation at that  
10 particular plant.

11          CHAIRMAN NILS DIAZ: Of course. And that's  
12 precisely what I was saying, whether that in some  
13 cases might be an issue and whether that might  
14 require some special attention on our part.

15          You know, one of the things that I alluded  
16 to before, the fact that there has been steam  
17 generator tube failures, there have been potential  
18 times in which people have concern with integrity of  
19 the steam generator. And it appears from all the  
20 experiences that none of these actual occurrences  
21 have created any public health and safety concerns.  
22 There have been minimal releases of radiation. Most

1 of them not measurable outside. Of course, the  
2 concern is always created and we have emphasized a  
3 need for communicating those issues well.

4 But if you take the issue and consider the  
5 safety, and take it into a severe accident scenario,  
6 has the industry been looking at this area as part of  
7 your preventive programs?

8 Have these been taken into consideration as  
9 you progress in closing this issue, the issue of  
10 severe accident scenarios?

11 ALEX MARION: That has been addressed in  
12 the operability assessments that the utilities have  
13 been conducting in this program.

14 CHAIRMAN NILS DIAZ: And you are satisfied  
15 that those are --

16 ALEX MARION: No, I'm sorry. Okay. I  
17 stand corrected.

18 CHAIRMAN NILS DIAZ: All right.

19 CHUCK DUGGER: But I will tell you through  
20 the review process, that as we look at individual  
21 plants in the industry, experts go in and take a look  
22 at each plant and how they have implemented NEI

1 97-06. That's the baseline view that they take of  
2 the plant.

3 Now, the severe accident portion of that,  
4 we have a lot of recommendations that come out that  
5 enhance the capability of utilities to detect any  
6 tube leakage downstream.

7 It used to just be main steamline rad monitors  
8 that had the capability to detect something or  
9 further down stream, our off gas monitors.

10 But now we are putting in more sensitive  
11 monitors that are redundant downstream from the N-16  
12 monitors so that we can pick up leaks as they occur  
13 in a smaller manner, so that we cannot approach the  
14 tech spec limit for leakage in a steam generator. We  
15 want to catch it long before that point.

16 CHAIRMAN NILS DIAZ: Yes, I was trying to  
17 point out, maybe I should have done it earlier, made  
18 it easier for you, whether you were using risk  
19 insights that would actually help you establish what  
20 your programs will need to deal with potential, you  
21 know, severe accidents and how does it tie to the  
22 performance-base approach that you are mixing with the

1 determinationalistic approach in the tech spec and whether  
2 that is an issue that is progressing or not, you  
3 know, is one of my pet peeves.

4       And you should have expected that to come  
5 out.

6       CHUCK DUGGER: Yes, Chairman.

7       JAMES RILEY: Although the operational  
8 assessments do not consider severe accidents, they do  
9 in fact use a statistical kind of an approach to  
10 steam generator tube failures. So that I think it's  
11 kind of unique in the steam generator world that we  
12 make a prediction of how long our steam generators  
13 can operator safely without exceeding our performance  
14 criteria that we defined. And that prediction  
15 establishes a length of time to the next inspection  
16 interval, and it's based on the kinds of degradation that are  
17 there, kind of growth rates we have been  
18 experiencing, et cetera.

19       As you indicated, we don't have 100%  
20 guarantee that we will not have a tube leak. We,  
21 through these kinds of evaluations, try to minimize  
22 that by doing an evaluation of what we do know is

1 inside the steam generators and how fast things  
2 progress to make sure we schedule our outage before  
3 we get into serious situations.

4 CHAIRMAN NILS DIAZ: I'm sure that the  
5 staff will be looking at this question and see how we  
6 are doing in this area. But it's certainly an area  
7 that seems to me like it's the progression of this  
8 work as you actually have better inspection  
9 techniques, better tech specs, better controls.

10 This is an issue that should be handled in  
11 risk informed space and that could provide some very  
12 reasonable answers and I believe it's an area that  
13 should be looked at too.

14 Besides this and we look at the, you know,  
15 the other side of the tech specs, are there any  
16 issues in your review that have come out, because I'm  
17 sure you have a strong interest in solid, reliable  
18 steam generator performance that have come out that  
19 the Commission should be aware of?

20 Any other issues out there that are  
21 important enough from the reliability or safety point  
22 of view that are beyond the present scope of tech spec



1 changes?

2 JAMES RILEY: I can't think of any that I  
3 would classify that way, no.

4 CHAIRMAN NILS DIAZ: Thank you.  
5 Commissioner McGaffigan?

6 COMM. EDWARD MCGAFFIGAN: Thank you,  
7 Mr. Chairman. I have got the staff's paper in front  
8 of us. I want to get your perspective.

9 In 2000, which is probably the last time I  
10 spent a lot of time on this issue, you had submitted  
11 a generic license change package and the staff was  
12 going to review it for review and approval.

13 That's disappeared and now we're doing this  
14 tech spec approach with the lead plants and then the  
15 generic tech spec. And there is going to be a safety  
16 evaluation on the plant specific one and it isn't  
17 clear to me what there is on the generic one, whether  
18 there's going to be a safety evaluation or risk or  
19 how we convey our approval to you in the generic  
20 package. But what happened?

21 Presumably NEI must have withdrawn the  
22 generic GLCP, the generic license change package?

1           Why have we had these process hiccups?

2           JAMES RILEY: This has been a continuing  
3 evolution. In fact, it wasn't withdrawn. It was --  
4 I guess the best way to put it, is revised.

5           The GLCP we used to call it which we  
6 initially submitted as you indicated February of  
7 2000, was revised at the end of 2000 and resubmitted  
8 and then continued to be worked on over the  
9 intervening time to resolve issues as issues came up.

10          Last fall, we were looking at what was the  
11 best way to submit this. One of the options was to  
12 revise and resubmit the GLCP again and realize that  
13 in doing that, we kind of fell outside of the normal  
14 regulatory process, you know, what do you do with the  
15 GLCP?

16          So the best thing we could think of doing  
17 was using a lead plan approach that puts it on the  
18 docket and also submitting it as a TSTF, which is a  
19 recognized method of making technical specification  
20 improvements and it is what was set up to create the  
21 standard improved new tech specs. So that's what we did.

22          We took what was the GLCP at that time that

1 reflected all the discussions, meetings, issues that  
2 have come up, and created two parallel documents that  
3 both were basically the GLCP, one on a plant specific  
4 basis, one converted over into a TSTF format.

5       COMM. EDWARD MCGAFFIGAN: How is our  
6 approval -- I understand there is this tech spec  
7 change process, this 449th change, so it must be well  
8 tried.

9       But how is our approval of that conveyed?  
10 Is it conveyed in some detail, a la, a safety  
11 evaluation or risk? Or is it conveyed in a short  
12 letter saying it looks okay to us, good luck  
13 submitting them on a plant specific basis?

14       ALEX MARION: Safety evaluations  
15 will be issued on Catawba, but on the generic  
16 application, I believe a risk will be issued  
17 identifying a generic framework that the staff finds  
18 acceptable.

19       And then it will be folded into the  
20 line item improvement process. And that will be  
21 noticed and licensees will indicate their interest in  
22 taking advantage of that generically improved tech

1 spec. And then the licensees will submit a tech spec  
2 change to address the plant specific differences from  
3 the generic format. And if there is someone here  
4 from the Tech Spec Branch, they could probably --

5 BILL BECKER: I'm Bill Becker. Let me try  
6 to clarify. Very close, we probably won't issue a  
7 RIS. The staff after the Catawba review will  
8 prepare a draft generic safety evaluation process  
9 that we'll put out for comment in the Federal  
10 Register.

11 Once we finish that, we'll get a second  
12 Federal Register Notice. It will announce the availability  
13 for referencing along with any other plant specific  
14 items that have to come in.

15 COMM. EDWARD MCGAFFIGAN: So you're going  
16 to put out a draft sort of safety evaluation for  
17 comment and then you'll finalize it?

18 MR. BECKER: We'll finalize it and announce  
19 its availability for referencing after that.

20 COMM. EDWARD MCGAFFIGAN: And that's the  
21 normal process you use --

22 BILL BECKER: This is our Consolidated Line Item Improvement  
23 Program process.

24 COMM. EDWARD MCGAFFIGAN: -- the CLIIP program. I'm  
25 glad you told me what CLIIP was.

1 I'm surprised Commissioner Merrifield who  
2 is usually a beast on making people tell us what the  
3 acronyms are, let you get by with CLIP without  
4 telling us. I now understand it is a consolidated  
5 line item improvement process. Thank you very much.

6 Let me go to a different line of  
7 questioning.

8 The staff has put out on a separate matter,  
9 but you know, it got to be front-page news in Energy  
10 Daily, on May 14th a Federal Register Notice with  
11 regard to a proposed generic letter that they are  
12 planning to issue, and according to the staff were  
13 quoted in the article, Paul Klein, the origin of this  
14 generic letter has to do with some license amendments  
15 submitted by TVA for Sequoyah 2 and Southern  
16 California Edison for San Onofre 2 and 3 and the  
17 staff basically discovered through these license  
18 amendments that their current view of the current  
19 tech specs were not being carried out potentially at  
20 some of the licensees.

21 So this proposed generic letter asks  
22 licensees to tell us in some detail, how they're

1 inspecting, address the issue, provide a description  
2 of their steam generator tube inspections performed at  
3 their plants during the last inspection and in addition addressee  
4 should provide various other things.

5       If addressees conclude that full compliance  
6 with the tech specs in conjunction with criterion 9  
7 of 10-CFR, part 50, Appendix B requires corrective  
8 action, they should tell us about it.

9       The plants where steam generator tube  
10 inspections have not been or are not being performed  
11 consistent with NRC's position on the requirements  
12 contained in the tech specs in conjunction with  
13 criterion 9 of 10 CFR Part 50, Appendix B, a licensee  
14 should submit a safety assessment, et cetera.

15       Has there been a reaction to this proposed  
16 generic letter?

17       I'm just interested partly in your -- if  
18 this change package you proposed to us, whether the  
19 new tech specs would relieve these folks or whether  
20 this is going to be a problem with the new tech specs  
21 as well.

22       So I'm just interested in any reaction you

1 have to this proposed initial reaction. I know it's  
2 only been out for a couple of weeks to this proposed  
3 generic letter. And as I say, part of my question  
4 is: Does the new tech spec package that you  
5 submitted for plant specific and generic approval resolve  
6 this issue, or is this still an issue under the  
7 revised tech spec package?

8       ALEX MARION: Well, it's an issue that  
9 needs to be resolved and part of that resolution  
10 process involves the public comment period which we are  
11 in the middle of now. Comments are due July 14th or 15th.

12       From an industry perspective, this is  
13 clearly an interpretation of the tech specs by the  
14 NRC staff. And it's a different interpretation than  
15 what's been the past practice. And so what we  
16 encourage the NRC to do is stake out their position,  
17 communicate that to the industry as part of this  
18 process; this generic letter is the appropriate  
19 mechanism to use, and then we'll provide comments.

20       The Energy Daily articles are kind of a  
21 misrepresentation of some of the specifics of this,  
22 in that it suggest the utilities are not in

1 compliance with tech specs and not in compliance with  
2 NRC expectations.

3 That may be true in light of the new NRC  
4 staff interpretation of tech specs. But prior to  
5 finalizing this interpretation, utilities are  
6 currently in compliance. Now, from the standpoint --

7 COMM. EDWARD MCGAFFIGAN: Well, I don't  
8 know. If I'm to defend -- who is it, George Lobsenz --  
9 if I'm reading this Federal Register notice and then  
10 asking NRC staff for clarification, he's fairly  
11 interpreting the notice. And the notice has in it, a  
12 discussion that, you know, backfit discussion, which may be  
13 what you are getting to, this generic letter transmits information  
14 requests for the purpose of verifying the applicable  
15 existing requirements.

16 So the staff has determined, at least for  
17 purposes of putting this draft generic letter out,  
18 that this is and has been their position. And that  
19 it was news to them when they got these license  
20 amendment requests from Sequoyah and San Onofre, that people  
21 were not inspecting in these areas on the grounds that it was  
22 either too difficult or even if they were a problem



1 there, it was not safety significant.

2       ALEX MARION: I don't want to speak for the  
3 staff, but the issue came down to the point of  
4 whether or not the licensee had a technical basis to  
5 limit the inspection within the certain area of the  
6 steam generator. And the answer to the question is  
7 the licensee did.

8       Now, the next question is: Do you need NRC  
9 approval of that position? And that's this new  
10 interpretation we are talking about. Now, the  
11 question becomes one of whether or not this would be  
12 addressed by the new tech spec.

13       JAMES RILEY: Maybe an item of  
14 clarification on the first point just to make sure we  
15 understand it had to do with not whether or not we  
16 were inspecting the tubes, but with the method we used to  
17 inspect the tubes and as Alex indicated how far within the tube sheet  
18 we were inspecting, whether the NRC had to approve the depth  
19 within the tube sheet that we were inspecting or not.

20       And our program requires basically that we  
21 inspect those areas that we feel degradation is  
22 present or that those areas have a chance for

1 creating a risk to the public through any kind of tube  
2 leak and rupture and release and things of that nature.

3       So we were following our programs and using  
4 the appropriate methodologies to inspect as far as  
5 our programs were concerned. Again, the differences  
6 came because of interpretation, who needed to review  
7 what.

8       The second part of your question has to do  
9 with whether the new package is going to address  
10 this, and I think it will help clarify the matter.

11       The issue came down with what you mean by a  
12 tube sheet inspection earlier. Tech specs kind of  
13 defined it pretty straightforward, it was point of  
14 entry to some point on the cold leg. The new tech spec adds more  
15 information on what is intended by this inspection  
16 along the lines that we have been discussing here,  
17 that you will be using the technology capable of  
18 detecting degradation where it may exist.

19       So that helps clarify the issue of what is  
20 intended by inspection. So we do feel that the new  
21 tech specs that are being proposed will go a ways  
22 towards, hopefully resolving -- I shouldn't say go a

1 ways, we hope will resolve the issue so that it's  
2 clear that you have to be looking for what the  
3 technology will enable you to find, what's there, and  
4 that NRC's approval is required if you are going to  
5 be changing your depths, et cetera with inspection.

6       COMM. EDWARD MCGAFFIGAN: That would raise  
7 an issue. If the new tech specs solve the issue, it  
8 sort of raises the issue as to whether you want two  
9 processes going on simultaneously. But I'll wait to  
10 hear from the staff as to their view on that.

11       Do you really have to do the generic letter  
12 if you are all going to be submitting tech specs in  
13 the next year that's going to fix the problem anyway?

14       You know, do we give you enforcement  
15 discretion for a year or something and then, you  
16 know, once we have approved the new tech spec, then  
17 the issue goes away.

18       JAMES RILEY: I don't think the new tech  
19 spec would remove the issue as it exists. I think it  
20 clarifies the requirements with respect to the issue.

21       COMM. EDWARD MCGAFFIGAN: Okay. Well,  
22 thank you very much.

1       CHAIRMAN NILS DIAZ: All right. Thank you  
2 very much. We appreciate you coming and briefing us.  
3 It's a pleasure and we wish you well in your new  
4 position.

5       CHUCK DUGGER: Thank you very much,  
6 Chairman.

7       CHAIRMAN NILS DIAZ: Panel, do we need a  
8 break?

9       CHAIRMAN NILS DIAZ: Good morning,  
10 Mr. Travers and your entire team. We are gathered here to  
11 hear a lot of good news, we hope and how all of these  
12 issues are being closed one by one in a satisfactory  
13 matter. And if there is any bad news, well, please  
14 tell us also. Besides that, any comments?  
15 Mr. Travers?

16       WILLIAM TRAVERS: Good morning, Chairman  
17 and Commissioners. As you already pointed out, the  
18 staff and the industry for some time has focused considerable  
19 attention on steam generator tube and integrity issues. When we last  
20 briefed the Commission on steam generator activities in December 2001, we  
21 talked about the integrated steam generator action  
22 plan and our ongoing and scheduled staff activities to

1 implement that plan.

2       We think we have made a lot of progress in  
3 this dynamic area since then. And today, we will  
4 brief the Commission about the progress we have made,  
5 as well as our continuing efforts to improve our  
6 regulatory framework.

7       I should mention that we have also recently  
8 provided the Commission with an information paper  
9 SECY-03-0080 on this subject. And with me today is my  
10 deputy for Reactor Programs, Bill Kane, Dr. Brian  
11 Sheron, Richard Barrett and Ken Karwoski from the  
12 office of Nuclear Reactor Regulation and Mike  
13 Mayfield from the office of Nuclear Regulatory Research. And  
14 let me turn to Brian to begin the briefing.

15       BRIAN SHERON: Thank you. Good morning.

16       We have heard from the industry about their  
17 initiative and how it improved the safety of steam  
18 generator performance in the past few years.

19       Before I turn it over to Ken, I would like  
20 to kind of give you a little background and set the  
21 stage here.

22       As Bill mentioned, we have made a lot of

1 progress in the steam generator area. Regarding the  
2 action plan, the shorter-term activities to improve  
3 steam generator inspection and licensing programs  
4 which are mostly a follow-up from lessons learned  
5 task force from Indian Point 2 have been complete.

6       These efforts resulted in improvements in  
7 our steam generator review and oversight activities,  
8 making them more performance-based and risk-informed.

9       With the short-term actions completed, we  
10 are currently working on a longer term research  
11 activities in steam generator area and as well as the  
12 regulatory framework which you have heard a lot about  
13 already. And in today's briefing, we will discuss  
14 the progress we made in the regulatory framework.

15       I want to emphasize that although steam  
16 generator tube ruptures are analyzed events within our  
17 design base, as you know, they are postulated  
18 accidents and required to meet requirements for  
19 postulated accidents Part 100 dose guidelines  
20 limits and so forth.

21       We don't believe their occurrences is  
22 acceptable and I think our foremost objective in our

1 efforts in this area are to reduce the occurrence of  
2 these tube failures to as low as I think we could  
3 achieve.

4       Consistent with our primary performance  
5 goal of maintaining safety is really what is driving  
6 us. I have asked Ken, he is going to address how  
7 this effort relates to the four performance goals and  
8 he'll do that in his presentation.

9       Back in the 1970's, the steam generator  
10 tech specs and regulatory framework were developed  
11 assuming -- or not assuming, but actually based on  
12 tubal thinning and wastage being the primary  
13 degradation mechanisms.

14       However, with improvements and secondary  
15 side water chemistry that took place to combat these  
16 forms of degradation, it became most prominent. And  
17 what we learned is that as these generators got older,  
18 stress corrosion cracking became one of the dominant  
19 mechanisms.

20       To address the challenges posed by the new  
21 degradation mechanisms, industry programs for addressing tube  
22 integrity started to evolve through the '80s and the '90s.

1        If you remember back in 1993, the staff  
2 considered several regulatory actions for revising  
3 the steam generator regulatory framework to reflect  
4 changes in these approaches needed to address the  
5 change in the degradation mechanisms.

6        First, we considered rulemaking and we did  
7 a regulatory study on that. And what the conclusion  
8 was is that we did not really need to impose any new  
9 regulation, new requirements over and above what was  
10 already in place. And specifically what we looked at  
11 was the risk, the steam generator risk part and we  
12 said is there an unacceptable risk that would prompt  
13 us to put in place a new rule or regulation, and we  
14 didn't see any.

15       And so going from there saying that our  
16 regulatory framework was sufficient in terms of our  
17 rules, we then looked at the need for a generic  
18 letter. And this would ask licensees to evaluate  
19 their programs to ensure they are maintaining and  
20 monitoring the tube integrity consistent with the  
21 regulatory requirements and the plant design base.  
22 But taking into account these new degradation



1 mechanisms.

2       The staff also developed the draft  
3 regulatory guide that described a method acceptable  
4 for the NRC staff for maintaining tube integrity.  
5 While the staff was working on the generic letter and  
6 this draft regulatory guide in December 1997, the  
7 industry adopted an initiative to improve steam  
8 generator programs. And you heard about that. That  
9 was basically 97-06.

10       Also, we had gotten guidance at that time  
11 through DSI, direction setting initiative 13, which  
12 authorized the staff to use industry initiatives in  
13 lieu of regulatory actions as appropriate.

14       And so the staff following up on that  
15 initiative, deferred the generic letter under  
16 regulatory guide and we did engage with the industry  
17 working on 97-06.

18       As the industry discussed, there are two  
19 important elements to this initiative, a voluntary  
20 initiative implementation of the improved steam  
21 generator program that uses the EPRI prepared  
22 guidelines. And two, industry submittals to improve

1 the regulatory framework by changing the plant tech  
2 specs.

3 Approval of the tech specs will complete  
4 our review of 97-06. Earlier this year, the industry  
5 submitted a lead plant and a generic application to  
6 change the tech specs consistent with the philosophy  
7 in 97-06. This review is progressing in a timely  
8 manner with completion expected, I think within  
9 months now.

10 Ken Karwoski, I'm going to turn it over to  
11 Ken now and he'll provide you with more details.

12 KENNETH KARWOSKI: Thank you, Brian. Good  
13 morning. As Brian indicated, the focus of my  
14 presentation is on the progress that we have made  
15 with respect to changing the technical specification  
16 requirements related to steam generator tube  
17 inspections.

18 But before I got into that, I wanted to  
19 spend a few minutes laying some background of what the  
20 technical and regulatory issues that we have been trying  
21 to address over the past several years and our  
22 progress in addressing those issues.

1       As you know, the steam generator tubes make  
2 up the majority of the reactor coolant pressure boundary in  
3 pressurized water reactors and also serve as a  
4 containment boundary to isolate radiological fission products from the  
5 environment.

6       As a result of their importance, both the  
7 NRC and the industry place a high degree of priority  
8 on ensuring tube integrity.

9       And we have a framework for managing tube  
10 integrity. And that framework consists of three main  
11 elements. And those three elements are designed to  
12 ensure that we do maintain safety consistent with our  
13 performance goals.

14       Those three elements are: the regulations,  
15 industry programs, and NRC review and oversight. The  
16 regulations pertaining to steam generators are  
17 primarily located in two locations, in Part 50 to  
18 Title 10 of the Code of Federal Regulations and also  
19 the Technical Specifications.

20       In Part 50, Appendix A have the general  
21 design criteria to which the plants are built.

22       The general design criteria indicate in

1 part that the reactor coolant pressure boundary shall be  
2 designed so as to ensure an abnormally low probability  
3 of leakage or of gross rupture. And in addition,  
4 that it should be designed to permit the periodic  
5 inspection and testing for assessing the structural  
6 and leakage integrity.

7       And since the steam generator tubes are the  
8 majority of the reactor coolant pressure boundaries, these  
9 requirements would apply to them.

10       In addition to the general design criteria,  
11 50.55A also refers to codes and standards and  
12 specifically to the ASME, oil and pressure vessel  
13 code and that also contains requirements related to  
14 the design of the steam generator.

15       The technical specifications also have  
16 surveillance requirements related to the inspection  
17 of steam generator tubes. These requirements include  
18 the periodic inspection of the tubes along with the  
19 repair and dispositioning of flaws that are detected  
20 in the steam generator.

21       In our current effort in modifying the  
22 regulatory framework involves changes to the

1 technical specifications as you heard earlier.

2 In addition to the regulations, the  
3 framework for addressing tube integrity also involves  
4 industry programs as you heard earlier.

5 These programs are to ensure that tube  
6 integrity is maintained consistent with the plant  
7 design and licensing basis and the applicable  
8 regulations.

9 The third element ensuring tube integrity  
10 are the NRC review and oversight activities.

11 These activities verify that the industry  
12 programs have been successful in ensuring compliance  
13 with the regulations.

14 Although these activities impose a burden  
15 on the licensees, we believe this burden is necessary  
16 for ensuring the safe operation of the plant  
17 consistent with our performance goal of maintaining  
18 safety.

19 Next slide, please.

20 As Brian indicated, our current technical  
21 specification requirements were developed in the  
22 1970's when wastage and wall thinning were the

1 dominant degradation mechanisms.

2 As the degradation mechanisms evolved over

3 time as a result of changes in water chemistry

4 practices, so did the industry programs for

5 addressing the degradation mechanisms.

6 However, the technical specification

7 requirements have remained the same. The current

8 effort that we have underway is to reflect the

9 improvements that the industry has made in addressing

10 tube integrity into the technical specifications.

11 What you typically see is that licensees

12 typically perform more than what is required in the

13 current technical specifications. And so with

14 adopting the new technical specifications, we will

15 provide additional assurance that tube integrity will

16 be maintained between inspections.

17 Since the existing technical specifications

18 were developed in the 1970's based on our

19 understanding of wastage and wall thinning and

20 degradation mechanisms at that time, they do have some

21 unnecessary prescriptive attributes in them.

22 The proposed technical specification

1 revision would take out some of those unnecessary  
2 prescriptive attributes.

3       Next slide, please.

4       To address the technical challenges posed  
5 by the changing degradation mechanisms, the industry  
6 programs were significantly enhanced in the 1990's  
7 and you heard some of that this morning.

8       I just like to point out that in looking at  
9 the industry programs, what occurred in the 1990's  
10 was that the guidance that was out there in the early  
11 1990's was improved and in addition, the industry  
12 also developed new guidance to address things that  
13 had not been previously addressed in generic industry  
14 guidance.

15       For example, the industry developed  
16 guidelines on performing in-situ pressure testing, which is  
17 testing the specific condition of a steam generator tube.

18       They also developed guidelines related to  
19 primary and secondary leakage monitoring and also for  
20 performing degradation assessments.

21       As the industry programs improved, so did  
22 the NRC review and oversight activities. There have

1 been significant improvements in those activities since the early  
2 1990's.

3       Those improvements have been in both the  
4 inspection program and in the licensing program.

5       In terms of the inspection program, we have  
6 improved the inspection procedures that the regional  
7 base inspectors used to inspect licensee steam  
8 generator inspection programs.

9       In addition, we have increased the level of  
10 effort that the inspectors are allowed to spend on  
11 this activity consistent with the safety significance  
12 of this issue. This inspection procedure is also  
13 performance-based.

14       In addition, in the inspection program, we  
15 have worked with our stakeholders to develop a  
16 significance determination process for addressing  
17 steam generator tube degradation.

18       With respect to the licensing activities,  
19 we have developed guidance for the performance of  
20 steam generator reviews to ensure the consistency of  
21 those reviews and to ensure that those reviews ensure  
22 safety.



1       We have also formalized our process for  
2 interacting with licensees during their steam  
3 generator outages and also formalized our review  
4 process for reviewing plant specific inspection  
5 summary reports which the industry provides following  
6 their inspection outages.

7       With respect to the regulatory framework,  
8 our primary focus at this point is modifying the  
9 technical specifications. And we currently, as you  
10 heard this morning, have two reviews in-house or two  
11 submittals in-house.

12       We have the Catawba submittal, which was  
13 submitted in February of 2003. And we have the  
14 generic changes to the standard technical  
15 specifications which we received in March 2003.

16       Next slide, please.

17       Two submittals, both the plant specific  
18 submittal and the generic submittal are intended to  
19 be consistent and we are reviewing those together.

20       The intent is that the lead plant submittal  
21 would allow us to resolve the remaining technical  
22 issues that we had with the old generic licensing

1 change package in an established process.

2 The objective or goal of these proposed  
3 revisions to the technical specification is to  
4 provide additional assurance that tube integrity will  
5 be maintained during operation.

6 And tube integrity is defined in these  
7 proposed technical specifications. And tube  
8 integrity basically involves two main item,  
9 structural integrity and leakage integrity.

10 Structural integrity relates to the actual physical  
11 strength of the tubes.

12 Leakage integrity refers to the amount of  
13 leakage that is acceptable under both normal  
14 operating conditions and postulated accident conditions  
15 and there are limits associated with both of those consistent with the  
16 design and licensing basis of the plant.

17 Next slide, please.

18 The proposed revisions to the technical  
19 specifications have several noteworthy attributes.  
20 And you heard some of those attributes this morning,  
21 but I would like to reiterate some of those.

22 The proposed technical specifications are

1 largely performance-based. A lot of the unnecessary  
2 prescriptive elements are being removed from the  
3 technical specifications.

4 But basically what the technical  
5 specifications would accomplish is that basically it  
6 would set the criteria which the tubes need to meet  
7 between inspections.

8 Or in other words, it basically  
9 would require plants to ensure that tube integrity is  
10 maintained between inspections. It does not provide  
11 details of what inspection techniques to be used. It  
12 basically specifies what the goals of the inspection  
13 program are.

14 Now, with that said, the framework isn't  
15 totally performance-based. There are some  
16 prescriptive elements in it. Those prescriptive  
17 elements -- there's really two main areas.

18 Those prescriptive elements are the tube  
19 repair criteria and also the maximum inspection  
20 intervals, or maximum amount of time a plant can go  
21 between inspection of the steam generators. And we  
22 felt these prescriptive elements were necessary to

1 maintain risk.

2       With respect to our rulemaking effort, one  
3 of the lessons learned from that rulemaking effort is  
4 that tube repair criteria can have a significant  
5 impact on risk. And as a result of that, the tube  
6 repair criteria remain in the tech specs and with  
7 prescriptive limits.

8       In addition, inspection intervals can also  
9 have a significant contribution to risk, and in  
10 addition, the state-of-the-art in terms of modeling  
11 degradation in some of the newer materials limits the  
12 amount of time that should be permitted between  
13 inspections. And so there is the prescriptive limits  
14 on the maximum interval between inspection.

15       Another attribute of the proposed technical  
16 specifications is that it reflects the performance of  
17 steam generators with new materials.

18       As you may be aware, over half the plants  
19 in the country now have what would be considered  
20 second or third generation tube materials, which are  
21 much more corrosion resistant than the mill-annealed alloy  
22 600 which was initially placed in service in the

1 '70s.

2       As a result of this, the prescriptive  
3 maximum inspection intervals that I just mentioned  
4 reflect the fact that the plants with the second  
5 generation tube material are more corrosion resistant  
6 than the plants with the early material, and  
7 similarly, for the third generation tube material.

8       Another attribute of the proposed technical  
9 specifications is that they are flexible. They will  
10 permit -- one of the challenges in the existing  
11 regulatory framework is that it was developed in the  
12 1970's when wastage and wall thinning were the dominant  
13 degradation mechanism and a lot of assumptions that  
14 went behind those prescriptive limits were based on  
15 our understanding at that time.

16       The current technical specifications are  
17 flexible in that they will accommodate changes in  
18 operating experience and technology, while giving  
19 incentives to improve the state-of-the-art for tube  
20 inspection and repair.

21       The last thing that I wanted to mention on  
22 this page is that our interaction with -- on the

1 regulatory framework have involved the public. We  
2 have had numerous public meetings on this issue. The  
3 public is encouraged to participate in those.

4 All of our documentation related to the  
5 improved regulatory framework is also publicly  
6 available.

7 So we continue to -- with the current  
8 proposed revisions to technical specifications we  
9 continue to encourage public involvement and we  
10 continue to operate in a public forum consistent with  
11 our performance goal.

12 Next slide, please.

13 The proposed technical specifications  
14 require the development of a steam generator program.  
15 That program has certain elements, and you heard some  
16 of those elements alluded to in the industry  
17 presentation. I just wanted to spend a few minutes  
18 discussing what those critical elements are.

19 One of the critical elements are that the  
20 steam generator program must have procedures for  
21 assessing the potential degradation mechanisms that  
22 may occur at the plant.

1       What this would entail is assessing the  
2 operating experience, not only at that plant but  
3 other plants, both foreign and domestic, and  
4 incorporate those insights into their inspection  
5 program. And the inspection program is another  
6 critical element of the overall steam generator  
7 management philosophy.

8       In the inspection program, the licensees  
9 are supposed to determine what are the appropriate  
10 probes to be used in order to find the degradation  
11 that may be occurring in those tubes and to determine  
12 what the appropriate frequency of inspections are  
13 within those maximum inspection intervals.

14       Another critical element in the tube  
15 integrity program is the integrity assessment, that's  
16 assessing the condition of the tubing to determine  
17 whether or not you are meeting the performance  
18 criteria.

19       Another critical element is that the  
20 licensees should have a provision for maintenance,  
21 plugging, and repair of degraded or defective steam  
22 generator tubes.

1       Next slide, please.

2       The steam generator program also has to have  
3 provisions for leakage monitoring. As I indicated  
4 earlier, the industry has developed EPRI guidelines  
5 related to monitoring primary to secondary operating  
6 leakage.

7       In addition, the program has to have  
8 provisions for secondary side integrity inform  
9 material exclusion. And this recognizes the fact  
10 that degradation on the secondary side of the steam  
11 generators, for example a support plate, may impact  
12 tube integrity.

13       And as a result, plants need to have  
14 provisions for monitoring that.

15       And a question came up earlier this morning  
16 about assessing foreign operating experience and how  
17 we use that.

18       One of the principal examples of the use of  
19 foreign operating experience is specifically in this  
20 case, in which steam generators in a foreign country  
21 experience degradation of some secondary side support  
22 structures. That raised concerns with respect to



1 what the potential impact would be on tube integrity.  
2 And as a result of that experience, we issued a  
3 generic letter to the industry back in 1997. So the  
4 staff does consider both foreign and domestic  
5 operating experience and takes the appropriate action  
6 when it is necessary.

7 Another provision of a steam generator  
8 program is that it has to have reports and  
9 self-assessments. And you heard the industry mention  
10 this morning that one of the self-assessments that  
11 they typically do, they have INPO audits which fulfill  
12 some of these self-assessment requirements.

13 And the last critical element of the steam  
14 generator program is the water chemistry program  
15 which must be implemented to control the corrosion or  
16 degradation of the steam generator tubes.

17 Next slide, please.

18 I would now like to spend a few minutes  
19 discussing where we are with respect to the Catawba  
20 review and what we have accomplished to date.

21 There have been a number of significant  
22 changes in our approach for modifying the technical

1 specifications since the last Commission meeting.

2 And you heard some of the reasons for those, but I

3 thought I would go through them briefly again.

4 As you are aware, back in 2001 we were

5 reviewing something termed a "generic license change

6 package" which was basically a generic proposal for

7 changing the standard technical specifications which

8 would have served as a template for plants to come in

9 with plant specific amendments. Since that time, as

10 you are aware, we are currently reviewing two types of

11 submittals, both the plant specific or lead plant submittal and also a

12 generic submittal. Both of those are being reviewed

13 and defined processes which are familiar with our

14 stakeholders. And these processes have defined goals

15 and expectations.

16 For example, the lead plant submittal is

17 being reviewed in accordance with our processes

18 for license amendments. The generic submittal is

19 being reviewed in accordance with our CLIIP, Consolidated

20 Line Item Improvement Process.

21 Another significant change since the last

22 Commission meeting is the structure of the proposed tech specs

1 and what needs to be inserted into the technical  
2 specifications.

3       With respect to the content, basically  
4 early in 2002, we identified an issue where the  
5 initial -- the generic license change package may  
6 have established a change process outside our normal  
7 establish processes for making changes to the  
8 facility, which are the license amendment process and  
9 the 50.59 process. As a result of that and as a  
10 result of a concern that this process may not allow  
11 the public the opportunity for a hearing under  
12 certain circumstances, we engaged the industry in  
13 June of last year and indicated that there were  
14 potential problems with their submittal. As a result  
15 of that, the industry made significant changes back  
16 in around September of last year. And right now we  
17 are in agreement with what needs to be in the tech  
18 specs.

19       Another significant accomplishment is that  
20 the NRC and the industry agree on what the goals and  
21 the critical elements of a steam generator program  
22 should be. And I briefly discussed what those goals

1 and critical elements are.

2        Another significant accomplishment since the  
3 last meeting in December of 2001 is that we have  
4 reached agreement on what the appropriate maximum  
5 inspection intervals should be. These maximum  
6 inspection intervals reflect our current state of the  
7 art knowledge with respect to the performance of the  
8 newer steam generator materials. It will reduce the  
9 burden on the industry and also increase our  
10 effectiveness sufficiency, because currently we are  
11 reviewing numerous requests for plants that have  
12 these improved materials to extend their operating  
13 interval based on the operating experience and the  
14 knowledge we have to date with respect to the  
15 performance of these materials.

16        So adoption of these proposed technical  
17 specifications and these maximum inspection intervals  
18 should not only decrease the burden on the industry  
19 but should also increase our effectiveness and  
20 efficiency.

21        Next slide, please.

22        We are also in agreement with the industry

1 on what the appropriate leakage performance criteria  
2 are. And these leakage performance criteria apply  
3 not only to the amount of leakage that may occur  
4 during normal operation but also the amount of  
5 leakage that would be tolerated during a design basis  
6 accident. And these criteria are consistent with the  
7 plant's safety analysis for assessing the  
8 radiological dose consequences associated with  
9 leakage.

10 The staff and the industry are also in  
11 agreement on the appropriate tube repair criteria  
12 and methods that should be incorporated into the  
13 technical specifications.

14 As I discussed before, the prepared  
15 criteria are prescriptive, consistent with our  
16 understanding that those repair criteria can have a  
17 significant contribution to risk.

18 The last bullet on this page just indicates  
19 that the staff and industry are also in agreement on  
20 the requirements to monitor the "as found" condition of  
21 the steam generator tubes. Since this is a  
22 performance-based approach, this is a critical

1 element in the steam generator program. It basically  
2 would require the licensees, during inspection and  
3 maintenance outages, to assess what they have found  
4 to make sure that they are meeting the applicable  
5 performance criteria.

6       Next slide, please.

7       As you heard this morning, we are nearing  
8 completion, but we are not done yet. There are still  
9 some remaining items. We have made significant  
10 progress since the receipt of the Catawba submittal  
11 on February 25th of this year. We had a public  
12 meeting which we discussed some of the issues that  
13 had been raised with the generic license change  
14 package and with the Catawba submittal. And we  
15 reached an understanding on many of those issues as I  
16 just discussed. We also issued an RAI which  
17 reflected some of the issues we raised during that  
18 meeting and also reflected additional issues that we  
19 identified following that meeting.

20       The most significant issue that is  
21 outstanding is the structural integrity performance  
22 criteria and what the appropriate safety factors

1 should be against failure under design basis accident  
2 conditions. And as the industry indicated, we are on  
3 a near-term schedule for completing that review.

4       Next slide, please.

5       Although we have reached agreement  
6 conceptually on a lot of issues, there are still some  
7 terminology concerns that we have. And these are  
8 administrative. We don't see these as major issues,  
9 and we think we are on the same page with the  
10 industry. But there are some concerns with the  
11 original Catawba submittal with respect to how things  
12 are stated and whether or not they are clear and  
13 concise.

14       In addition, we also need to clear up some  
15 potential inconsistencies in the proposal. And once  
16 again, we don't see these as significant issues and  
17 we believe that when Catawba provides their response  
18 to the RAI's that these will be cleared up.

19       As Brian indicated and I just wanted to  
20 reiterate is that approval of these technical  
21 specifications would essentially complete our review  
22 of the industry initiative in NEI 97-06. Basically,

1 we have taken all of the critical parts out of NEI  
2 97-06, and it would be incorporating those essential  
3 elements into the technical specifications.

4 Next slide, please.

5 With respect to schedule, I think you heard  
6 some of the industry's -- the industry portion of the  
7 schedule and their expectations. I think we are in  
8 agreement with those. We expect a Duke Power  
9 response in early June. I think they are shooting  
10 for June 9th.

11 We would expect to have the Safety  
12 Evaluation Report completed on that within three  
13 months of the final RAI response. At this point,  
14 it's not clear whether or not the June 9th response  
15 would actually fully address the structural integrity  
16 performance criteria, but we will continue to work  
17 that to resolve that in the near term.

18 With respect to the generic safety  
19 evaluation, which we would issue on the Technical  
20 Specification Task Force changes, we would expect to  
21 have that complete six months after receipt of the  
22 final submittal. As I indicated, that submittal will



1 have to be changed to reflect what we agreed to with  
2 respect to Catawba. So we would expect that generic  
3 safety evaluation to be completed six months after  
4 receipt of that submittal.

5 >> COMM. EDWARD MCGAFFIGAN: Mr. Chairman,  
6 could I clarify just on that point?

7 >> CHAIRMAN NILS DIAZ: Sure.

8 >> COMM. EDWARD MCGAFFIGAN: There will be  
9 a final SER on Catawba, say September of this year.  
10 At that point, you expect the industry to provide a  
11 revision to TSTF 449.

12 At that point, you're going to take six  
13 months from when they do that to get to the final  
14 SER? Or earlier there was a mention of a draft SER  
15 that will go out and then there will be comments on  
16 it.

17 >> KENNETH KARWOSKI: Our intention is that  
18 six months would be the final SER. So that would  
19 reflect developing the draft. I don't recall the  
20 exact public comment period, but sixty or ninety  
21 days, and then addressing the public comments, and  
22 then republishing the final SER.

1           So the six months basically has a month to  
2 six weeks to prepare the draft safety evaluation  
3 report, sixty, ninety days. We do not expect  
4 extensive public comments on this. And that schedule  
5 reflects that fact.

6           >> COMM. EDWARD MCGAFFIGAN: So some time  
7 in the spring of next year there would be a final SER  
8 on the -- assuming NEI can get their generic change  
9 package changed fairly quickly. At that point,  
10 spring of next year, there is a basis for everybody  
11 else over the following year to submit -- everybody  
12 else on the pressurized water reactor sector to  
13 submit tech spec changes.

14           >> KENNETH KARWOSKI: That would be our  
15 expectations.

16           >> COMM. JEFFREY MERRIFIELD: I was going  
17 to say with no ill respect to Mr. Karwoski, I have seen various  
18 folks in the audience, both our staff and NEI have been shaking  
19 their heads at various points in terms of some of the timing  
20 issues. And although the record reflects his  
21 comments, there may be some additional need for  
22 clarification. I don't know if either staff or NEI

1 wants to -- or we can clarify that for the record

2 later on.

3 COMM. EDWARD MCGAFFIGAN: I wasn't

4 watching. I was really looking at Mr. Karwoski.

5 COMM. JEFFREY MERRIFIELD: I was

6 watching the body language of other folks in the

7 audience. I apologize.

8 COMM. EDWARD MCGAFFIGAN: Were they twisting

9 and turning and moaning?

10 COMM. JEFFREY MERRIFIELD: Well, just for the record,

11 there was a great degree of specificity. And I don't mean to put

12 Mr. Karwoski on the spot. But there may be some

13 clarification that needs to be made about the timing

14 and expectations of the staff vis-a-vis --

15 CHAIRMAN NILS DIAZ: And that would be

16 fine. We hope we'll get it.

17 JAMES RILEY: Hi, this is Jim Riley,

18 NEI. This is pretty simple. I just wanted to

19 clarify the TSTF schedule. We intend to submit that

20 very shortly after the Catawba submittal, probably

21 within a matter of weeks. So you should have the

22 TSTF also in June.

23 COMM. EDWARD MCGAFFIGAN: You can do

24 that without having the final SER? You don't get the

1 final SER until September.

2 JAMES RILEY: Right. We would make the  
3 TSTF look like -- well, the Catawba submittal and  
4 TSTF look very similar. The TSTF then would go in  
5 the review process for the NRC. And if there are  
6 other RAI's that come out of the Catawba submittal,  
7 that would have to be reflected in the TSTF, too.

8 COMM. JEFFREY MERRIFIELD: You're going  
9 to dual track it?

10 JAMES RILEY: Yes. We're working them in  
11 parallel. We would have the TSTF in about the same  
12 time as the final Catawba submittal.

13 CHAIRMAN NILS DIAZ: All right. Thank  
14 you.

15 KENNETH KARWOSKI: I guess if I could  
16 just clarify. The assumptions on the schedule is that  
17 we would reach resolution of the structural integrity  
18 performance criteria some time in the June time  
19 frame.

20 Just to summarize slide 15, we believe that  
21 the current framework which I outlined earlier, which  
22 basically consists of the regulations, the industry

1 programs and the NRC review and oversight provides  
2 reasonable assurance of tube integrity at this time.  
3 With that said, we do believe that there is a need to  
4 modify the technical specifications to basically  
5 incorporate or to reflect what the industry is  
6 currently doing to ensure tube integrity.

7       We are on a near-term schedule for  
8 improving the regulatory framework. We believe this  
9 regulatory framework will maintain safety. We  
10 believe it will reduce burden on the licensee and  
11 also improve the staff effectiveness and efficiency.  
12 And we also believe that it will increase public  
13 confidence in this area.

14       The new framework, as was pointed out this  
15 morning, will not correct all the issues. Issues  
16 will still come up, plants may still have a tube  
17 rupture. Although our goal would be to minimize  
18 those. But the possibility of that exists. But as  
19 Brian indicated, a steam generator tube rupture is an  
20 analyzed event. We will continue to monitor  
21 operating experience, both domestic and foreign  
22 operating experience, and evaluate that to determine

1 what additional actions if any need to be taken. And  
2 that concludes my presentation.

3 WILLIAM TRAVERS: Thanks, Ken.

4 Mr. Chairman, that completes the staff's  
5 presentation on updating on the issues of steam  
6 generator tube integrity.

7 CHAIRMAN NILS DIAZ: Thank you Dr. Travers. I  
8 believe we'll go back to Commissioner Merrifield.

9 COMM. JEFFREY MERRIFIELD: Thank you,  
10 Mr. Chairman. I mentioned in my earlier round, but  
11 since the mid 90s, the staff and industry have been  
12 working diligently on steam generator integrity  
13 issues. It now being 2003, according to the  
14 director's quarterly status report that I took a look  
15 at, we have logged some 43,000 hours to get to the  
16 point that we are today, albeit, there's been some  
17 changes along the way. My take from the meeting this  
18 morning is that we are on the way toward resolving  
19 many of these issues and being where we need to be in  
20 a path forward. And I think everyone should be  
21 commended for that effort.

22 That having been said, we are, we would

1 like to stay, a learned and learning organization.

2 And my question is how is it that it has taken so

3 long and so much time to get to where we are today?

4       BRIAN SHERON: I think there are a lot

5 of contentious issues that we had to really kind of

6 work through with the industry. There was a number

7 of them, I think, where we started out miles apart in

8 terms of what we believed was necessary versus what

9 the industry did. And it just took time to have

10 meetings, work through the issues, lay out

11 everybody's side of the argument, you might say. And

12 plus when we're dealing with industry -- and this is

13 not said in any pejorative way -- but it takes time

14 for them as well. Because, for example, NEI comes in, and I

15 don't believe they can just unilaterally commit for

16 the industry. They need to take proposals back and

17 the like, and they need to hash it around with their

18 licensees and so forth, and then come back and either

19 say, what the staff proposed was acceptable and

20 whether they propose an alternative and the like.

21 And it's a time consuming process just in terms of

22 that.

1 Ken, I don't know if you want to add on a  
2 little bit, because you were more involved than I was

3 KENNETH KARWOSKI: Right. The focus has  
4 changed over time. As Brian indicated, our initial  
5 effort was evaluating the need for a rule. We  
6 determined that a rule was not the appropriate  
7 vehicle, that we should modify the technical  
8 specifications. At that point in time, we started  
9 developing a draft generic letter and an associated  
10 draft regulatory guide. At about that time, DSI-13  
11 on the role of industry initiatives came into play.  
12 And we basically put our effort with respect to the  
13 draft generic letter and the draft regulatory guide  
14 on hold in order to work with the industry to address  
15 these issues. That's from the regulatory framework  
16 standpoint.

17 But in addition, we were addressing a  
18 number of technical issues. And the focus of those  
19 technical issues during that time period has changed.  
20 Back in the early '90s, a lot of the plants had the  
21 older tube material or the alloy 600 mill-annealed. As a result,  
22 the focus of the industry at that point in time was a



1 steam generator degradation specific management  
2 program, which they were looking at alternate tube repair  
3 criteria. As plants replaced their steam generators  
4 throughout the '90s, the focus became relaxation of  
5 the inspection intervals currently in the technical  
6 specifications.

7       So when you look at it from a perspective  
8 of what was happening in the '90s to what is  
9 happening today, the focus has changed. And in  
10 addition we evaluated various regulatory options for  
11 addressing the issue. And those have evolved with  
12 time.

13       COMM. JEFFREY MERRIFIELD: Well, I  
14 appreciate that, recognizing that times have changed  
15 and our focus on the sub-issues can change. I do  
16 hope, after having gone through this, the staff looks  
17 back at it to see if there are any changes in our  
18 processes or methodologies that can be used to either  
19 try to seek some resolution earlier on of what the  
20 focus needs to be and additionally to make sure that  
21 the process that we have to elevate and resolve  
22 issues where there are technical differences can be

1 made more efficient.

2 I mean, obviously, we need to take the time we need  
3 to do as an agency to be satisfied that we have  
4 a technical basis for making the regulatory changes  
5 we are making. I'm not going to belittle that at  
6 all. But frequently I think we have found as a  
7 Commission that there are times when the staff is --  
8 and I'm not saying that you have to elevate issues to us, I'm saying  
9 when there is an issue in the staff that takes an awful lot of time, it might be  
10 something that the Commission, if given that issue,  
11 could resolve relatively quickly. And by analogy it would seem to me  
12 that sometimes there are issues that higher level management  
13 might be able to focus on with a little greater  
14 degree of repeatability than the staff might be able to do  
15 on their own.

16 But this is just saying 43,000 hours is a  
17 lot, and is there a better way to do it going forward  
18 so we don't repeat this kind of thing and resolve  
19 these things more efficiently?

20 RICHARD BARRETT: Commissioner, I would  
21 just like to add a word to round out our answer.  
22 There is a third component to this, and that is steam

1 generator action plan, which is a fairly extensive  
2 body of work that has been done and that is still in  
3 progress, both in NRR and in Research, that came out  
4 of lessons learned from our experience with the  
5 Indian Point tube failure as well as the resolution  
6 of a rather extensive differing professional opinion,  
7 which resulted in quite an extensive list of  
8 recommendations from the ACRS. And I'm not sure where  
9 you got the 43,000 hour estimate, though it doesn't  
10 surprise me at all. But I imagine it also includes a  
11 lot of effort on the part of NRR and Research to  
12 resolve those issues.

13       COMM. JEFFREY MERRIFIELD: My guess is  
14 that it probably is inclusive of those efforts as  
15 well. I think my comment is still valid.

16       RICHARD BARRETT: I agree.

17       COMM. JEFFREY MERRIFIELD: On slides 12  
18 and 13, you discuss the issues that remain for  
19 closure. The second bullet on slide 12 is one I've  
20 also previously mentioned regarding the resolution of  
21 the structural integrity performance criterion. And  
22 I'm wondering if you can give me some greater degree

1 of specificity as to how you intend on resolving the  
2 issues.

3       KENNETH KARWOSKI: What we are trying to  
4 do there is basically make the factor of safety  
5 against failure consistent with what the code would  
6 require. The code doesn't specify factors of safety,  
7 it specifies stress limits. So basically we need to  
8 evaluate what the intent of the code was with those  
9 stress limits. We need to look at failure theory and  
10 historical precedence in this area to make sure that  
11 we maintain a margin of safety consistent with the  
12 code.

13       And basically, what the issue boils down  
14 to, although I refer to it as the structure integrity  
15 performance criteria it's only one aspect of that,  
16 and that's what the appropriate safety factor should  
17 be on a certain type of loads, primarily bending loads during  
18 postulated accidents.

19       COMM. JEFFREY MERRIFIELD: Assuming that  
20 all goes well with the Catawba and generic submittal  
21 of reviews, our resources obviously are going to have  
22 to shift toward processing of individual requests

1 to adopt new tech specs.

2       On slide 15 of NEI's presentation, they say  
3 that they are encouraging PWR's to submit tech spec  
4 changes within 12 months after the staff approves a  
5 generic submittal. Do we have any sense at this  
6 point of the resources that are going to be necessary  
7 to conduct these reviews and whether we have  
8 available resources to conduct those reviews?

9       KENNETH KARWOSKI: The resources to  
10 conduct those reviews have been budgeted. The actual  
11 reviews should be minimal. That is the whole  
12 process. That's the whole reason for processing the  
13 generic submittal, is to basically make the process  
14 more effective and efficient.

15       We believe that a lot of these reviews will  
16 be able to be done by our project managers because  
17 they basically should be very consistent from plant  
18 to plant. The difficulty that will become is if  
19 licensees want to deviate from that generic template  
20 that we will put out.

21       COMM. JEFFREY MERRIFIELD: So the staff  
22 is committed, and I take your comments as optimistic

1 about its ability to effectively and efficiently deal  
2 with those reviews as long as NEI is disciplined in  
3 following the generic guidance.

4       COMM. EDWARD MCGAFFIGAN: You mean NEI's  
5 members?

6       COMM. JEFFREY MERRIFIELD: NEI's  
7 members. I mean, the more people want  
8 specialization, the less sufficient we can be?

9       KENNETH KARWOSKI: Absolutely.

10       COMM. JEFFREY MERRIFIELD: My final  
11 question. It seems to me that a lot of the effort --  
12 and I'm not belittling it. I think it's a very  
13 positive effort that's been undertaken to deal with  
14 the steam generator issues. It obviously focuses a  
15 lot of after the horse is out of the barn. And by  
16 that I mean how we resolve inspection and oversight  
17 of the steam generators as they are installed in  
18 reactors. We have a significant effort underway in  
19 which a lot of the plants are installing these steam  
20 generators for a whole variety of different reasons.  
21       Unlike years passed, we no longer  
22 manufacture any of those steam generators in the

1 United States. All of them are manufactured abroad.

2 Although we may have the capability, that just

3 doesn't happen here.

4 What are we doing related to our

5 inspections and oversight of the generators as they

6 are manufactured at these foreign facilities?

7 BRIAN SHERON: I think you had raised

8 that issue actually a couple of months ago.

9 COMM. JEFFREY MERRIFIELD: I've raised

10 those kind of issues repeatedly.

11 BRIAN SHERON: And I'm going to have to

12 turn to the staff because I understand that our

13 leadership team did address that issue. I don't know

14 if, Richard, you're prepared or --

15 RICHARD BARRETT: I think it would be

16 optimistic to say that we did address the issue. Our

17 leadership team which consists of our division

18 director level management have been considering the

19 question of whether it's appropriate at this time for

20 the staff to propose to reinstate a vendor-type of

21 inspection program. We had a rather extensive vendor

22 inspection program in the past. That's something

1 that we don't, at this time, spend a great deal of  
2 effort on. And so we are considering the question of  
3 whether some of these large programs such as  
4 replacements of steam generators, replacements of  
5 reactor vessel heads which are being fabricated  
6 overseas, whether that's something that we want to  
7 begin to expend significant resources on or whether  
8 that's something that we want to continue to leave to  
9 the control programs that licensees themselves are  
10 required to have. And I don't have an answer for  
11 that at this time. It's a question we have under  
12 advisement.

13       We have only done a limited amount of  
14 inspection and oversight of foreign vendors. We have  
15 had, for instance, some of our staff visit facilities  
16 where these components are fabricated, Canada and  
17 France. We have the specific example of the reactor  
18 head that was fabricated for North Anna 2 last year  
19 where we had a rather extensive review. But that  
20 review was done because that head had been fabricated  
21 to a different set of codes and standards and had  
22 been fabricated to a different quality assurance set



1 of requirements. And we wanted to get a sense of  
2 comfort that there was an equivalence.

3       So we are aware of these facilities. We  
4 know that the work that's done there is quality work.  
5 We have had visits by our competent technical staff.  
6 I would not characterize those as inspections  
7 however.

8       CHAIRMAN NILS DIAZ: I'm sorry. But it  
9 seems, seeing some of this, they do have the code  
10 standards, the requirements and quality assurance  
11 that are used in this country. And I think  
12 Commissioner Merrifield's question is, you know,  
13 sometimes we need to be assured that there are  
14 following -- I know they have them and I know they are  
15 supposed to follow them. It's just this comfort level  
16 of, are all of those things being used.

17       COMM. JEFFREY MERRIFIELD: I agree with  
18 that. In no way am I suggesting that we create some  
19 new staff travel program to go abroad and do a whole  
20 lot of new inspections. But I think we do need  
21 to have the confidence that these are in fact being  
22 manufactured according to the specifications that we

1 think are appropriate. I would say as a bi-way --  
2 and this is another topic that I have raised before  
3 -- it also, I think, raises the possibility of  
4 revisiting whether there are other methodologies for  
5 conducting inspections that may be more effective and  
6 efficient, i.e. the ISO-9000 program which many foreign  
7 vendors are also intimately involved with and some of  
8 our foreign counterparts, including the Swiss, have  
9 actively engaged in.

10       So I think as the staff reviews this -- and  
11 I appreciate the Chairman jumping in, although I was  
12 about to go that way as well -- as the staff reviews  
13 this, I'm not suggesting that no one single  
14 Commissioner should tell you guys what to be doing.  
15 I don't want you to take from my comments that you  
16 have to have this massive inspection program using  
17 the old standards and we just go out in a half-handed way  
18 and conduct those inspections. I think I'm in  
19 agreement with the Chairman, that it's got to be sort  
20 of a narrow look, but one that is inclusive of  
21 perhaps some new ideas and different ways of doing  
22 things to make sure that the components that are

1 coming into the United States and that are going into the  
2 reactors that we regulate have the quality and  
3 meet the needs that we think are appropriate.

4 WILLIAM KANE: If I could add to that a  
5 little bit, perhaps it will help. Certainly we  
6 expect the licensees to have the first responsibility  
7 for having a quality assurance program that we can  
8 have confidence in and that will address the issues.  
9 Wherever they happen to be manufactured, that's their  
10 responsibility. And we look at that. But if in fact  
11 there are issues or information that comes to us,  
12 then we would have to react to that as appropriate.  
13 And we will.

14 COMM. JEFFREY MERRIFIELD: And you raise  
15 an excellent point as well. The licensees have  
16 significant responsibility in that area. And again,  
17 raising a point for their part, NEI as I'm aware and  
18 EPRI are both looking also at the ISO-9,000 as a  
19 possible arrangement for conducting the same or  
20 greater level of quality assurance but in perhaps a  
21 more effective and efficient manner. I certainly  
22 would not instruct but encourage the staff to be

1 engaged with those discussions as well.

2 Thank you, Mr. Chairman.

3       BRIAN SHERON: Actually, we have not had  
4 a lot of difficulty or problems with the components  
5 that have been replaced from the standpoint of  
6 quality. And I do want to point out that the regions  
7 do spend a fair amount of time during the inspection  
8 process when new components come on site. I know  
9 that, for example Region II has been very concerned  
10 because they have seven vessel heads that are going  
11 to be replaced in the near term. And I know they  
12 spent a lot of time looking at the components as they  
13 come in and making sure that they meet all NRC  
14 requirements.

15       CHAIRMAN NILS DIAZ: All right. Thank  
16 you. Well, let me pick up on something that  
17 Commissioner Merrifield started. You know, this has  
18 been a long rulemaking effort, about 10 years. I  
19 think I was a young man then, and not young anymore.  
20 Fundamentally, it's being a very steady progress. We  
21 look forward to closure as Ken has been saying, and  
22 we look forward to closure on those schedules. I know

1 they're tight, but it will certainly be a good thing

2 to do.

3 I agree with you, Ken, that this doesn't

4 close -- there's always new information that is going

5 to come out. There are new issues, and that's

6 precisely why the performance based rules make a lot

7 of sense, because it actually focuses on the outcomes

8 rather than in something that might be obsolete.

9 I need to go back and focus a little bit on

10 the first comments of Brian Sheron and the last

11 comments of Ken because of something that I keep

12 stressing for years. We know this is going on the

13 record, and there might be an audience. It's the

14 fact that, you know, the Commission works on a very

15 good charter of reasonable assurance of protection of

16 public health and safety. And when we tackle

17 something as sensitive as steam generators, which has

18 had many problems, we have tried and keep trying and

19 will keep trying to minimize the potential for the

20 degradation of this important barrier. And we will

21 do this within the bounds of our charter.

22 However, I don't know whether I read you

1 wrong, Brian, but I sensed that your expectation as  
2 could be projected will be higher than what mine  
3 would be. I don't think anybody should expect a  
4 great surprise if you put a brand new steam generator  
5 in 15 years from now and you got either a tube leak  
6 or you got a tube rupture, because the probability of  
7 that is not zero. There's no zero defects, there's  
8 no zero deficiencies. Our job is to minimize that  
9 probability and to also minimize the potential health  
10 impacts from any such rupture. And those are very  
11 reasonable bounds of some things that are achievable,  
12 things that we can work to. But I don't know whether  
13 there was a discrepancy between my concluding  
14 statements and your first statements regarding how we  
15 were driving this. Did I notice --

16 BRIAN SHERON: No. I may have sent the  
17 wrong message or so when I said that tube ruptures  
18 were not acceptable --

19 CHAIRMAN NILS DIAZ: My hair stood up in  
20 the back and my ears got red, but besides that --

21 BRIAN SHERON: I mean, obviously you  
22 can't foresee and prevent all tube ruptures and

1 that's why they are considered design base. But I  
2 think my point was that we should be doing and making  
3 sure the industry is doing everything that is  
4 reasonable to prevent these tube ruptures or tube  
5 failures from occurring, which means, you know,  
6 taking all reasonable steps toward doing the right  
7 inspections, using the right inspection techniques,  
8 et cetera.

9 WILLIAM KANE: Our test has been and will remain  
10 reasonable assurance.

11 CHAIRMAN NILS DIAZ: You know, I don't  
12 want it to happen that when we get one of these we  
13 can and say oh, my gosh, how can this happen. No.  
14 It is time that we look at these things as manageable  
15 incidents, and that's what we want to do. We want to  
16 put them within a frame work where they can be  
17 managed. Because you know once it happens, we should  
18 not be rushing out saying, oh, how did this happen.  
19 It happens because things happen. As long as there's  
20 no impact on public health and safety, we have done  
21 our job and the licensees have done their jobs. And  
22 I just want to make sure that we agreed on that.

23 BRIAN SHERON: If when we take a look

1 and we find out why, for example a tube failure  
2 happened and it was because of some inadequacy in a  
3 licensee's program, had a poor inspection -- that's my  
4 point.

5 CHAIRMAN NILS DIAZ: That's a different  
6 issue.

7 BRIAN SHERON: And we want to make sure  
8 that they do it right the first time.

9 CHAIRMAN NILS DIAZ: This great effort  
10 is trying to make sure that everybody understands  
11 that these things need to be done right and I totally  
12 agree with that.

13 Very good. Let me just put that aside and  
14 go forward. I asked a question on the NEI about how  
15 we are introducing risk insights which are performance based  
16 as we look at severe accidents. I'm sure we have a more in  
17 depth look at the present time of those issues, if  
18 you care to comment on it.

19 RICHARD BARRETT: Yes, we have,  
20 Chairman. We have been looking at the risk implications  
21 of this issue going back into 1997 and perhaps before  
22 that. And we have looked at it from a broad



1 perspective, not only from the perspective of a steam  
2 generator tube rupture which has a finite, albeit  
3 small, probability of leading to core damage. We  
4 have also looked at it from the risk associated with  
5 induced steam generator tube ruptures and the  
6 potential that a degraded tube could fail during a  
7 severe accident that was caused by some other means,  
8 some other type of accident, perhaps a station  
9 blackout, and turn a core damage accident into a  
10 large early release.

11       We've done a lot of analytical work, and we  
12 think we understand the relationships between the  
13 performance criteria that we are putting into this  
14 tech spec and risk as it goes across the board. And  
15 we have actually used risk in a couple of regulatory  
16 applications. We have looked at two risk informed  
17 license amendments where we applied this methodology.  
18 One we accepted, one we rejected.

19       We also used this risk methodology in  
20 analyzing the steam generator tube failure event at  
21 Indian Point from the perspective of the reactor  
22 oversight process and came up with a red finding

1 which went into the record.

2       There are still a lot of uncertainties  
3 associated with this. And some of those  
4 uncertainties are being addressed in the steam  
5 generator action plan. Some of the thermal hydraulic  
6 questions about how hot the steam is, for instance,  
7 that comes up in the steam generator in a high / dry  
8 accident sequencing. And we continue to try to make  
9 progress on those areas. And we deal with those as  
10 large uncertainties when we try to apply risk.

11       CHAIRMAN NILS DIAZ: Well, I think  
12 that's a good story. Again, I would like to see  
13 some reasonable closure of this issue because, you  
14 know, we can keep looking for things and never end.  
15 We want to realize which ones are really the  
16 important ones.

17       MICHAEL MAYFIELD: Coming out of the  
18 Calloway evaluation, this issue became a driving  
19 matter. Mr. Thadoni set us on a path to deal with  
20 some of the uncertainties that Rich mentioned. And  
21 Mr. Collins in his office subsequently provided a  
22 user need request to deal with exactly the same

1 issue. We are focused both through some experimental  
2 work and a fair bit of analytical work ongoing to  
3 address the uncertainties to try to bring this issue  
4 to closure, and to do so so that we never get into  
5 another Calloway situation, at least not the same  
6 one. So we're sensitive to your issue.

7       BRIAN SHERON: I would point out though  
8 that Calloway was a unique situation because the  
9 licensee came in and proposed to use a material in  
10 a steam generator which we had never contemplated  
11 before. And it posed new questions, which our  
12 regulations, for example, didn't cover. So I can't  
13 say that the industry might not come up with some new  
14 or different technique in the future for say  
15 repairing generator tubes that we would have to look  
16 at and also take a risk perspective on.

17       CHAIRMAN NILS DIAZ: I've been very  
18 satisfied in following the interaction with the  
19 public on this issue. And I think you have had a  
20 very open process. We're getting to closure on those  
21 things. And of course there's going to be an issue,  
22 how we document the resolution of public comments

1 when this issue of the plant specific versus  
2 generic issue comes out. And I'm sure you have been  
3 concerned whether the issue that the design basis is  
4 going to come in between these things. Do you care  
5 to comment on that if somebody were to raise the  
- 6 issue of the design basis as it applies to plant  
7 specific versus the generic?

8 KENNETH KARWOSKI: I don't think the  
9 proposed changes that we are reviewing for Catawba or  
10 the generic submittal would raise any questions with  
11 respect to the design basis. Basically, the  
12 performance criteria that we are establishing are  
13 supposed to be consistent with the design and  
14 licensing basis of the plant. And that's why we are  
15 taking a close look at the structural integrity of  
16 performance criteria. So I do not believe that we  
17 are introducing anything that would question the  
18 design basis.

19 CHAIRMAN NILS DIAZ: I believe somebody  
20 would probably, you know, like my comment on the  
21 issue and I'm saying are you prepared to provide the right answer.  
22 And that's the issue. Because I'm sure the design basis is  
23 coming back out of the woodwork, you

1 know, every time we do something, and rightly so.

2 But we need to be prepared. You said you don't

3 see that's going to be a major problem.

4       The scope of the review of the licensee

5 steam generator inspections, you know, when we get

6 the summary reports that are submitted after the

7 plant outage, just a question, is this review done by

8 inspectors as part of an inspection? And does

9 headquarters participate on this? How is this put

10 together?

11       KENNETH KARWOSKI: The specific review

12 of the inspection summary reports are done by

13 headquarters personnel. Headquarters personnel

14 participates in phone calls with licensees during

15 their outages to assess what they are doing and the

16 adequacy of what they are doing to ensure that they

17 are meeting the regulations. We coordinate those

18 discussions with the regions to make sure that

19 they're aware so that they can factor those into

20 their inspections. But with respect to the review of

21 the inspection summary reports, those reviews are

22 done in headquarters.

1 CHAIRMAN NILS DIAZ: And again an issue documentation.  
 2 So the issue is this -- the documentation is up today then goes up the  
 3 ladder and all of those things that the Commission  
 4 gets concerned with.

5 KENNETH KARWOSKI: The answer is yes.

6 CHAIRMAN NILS DIAZ: You are putting it  
 7 on the record. That's all we want to know.

8 KENNETH KARWOSKI: They are publicly  
 9 available.

10 CHAIRMAN NILS DIAZ: I asked the  
 11 industry -- and of course there is no real answer.  
 12 But I'm sure you have been thinking about the  
 13 possibility that one of these plants might not go  
 14 with the generic tech specs. Is there a fallback  
 15 plan on how we are going to deal with that issue?

16 KENNETH KARWOSKI: We anticipate that  
 17 utilities would come in with the proposed revisions  
 18 to the technical specifications. In the event that a  
 19 utility did not, we would have to evaluate whether or  
 20 not there is need to take some other action with that  
 21 utility. But at this point we foresee that most  
 22 plants would come in there as benefit to licensees,

1 not only plants with the newer materials but also

2 with the older materials. There are advantages.

3 CHAIRMAN NILS DIAZ: And besides the

4 tech specs, what could the Commission expect in the

5 future regarding additional closure of steam

6 generator issues? Is there anything out there, be it

7 NRR, Research, or a combination of both, that the

8 Commission should be hearing about in the future, in

9 the near future? Is there anything else?

10 I knows there is the steam generator

11 action plan, but besides that is there an emerging

12 issue that you guys are talking about?

13 WILLIAM KANE: I believe it all would be

14 encompassed in the steam generator action plan, which

15 we will provide, as I recall, semiannual reports to

16 the Commission.

17 WILLIAM TRAVERS: Of course you

18 recognize anything else that comes up we would

19 factor into that plan and keep you informed.

20 CHAIRMAN NILS DIAZ: All right.

21 Commissioner McGaffigan?

22 COMM. EDWARD MCGAFFIGAN: Thank you,

1 Mr. Chairman. I just want to explore again a couple  
2 of differences between what you said and what is in  
3 SECY-03-0080.

4 One of the sentences I'll just read you  
5 from page 5 of the paper. It says, " The staff has  
6 raised concerns with respect to the industry's  
7 proposed changes to the maximum inspection intervals  
8 currently specified in the tech specs". Nowhere in  
9 here does it say that the main issue remaining is the  
10 structural integrity performance criterion. And I  
11 thought the paper implied that the main issue was the  
12 maximum inspection interval. So is the maximum  
13 inspection interval now resolved.

14 KENNETH KARWOSKI: The answer is yes in structural integrity  
15 performance criteria. You have something more recent than what was in the  
16 SECY paper just simply because of timing of when that  
17 was prepared.

18 COMM. EDWARD MCGAFFIGAN: How long did the concurrence process  
19 last -- one of my favorite topics.

20 KENNETH KARWOSKI: So the resolution of maximum  
21 inspection intervals is a recent development. And so  
22 that is resolved. And the structural integrity  
23 performance criteria is a result of -- basically, we  
24 didn't recognize the significance of the change that  
25 they were making at the time we received the Catawba



1 submittal. Certainly we noticed there was a  
2 difference, but we thought we would be able to reach  
3 resolution quickly and we are not there yet.

4       COMM. EDWARD MCGAFFIGAN: I have not  
5 poured over these tech spec documents. But just to  
6 enlighten me, maximum inspection interval, does it  
7 change for somebody with the old materials, with the  
8 alloy 600? Does it get tighter or does it get looser  
9 for somebody who has, you know, the material that  
10 we're most worried about.

11       KENNETH KARWOSKI: It's intended to stay  
12 the same. And let me clarify that. The existing  
13 technical specifications would indicate that a plant  
14 with a degraded steam generator such as with mill-annealed  
15 alloy 600 would inspect over 24 calendar months. In the  
16 proposed revision, we would say 24 effective full  
17 power months, which basically reflects the fact that  
18 corrosion normally occurs when the plant is hot or  
19 operating rather than when the plant is shut down.

20       In terms of effectiveness and efficiency,  
21 we frequently get technical specification amendments  
22 which plants indicate we've been shut down for an

1 extended period of time, our technical specifications  
2 would require us to do an inspection after 24  
3 calendar months, and would you please extend it. So  
4 they are essentially identical.

5 COMM. EDWARD MCGAFFIGAN: The leakage  
6 performance criterion, what is that now going to be  
7 compared to what it was before?

8 KENNETH KARWOSKI: Okay. There are two  
9 criteria. There's the normal operating and accident  
10 induced. I assume you're referring to the normal  
11 operating.

12 The new normal operating leakage limit will  
13 be 158 gallons per day.

14 COMM. EDWARD MCGAFFIGAN: Down from 450  
15 or something like that?

16 KENNETH KARWOSKI: Plants ranged from 500  
17 gallons per day to 720 gallons per day, but the  
18 standard technical specifications would indicate 500 to  
19 720.

20 COMM. EDWARD MCGAFFIGAN: My  
21 recollection in the Indian Point case was that they  
22 were down at fractions of a gallon per day and then

1 flipped to two gallons a day or something like that.  
2 Our resident inspector was all over it and the region  
3 all over it, before the event saying, make sure  
4 you're monitoring this stuff. And we're trying to  
5 understand this Delta. But we are still very, very  
6 far away from, and I think it's appropriate, were very far away from any  
7 sort of criterion that would be at all relevant to the Indian Point event, right?

8 KENNETH KARWOSKI: You're correct in  
9 your characterization of the amount of leakage that  
10 occurred at Indian Point 2 and at other plants that  
11 have had ruptures. I think the key point to make is  
12 that there is no leakage limit that can provide you  
13 assurance of tube integrity.

14 COMM. EDWARD MCGAFFIGAN: You see the  
15 Chairman nodding vigorously.

16 BRIAN SHERON: About half the tube  
17 ruptures we have seen had no precursor leakage. And  
18 if you look at the leakage that was occurring in  
19 Indian Point 2 and the accuracy at which you could  
20 measure that -- you know, if you've ever seen a plot,  
21 it looks like a shotgun hit it. It changes daily,  
22 it goes up and it goes down.

1       We have seen this in a number of plants  
2 where we have monitored leakage, it will rise up and  
3 then we start getting worried and then the next day  
4 it's down again and we don't get worried.

5       COMM. EDWARD MCGAFFIGAN: I'm going to stay on Indian Point  
6 for a second because it comes up -- you know, you mentioned the red finding  
7 in the SDP process. But my understanding is that the accident sequence  
8 precursor process is having a hell of a time finding  
9 any risk significance to that event. And I'm not  
10 sure whether Research is finished with that.

11       Obviously, Region I was interacting with  
12 Research on that. But, you know, in retrospect, was  
13 Indian Point 2 a red event? If we were risk based,  
14 it would not be a red event. It was other things  
15 that drove that to a red, right, other than  
16 risk?

17       RICHARD BARRETT: No, I think it was a  
18 red event based on the risk analysis. And we could  
19 have an entire briefing on this question of how the  
20 reactor oversight process calculations are done  
21 versus how the accident sequence precursor  
22 calculations are done. But I think the key

1 difference here is the fact that the accident  
2 sequence precursor program analyzes the event, they  
3 look at the actual failure of the tube and they ask  
4 the question, what's the conditional core damage  
5 probability should this happen again in the same way.  
6 What we do on the reactor oversight process is we  
7 analyze the performance deficiency which was the  
8 failure of an inspection which occurred two years earlier or something  
9 like two years earlier and which puts the plant in a  
10 position where that actual event could happen or some  
11 worse event could happen. And what you do then  
12 is you calculate a Delta CDF and a Delta LERF. So  
13 you're analyzing a condition rather than an event and  
14 you are using a Delta CDF and a Delta LERF, rather  
15 than a --

16       COMM. EDWARD MCGAFFIGAN: You're  
17 speculating about a lot of parameters too in the SDP  
18 process. I mean, you are saying this might have and  
19 this might have and this might have. And you know,  
20 it can lead to piling on of conservatism.

21       RICHARD BARRETT: It can. But in the  
22 case of the Indian Point analysis -- and I noticed

1 that Steve Long who did the analysis is at the  
2 podium. Perhaps he could give you a better answer.

3         STEVE LONG: The ASP program looks at Delta  
4 core damage frequency, but it does not look at Delta  
5 LERF. The SDP Program looks at both. And it was a  
6 Delta LERF issue that was the red finding for Indian  
7 Point 2. I'll add that you were asking about  
8 speculation. The Indian Point 2 was intended to be  
9 best effort calculator or best guess calculation.  
10 Guest being, if you really don't know a parameter in  
11 certain areas, you have to use the best knowledge you  
12 have at the time, recognizing the uncertainty. Sometimes they're high,  
13 especially in the severe accident part of it.

14         We had to take numbers that we get out of  
15 our current computer codes and apply those whenever  
16 the event occurs and requires us to make a judgment.  
17 I don't think much of that has changed yet.

18         COMM. EDWARD MCGAFFIGAN: Could I ask  
19 just my original question? Is the ASP program  
20 arriving at a much smaller -- I mean, that this is  
21 essentially not -- it's certainly not a significant  
22 precursor. It isn't even a next precursor. I mean,

1 this is in one of the low bins. I may be a precursor,  
2 but maybe it fits the 10 to the minus six, or something. But my  
3 recollection is that that's where the ASP Program was  
4 headed. Now, I know there was a vigorous staff  
5 debate about that apparently taking place behind the  
6 scenes.

7 STEVE LONG: Okay. Well, I'm not  
8 involved in the vigorous staff debate if it's  
9 occurring. The last time I looked at it, I didn't  
10 think that was the case. And I can go back and look  
11 at it again and get back to you.

12 COMM. EDWARD MCGAFFIGAN: Okay. Let me  
13 go to the issue of this generic letter. And it's  
14 Mr. Beckner and company who are signing it. But the  
15 proposed generic letter, does this process in any way  
16 duplicate what's going to be happening in the process  
17 that you have underway with regard to changing the  
18 tech specs? Do the revised tech specs potentially  
19 resolve this issue or is this something that we  
20 really have to pursue? And San Onofre and Sequoyah have raised  
21 this issue to us, that all criterion may or may not be  
22 being met in this particular place, may or may not be

1 significant. What is the relationship between the  
2 generic -- proposed generic letter and your process?

3 KENNETH KARWOSKI: The revised technical  
4 specifications that we are currently reviewing would  
5 specifically address the issue, but it would still  
6 require the licensee to come in for an amendment, to  
7 basically reflect that they're essentially changing  
8 the pressure boundary of the tube.

9 COMM. EDWARD MCGAFFIGAN: Every time  
10 they discover, or every time they decide they don't  
11 have to inspect this area?

12 KENNETH KARWOSKI: Right. So  
13 essentially what the revised technical specifications  
14 would say is that inspection shall be performed for  
15 the entire length of the tube which is capable of  
16 detecting all forms of degradation that are  
17 potentially present. So by that it would require  
18 licensees who have degradation in the lower portion  
19 of the tube sheet to do qualified inspections  
20 consistent -- you know, they would have to do  
21 qualified inspections. So the revised process does  
22 address that issue.



1        If a licensee were then to determine that  
2 they don't want to do those qualified inspections in  
3 the lower part, they would need an amendment to  
4 change their technical specifications.

5        COMM. EDWARD MCGAFFIGAN: But it strikes  
6 me that -- and this is not my area of expertise. But  
7 if people are going to be asking for that relief and  
8 at the same time they are submitting the generic  
9 package that you will approve later this year or early next year, then a  
10 possible additional element that you earlier in your  
11 response to Commissioner Merrifield said additional  
12 elements will slow you down, a possible additional  
13 element that a lot of these folks may include in  
14 their package is, by the way, let's also resolve this  
15 proposed generic letter issue. And so if it's almost  
16 going to be a generic issue, should it be in the  
17 generic package? That's the only question I'm  
18 asking.

19        KENNETH KARWOSKI: I would like to  
20 address it this way. The number of plants that we  
21 believe would be affected by this specific issue is a  
22 small subset of the PWR's. I mean, the reason I say

1 that is the plants with the newer tube materials  
2 would not expect cracking and so would probably not  
3 be performing specialized probe inspections in the  
4 lower portion of the tube sheets. So the number of  
5 plants that would potentially be affected are small.

6 With respect to a generic resolution to the  
7 problem, a lot of these analyses are plant specific  
8 analyses. And although plant specific in some  
9 respects, because it depends on the pressure and temperature  
10 conditions in the steam generator and the design  
11 basis accidents, there are some generic aspects. And  
12 we have been reviewing the generic submittals and  
13 raised a number of issues. So we would not see a  
14 generic resolution. We don't foresee one in the time  
15 frame of reviewing the Catawba submittal.

16 COMM. EDWARD MCGAFFIGAN: I might just  
17 conclude with a comment. I got here in 1996, about  
18 the same as Commissioner Diaz or a few days later.  
19 And I remember one of the first briefings I had --  
20 not briefings -- it was industry visits -- was somebody  
21 coming in with a whole group of folks to express  
22 grave concern about the steam generator rule, the proposed steam

1 generator rule. And I think the process, as Brian said, some time in the  
2 late '96, early '97 time frame, CRGR and the staff  
3 decided that it wouldn't pass backfit and whatever rule  
4 the staff had in mind. And then I think one reason  
5 we churned up lots of hours at the point is you set  
6 up a complex negotiation between the staff and  
7 industry. The industry still wants some relief. The  
8 staff still has some issues. And, you know, there's  
9 sort of give and take.

10       When the rulemaking, when the backfit  
11 rule sort of gets in the way of rulemaking, which  
12 maybe it appropriately did here, you set up a very  
13 complex negotiation that churns -- that can burn  
14 hours on both sides probably to a large extent. And  
15 I think that's a lot of what happened here.

16       BRIAN SHERON: Because I came --  
17 actually, I was in the Office of Research from 1987  
18 to 1994. So in '94 when I came back, I kind of  
19 inherited this program where we were looking at a  
20 rule. And what was driving it was the fact that --  
21 and I think Ken eluded to this before -- and that is  
22 at the time licensees were not really thinking about

1 replacing generators, okay. Their plan was, okay, we  
2 are getting this degradation, we want to fix it. But  
3 we find different kind of degradation, so we want  
4 degradation specific management.

5       And the thought was that when they went  
6 into an outage and looked in the steam generator and  
7 found this kind of degradation, then there would be  
8 some guidance, some regulation somewhere that would  
9 tell them exactly how to deal with it. Because what  
10 was happening, as I was saying this morning, is we  
11 get the call on a Friday night, some plant went in,  
12 they were doing their general form of degradation.  
13 They had some proposed either repair technique that  
14 we had never seen before or they had some criteria  
15 that would allow them to leave it in service. And  
16 they wanted approval because they were going to start  
17 up on it on Monday morning. And we were going crazy  
18 here. And we said, we can't function this way, we  
19 are on a critical path for these plants that want to  
20 start up.

21       And so the whole thought was is there a  
22 rule we can put in place that will solve this

1 problem? And when we looked at it, what we found out  
2 is that we really didn't need to put any new  
3 requirements in place. In other words, we looked at  
4 it from a risk standpoint, we said no, there is  
5 nothing we need to do to protect from severe  
6 accidents and the like.

7       COMM. EDWARD MCGAFFIGAN: That's a fancy  
8 way to say backfit rule 51.09. I first heard the  
9 word "backfit rule" in that meeting I had. You  
10 know, industry was playing that card.

11       BRIAN SHERON: I don't even think this  
12 came up as a backfit concern. We just concluded  
13 that we didn't see a need for a rule because we  
14 already had regulations in place that we could rely  
15 on. Okay, we could cite.

16       CHAIRMAN NILS DIAZ: Brian, I believe  
17 that Sam wants to add something.

18       SAM COLLINS: I have been here long enough that I'm  
19 starting to live with some of my earlier decisions.

20       COMM. JEFFREY MERRIFIELD: As we all are.

21       SAM COLLINS: So my tenure is a little long in the tooth.  
22 One of the first decisions and dilemmas that we had  
23 when I came to this position in late 1997 was a  
24 proposal for this rule. And I believe, as has been

1 depicted here --

2 COMM. EDWARD MCGAFFIGAN: Isn't it late

3 1996 that you came to this position? I think it is.

4 BRIAN SHERON: February 1997 --

5 COMM. EDWARD MCGAFFIGAN: He arrived.

6 But he was chosen in the fall of '96, right. He's

7 been here so long, he's forgotten when he arrived.

8 SAM COLLINS: Some of it is a blur. Some of it I

9 blanked out.

10 CHAIRMAN NILS DIAZ: Brian is keeping track of the day you arrived.

11 SAM COLLINS: I'm losing my train of thought in this conversation.

12 We decided to go with the alternative to

13 the rule for the reasons that Brian depicted. In

14 that period we were also pursuing industry

15 initiatives, although that has less of an emphasis

16 today. Our primary purpose was to, in concert with

17 industry, pursue an initiative which ended up with many

18 exchanges, a lot of public involvement, and a lot of

19 back and forth that has been described in coming

20 together with a concept that all of the stakeholders

21 can agree to that's performance-based based on

22 industry experience.

23 Rich mentioned that DPO, that we had a

1 number of reviews which was not an easy process.  
2 ACRS was involved. We still have some Research work  
3 going on, I believe, as a result of that DPO that's  
4 in the action plan. And it has been a protracted  
5 process, as well as the events. Indian Point, for  
6 example, helped to refocus us in some priority. And  
7 I think Ken has done a good job at depicting the  
8 the reviews that fell out of some of the lessons  
9 learned on Indian Point.

10       So as the leader of NRR, I did want to  
11 acknowledge my role in the accumulation of the  
12 efforts and the shifts of course based on lessons  
13 learned. The rulemaking that went forward prior to  
14 the decision to pursue the industry initiative was  
15 quite extensive, quite extensive. And it was almost  
16 fully baked at the point where we decided to take the  
17 alternative course. So there was quite an  
18 accumulation of effort before that decision.

19       COMM. EDWARD MCGAFFIGAN: Can I ask just  
20 one last question to Mr. Mayfield? Mr. Hopenfeld's DPO, basically the  
21 big issue was propagation of tube ruptures. And he  
22 had a theory that ACRS did not embrace. But it said

1 you all should by no means embrace, but they said  
2 that you all should do further research. When is  
3 that going to be resolved to the point that you can  
4 say definitively what the probability of propagating  
5 rupture might be?

6       MICHAEL MAYFIELD: That particular  
7 piece, I believe, has been adequately resolved. We  
8 did some calculations looking at the potential for  
9 escaping high pressure steamer, just the water to cut  
10 into another tube, and we found that that wasn't a  
11 practical matter.

12       We then did some experimental work looking  
13 at the potential for some of the materials that would  
14 come out during the core damage accident and could  
15 escape from one tube and then impinge on another one.  
16 We did experimental work to look at that potential  
17 for steam cutting, and that also just wasn't viable.

18       COMM. EDWARD MCGAFFIGAN: Has that been  
19 documented thus far?

20       MICHAEL MAYFIELD: I believe those  
21 reports have been published.

22       COMM. EDWARD MCGAFFIGAN: They have been published,  
23 okay. Thank you.

24       CHAIRMAN NILS DIAZ: Thank you,



1 Commissioner McGaffigan. I believe, before we  
2 adjourn, I sense that the Commission has a concern  
3 for the tremendous amount of effort that was put  
4 into this and whether we have some good lessons  
5 learned to accelerate or make this process converging  
6 at an earlier time.

7       We believe that the results are good. I  
8 think we have now a sound product. I think that  
9 obviously is the result of all of these efforts.  
10 Whether these interactions should be as protracted as  
11 this has been, I think we have a question in our mind  
12 whether there is something else that can be done.  
13 And maybe that's a two-street question because it, of  
14 course, involves the industry.

15       Besides that, I want to thank the staff for  
16 a very good meeting, and the NEI. We really had a  
17 very fruitful morning. We are looking forward to the  
18 implementation of this very good effort. And unless  
19 my fellow Commissioners have any additional comment,  
20 we are adjourned.

21               + + + + +

22       (Whereupon, the briefing concluded at 12:00)