

Official Transcript of Proceedings ACRST-3242

**NUCLEAR REGULATORY COMMISSION**

Title: Advisory Committee on Reactor Safeguards  
503rd Meeting

PROCESS USING ADAMS  
TEMPLATE: ACRS/ACNW-005

Docket Number: (not applicable)

Location: Rockville, Maryland

Date: Friday, June 13, 2003

Work Order No.: NRC-946

Pages 1-59

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS (ACRS)

503rd MEETING

+ + + + +

FRIDAY, JUNE 13, 2003

+ + + + +

ROCKVILLE, MARYLAND

+ + + + +

The ACRS met at the Nuclear Regulatory Commission, Two  
White Flint North, Room T2B3, 11545 Rockville Pike, at  
8:30 a.m., Mario V. Bonaca, Chairman, presiding.

COMMITTEE MEMBERS:

MARIO V. BONACA, Chairman

GRAHAM B. WALLIS, Vice Chairman

GEORGE E. APOSTOLAKIS, Member

F. PETER FORD, Member

THOMAS S. KRESS, Member

GRAHAM M. LEITCH, Member

DANA A. POWERS, Member

VICTOR H. RANSOM, Member

WILLIAM J. SHACK, Member

JOHN D. SIEBER, Member

STEPHEN L. ROSEN, Member-At-Large

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ACRS STAFF PRESENT:

SHER BAHADUR, Associate Director - ACRS/ACNW

RALPH CARUSO, ACRS Staff

MEDHAT EL-ZEFTAWY, ACRS Staff

MAGGALEAN W. WESTON, Staff Engineer

PANEL MEMBERS:

DAVID COLLINS, Engineering Analyst

CHARLES DUGGER, Nuclear Energy Institute

GEORGE FELGATE, Nuclear Energy Institute/

Nuclear Power Operations

CLARE GOODMAN, NRC/NRR

JACK GROBE, NRC/0350 Panel

SONJA HABER, Human Performance Analysis Corp.

WILLIAM N. KEISLER, Nuclear Maintenance Int.

LEW MEYERS, FENOC

THOMAS MURLEY, Safety Consultant

WILLIAM O'CONNOR, Fermi 2

ALAN PRICE, Millstone/Dominion

ASHOK THADANI, NRC/RES

D. TRIMBLE, NRC/NRR

HOWARD WHITCOMB, III, ESQ.

GEOFF WRIGHT

AGENCY EMPLOYEES ALSO PRESENT:

ZENA ABDULLAHI, NRR/SPXB

J. BONGARRA, NRR/DIPM/IEHB

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## 1 AGENCY EMPLOYEES ALSO PRESENT: (cont.)

2 J. CAI, NRC/NRR/DIPM

3 C. CARPENTER, NRR/DIPM

4 J.F. COSTELLO, NRC/RES/DET

5 R. ECKERODE, NRR/DIPM

6 FAROUK ELTAWILA, NRC/RES/DSARE

7 S. TINA GHOSH, ACNW

8 JON HOPKINS, NRR/DLPM

9 LISAMARIE L. JARRIEL, NRR/OD

10 J. KARA, NRC/RES/REHHFB

11 MINDY LANDAN, NRC/OEDO

12 DANEIRA MELENDEZ, NRC RIII/DRP

13 TANYA MENSCH, NRC/PMAS

14 JOCELYN MITCHELLE, NRC/RES/DSARE

15 B. MUSICO, NRR/EPHP

16 HO NIEH, NRC/ OEDO

17 JAKE PERSENSKY, RES

18 T. QUAY, NRR/DIPM

19 ISABELLE SCHOENFELD, NRC/DEDO

20 D. SKOEN, NRR/DRIP

21 DEIRDRE SPAULDING, NRR/DLPM

22 MARVIN SYKES, NRR/SPSB

23 HANRY A. WAGAGE, NRR/SPLB

24 GEOFFREY C. WRIGHT, NRC RIII/DRP

25

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## 1       ALSO PRESENT:

2               ROBERT C. EVANS, NEI

3               GEORGE FELGATE, INPO

4               BRIAN HAAGENSEN, PSHA, Inc.

5               RICK JANATI, PADEP/BRP

6               CHARLIE JONES, TECHNIDIGM.ORG

7               STEPHEN KOFF, Cleveland Plain Dealer

8               DONA MEINDERTZMAN, Winston &amp; Strawn

9               THOMAS MURLEY, Safety Consultant

10              NORM PETERSON, Detroit Edison Co.

11              BROOKE POOLE, Winston &amp; Strawn

12              SUSAN G. STERRETT, Duke University

13              ALI TABATABAI, Link Technologies

14              SPYROS TRAIFOROS, Link Technologies

15              GREGORY TWACHTMAN, McGraw-Hill

16              ANDY VOMASTELI, Dominion

17              MIKE WOODS, Pittsburgh Post Gazette

18

19

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

(8:33 a.m.)

3) OPENING REMARKS BY THE ACRS CHAIRMAN

CHAIRMAN BONACA: Good morning. The meeting will now come to order. This is the second day of the 503rd meeting of the Advisory Committee on Reactor Safeguards. During today's meeting, the committee will consider the following: update to generic license renewal guidance documents, subcommittee report on the Fort Calhoun license renewal, proposed strategy for preparing the 2004 ACRS report on the NRC safety research program, future ACRS activities and report of the Planning and Procedures Subcommittee, reconciliation of ACRS comments and recommendations, and proposed ACRS reports.

A portion of this meeting will be closed to discussed the proposed ACRS report on safeguards and security. This meeting is being conducted in accordance with the provisions of the Federal Advisory Committee Act.

Sam Duraiswami is the designated federal official for the initial portion of the meeting.

We have received notice of comments and requests for time to make oral statements from members of the public regarding today's session. A transcript

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1 of portions of the meeting is being kept. It is  
2 requested that speakers use one of the microphones,  
3 identify themselves, and speak with sufficient clarity  
4 and volume so that they can be readily heard.

5 Before we proceed, I would like to make a  
6 couple of announcements. First of all, a very happy  
7 one, I think. And that is Ms. Tanya Winfrey of our  
8 staff yesterday received the NRC meritorious service  
9 award. I would like to read for you the motivation  
10 for that, "In recognition of her outstanding  
11 performance and contributions as an administrative  
12 assistant in the areas of financial management and the  
13 world of finance control. Ms. Winfrey consistently  
14 demonstrates a value to the agency and its Advisory  
15 Committees Reactor Safeguards and Nuclear Waste by  
16 seeking innovative approaches to increase the  
17 efficiency and effectiveness of the office's financial  
18 management practices.

19 "Among her notable achievements, Ms.  
20 Winfrey implemented an automated real-time  
21 budget-tracking and accounting system for expenditures  
22 related to travel and bank purchasing. This system  
23 provides the office with a dependable vehicle for  
24 sound fiscal management. In addition, Ms. Winfrey's  
25 positive and professional attitude makes her a

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1 valuable asset to the office and the agency as a  
2 whole."

3 I hope you will join me in --

4 (Applause.)

5 CHAIRMAN BONACA: The next announcement is  
6 to let you know that Ms. Tina Gosch joined the ACRS  
7 this year in the office as a summer intern on June 9,  
8 2003.

9 (Applause.)

10 MEMBER POWERS: I thought she was going to  
11 work for ACNW.

12 CHAIRMAN BONACA: She will be working for  
13 ACRS.

14 MEMBER POWERS: That's an insult.

15 CHAIRMAN BONACA: Well, well, on the Yucca  
16 Mountain repository KTI resolution agreements between  
17 the DOE and NRC. Tina is a Ph.D. candidate in the  
18 Nuclear Engineering Department somewhere. This place  
19 is called M.I.T., Professor Apostolakis. Have you  
20 heard?

21 MEMBER POWERS: He seems to be absent  
22 without leave.

23 CHAIRMAN BONACA: He's hiding. We  
24 welcome. Welcome aboard.

25 MEMBER POWERS: I think we need to start

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1 some remedial efforts with her right away to overcome  
2 the effect of her professor and the group she will be  
3 working with.

4 CHAIRMAN BONACA: We can try to bootleg  
5 her services.

6 MEMBER ROSEN: On those comments, you can  
7 ask her for help, but she won't give you any.

8 CHAIRMAN BONACA: And finally, in front of  
9 you, you have a number of items of interest, three  
10 from Chairman Diaz and then some interesting operating  
11 plant issues.

12 With that, all of the introductory  
13 statements are completed. Let's move to the first  
14 item on the agenda, which is ACRS briefing on the  
15 interim staff guidance process and status. Mr. Leitch  
16 will take us through this presentation.

17 4) UPDATE TO GENERIC LICENSE RENEWAL GUIDANCE

18 DOCUMENTS

19 4.1) REMARKS BY THE SUBCOMMITTEE CHAIRMAN

20 MEMBER LEITCH: Okay. Just to refresh  
21 everyone's memory, on July 17th of last year, we  
22 received an SRM stating that the ACRS should consider  
23 providing recommendations as license renewal guidance  
24 documentation should be updated to reflect supporting  
25 information. Particularly with regard to

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1 time-limiting agency analysis, that should, as a  
2 minimum, be included in license renewal applications  
3 to maximize the efficiency of the review process and  
4 minimize the requests for additional information.

5 We are due to respond to that SRM shortly.  
6 And in an effort to collect our thoughts and to  
7 determine how we should respond to that SRM, we have  
8 done a couple of things. One thing is the  
9 Subcommittee on License Renewal heard on Wednesday  
10 from both the staff and NEI a short presentation  
11 regarding some changes in the format of the license  
12 renewal applications, which we think should  
13 standardize that and simplify the process, not only  
14 for the licensees but for the reviewers on the staff  
15 and for us as we review these documents.

16 The other thing that is interesting is  
17 that as we have reviewed a number of license renewal  
18 applications, we have seen a number of areas where  
19 there seem to be repetitive questions coming up,  
20 indicating evidently that there is some confusion on  
21 the part of the staff, some ambiguity perhaps in the  
22 requirements. We have discussed these over the past  
23 year as they came up from time to time.

24 The staff has collected these comments,  
25 our comments, as well as a number of their own

1 comments, and has collected a series of documents  
2 called interim staff guidance, which is basically  
3 amplification of the expectations.

4 There are 16 of these documents. Interim  
5 staff guidance number 16 is one that specifically  
6 deals with the issue raised in the SRM because it  
7 addresses the information required in TLAAs.

8 So today we are going to hear from the  
9 staff a little more about these 16 TLAAs. I believe  
10 NEI is also going to make a short presentation later  
11 today, in a short while here, as to their position on  
12 these ISGs. The intention is that these ISGs, the  
13 interim, means that eventually they would be  
14 incorporated in the formal guidance documents.

15 So with that brief introduction, I will  
16 turn it over to P. T. Kuo, who will lead us through  
17 these presentations.

18 MR. KUO: Thank you, Mr. Leitch. And good  
19 morning, members of the Committee.

20 4.2) BRIEFING BY AND DISCUSSIONS WITH  
21 REPRESENTATIVES OF THE NRC STAFF REGARDING POTENTIAL  
22 IMPROVEMENTS TO LICENSE RENEWAL GUIDANCE DOCUMENTS

23 MR. KUO: I am P. T. Kuo, for the record,  
24 the program director for the license renewal  
25 involvement impacts program. And to my right is Dr.

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1 Samson Lee. He is the section chief for the license  
2 renewal section in this program.

3 Today the staff will brief the Committee  
4 on the interim guidance on the ISG process, as Mr.  
5 Leitch pointed out. And Mr. Peter Kang, who is the  
6 staff coordinator for this effort, will lead the staff  
7 presentation today.

8 He will summarize the process that we have  
9 used to develop ISGs. Specifically he will highlight  
10 a couple of ISGs, as Mr. Leitch pointed out, that are  
11 intended to further enhance the content of the license  
12 renewal application. One of these ISGs is proposed by  
13 NEI that established, standardized the format and  
14 content of the license renewal application. And the  
15 other is an ISG developed by the staff to address the  
16 TLAA, time-limiting agency analysis, technical  
17 information that should be included in the license  
18 renewal application.

19 By way of examples, the staff will  
20 describe three TLAA issues to illustrate the kind of  
21 information that is being sought in an application so  
22 that the staff can perform a rigorous review of the  
23 issue and to also help the public to understand what  
24 is the issue and what is the justification for the  
25 staff to accept the issue in the renewal application.

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1           During the presentation, Peter will also  
2 point out those ISGs that are being developed in  
3 response to some of the previous Committee's comments.

4           With that, Mr. Leitch, if you don't have  
5 any more questions, I would like to turn the briefing  
6 over to Peter Kang.

7           MR. KANG: Good morning. My name is Peter  
8 Kang, K-a-n-g. I am from the License Renewal and  
9 Environmental Impact Branch.

10           This morning I am going to brief on  
11 interim staff guidance, ISG, process and the status,  
12 all of that with regard to improving the license  
13 renewal guidance document, and also include  
14 time-limited agency analysis supporting information.  
15 That should be included in the license renewal  
16 applications.

17           When we talk about the license renewal  
18 guidance document, it consists of a goal and a  
19 standard review plan and Reg Guide 1.188, which  
20 endorses NUREG 9510. NUREG 9510 happens to be --

21           MEMBER FORD: That is NEI.

22           MR. KANG: I'm sorry. NEI 9510, which  
23 this is industry guidance for implementing the  
24 requirements of 10 CFR Part 54 license renewal rules.

25           License renewal staff has previously

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1 briefed ACRS subcommittee on the ISG process and the  
2 status during the presentation in April. So this is  
3 just a brief presentation on that ISG process. And we  
4 are going to have some updates on ISG status.

5 The improved license renewal guidance  
6 document was completed in July 2001. And staff plans  
7 to update the guidance document again in 2004. So for  
8 those interim times, staff has to develop new  
9 provisions for those lessons learned while processing  
10 the license renewal applications. And also staff has  
11 to develop this process, ISG process, to provide the  
12 guidance to the applicants to addressing these lessons  
13 learned in their applications.

14 So, with that, the purpose of the ISG  
15 process is to provide timely guidance to applicants to  
16 new staff positions. And the ISG process includes  
17 identification, implementation of the ISG for the  
18 current and the future applicants.

19 MEMBER LEITCH: Peter, would you say these  
20 are new staff positions or really clarification of  
21 ambiguities in the process?

22 MR. KANG: The majority of them are  
23 clarifications. And also there are some compliance  
24 issues, like SBO. That's a compliance issue. So  
25 basically most of them are clarifications.

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1           As to the implementation of those ISGs,  
2           applicant should address all approved ISGs before a  
3           license is renewed. But the approved ISG can be found  
4           on the NRC Web site under "License Renewal." And, in  
5           addition, staff has been encouraging the current and  
6           the future applicants to address those proposed ISGs  
7           because it can have a potential impact on their  
8           schedules.

9           MEMBER LEITCH: Are there any license  
10          renewals that have already been approved that are  
11          contrary to these ISGs or did you really implement the  
12          intent of the ISGs with all the previous applicants  
13          but it was just done on a case-by-case basis?

14          MR. KANG: We tried to be as general as to  
15          be able to generalize it to be applicable to all  
16          applicants. The plant-specific stuff is taken  
17          separately by itself.

18          So with the goal as being that's not the  
19          only way, this could be applicant can come up with  
20          their own way to be able to come up. For the ISG  
21          process as far as the process and issues concerned, we  
22          tried to be general so everybody can be applicable.

23          MEMBER LEITCH: My question really is to  
24          take, for example, the SBO issue. There is an ISG  
25          that clarifies and makes real clear what our

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1 expectations are with regard to SBO.

2 MR. KANG: Yes.

3 MEMBER LEITCH: But the plants where  
4 license renewal applications have been approved prior  
5 to the issuance of this ISG, are they in compliance  
6 with our expectations?

7 MR. KANG: No. We are --

8 MR. KUO: If I may, Kang, can I? Yes.  
9 Like Peter said, some of the issues, some of the ISG  
10 issues, are clarification, but those clarification  
11 issues, we do not intend to go back to look at those  
12 plants with renewal licenses.

13 However, if there are compliance issues,  
14 like SBO, we are going back to reassess those plants,  
15 whether they should be required to be compliance with  
16 the ISG. And we are in the process of establishing  
17 this guidance, how to go back to these plants.

18 We actually have a tracking list of all of  
19 the previous applicants with renewal licenses already.  
20 So that we know which plant has addressed certain ISGs  
21 and haven't addressed certain ISGs.

22 MR. KANG: Now, does that get us into a  
23 backfit discussion?

24 MR. KUO: This is the one thing that is  
25 being discussed in-house right now, whether this is

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1 actually backfit or we could use a process like 5437.  
2 That's the annual update of the license renewal FSAR  
3 supplement because in that section, it says that the  
4 licensees with renewal licenses are required to do the  
5 annual update if they identify new system structures,  
6 components as a result of whatever.

7 MR. KANG: Okay. Thank you.

8 MR. KUO: You're welcome.

9 MR. KANG: So, in a way, we feel the ISG  
10 process is a transparent process. And every ISG issue  
11 has been reviewed, not only by the staff, also NEI as  
12 well as other stakeholders, such as UCS and other  
13 environmental groups as well. Okay?

14 So at the end, all approved ISGs  
15 incorporate input from our staff as well as NEI and  
16 the stakeholders. So as to the implementation for the  
17 license already, they renewed their license Dr. Kuo  
18 already spoke to. The staff keeps track of all of  
19 these ISG lists. And also staff is in the process of  
20 considering implementation of approved ISGs for those  
21 licensees holding a renewed license already.

22 In summary, the ISG process is designed to  
23 capture the lessons learned and also ACRS comments.  
24 And the ISG process provides timely guidance to the  
25 applicants, which, in turn, applicants should address

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1 ISG in their license renewal applications. So it is  
2 a continuous process.

3 So when finalized, the ISG will be  
4 incorporated into the license renewal guidance  
5 document.

6 Any questions? This is the ISG process.  
7 This is the end of the ISG process presentation. Any  
8 questions before I go to updates of ISG?

9 MEMBER LEITCH: So I guess, as I envision  
10 the process, then, there will be a series of ISGs.  
11 Right now there's 16 or so that will be incorporated  
12 in the next revision. But, then, if there are other  
13 issues that develop with time, there may be a new set  
14 of ISGs accumulated and incorporated in a future  
15 revision.

16 MR. KANG: That's right.

17 MEMBER LEITCH: So this is like a holding  
18 --

19 MR. KANG: That's right.

20 MEMBER LEITCH: -- on for ISGs, then?

21 MR. KANG: Okay. As for the status  
22 update, since the staff presented the ISG status in  
23 April, we have grown four more. Dr. Leitch talked  
24 about the 15 and 16, but now since then we have 17 and  
25 18.

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1 MEMBER LEITCH: Okay.

2 MR. KANG: So it's still growing. If you  
3 look at it, if we go to the table itself, there are 18  
4 of them. The first five are approved. The first five  
5 issues have been approved.

6 If I can go back two more, those are 15,  
7 16, 17, and 18. Those probably you haven't seen it.  
8 Seventeen and 18 are the latest ones on the electrical  
9 bar. And the number 18 is revision to accessible  
10 water collection in the manhole, the one we discussed  
11 in April in San Jose.

12 MEMBER LEITCH: San Jose, yes. We talked  
13 a little bit about 17 in Fort Calhoun on Wednesday, I  
14 think. We didn't know it was an ISG, but we did  
15 discuss that issue.

16 MR. KANG: Okay. Also in the table, we  
17 have sort of distinguished now a step under  
18 development and a step under review. So the one step  
19 under review is the one step that is actually accepted  
20 in preparing either packages.

21 The step under development is still in the  
22 development stage. We haven't done too much work on  
23 it yet, but still it hasn't fully agreed whether it  
24 should be an ISG item or not. But still I have to  
25 maintain the inter-status trial.

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1 MR. KUO: Peter, at this point, if I may,  
2 just to add a little clarification here, this ISG  
3 process we have, anybody, including staff, the  
4 applicants, and the public, can propose an ISG. If  
5 that is an issue we think that is worth dealing with,  
6 then we will establish the ISG and into the process.

7 Once this ISG is accepted for the ISG,  
8 developed as an ISG, then we will prepare the draft  
9 paper and have a communication with the stakeholders,  
10 such as NEI and the public in general. And some of  
11 these ISGs, we have had several iterations with them.  
12 And once we reach to a consensus, then we will  
13 finally, formally issue the ISG. That's the process  
14 that we have been using for some time, and that's what  
15 Peter was talking about.

16 Some are still ongoing. We have issued a  
17 draft paper already to NEI and to other stakeholders,  
18 soliciting for comments. And the recent 17 and 18 are  
19 still at the development stage. We haven't had a  
20 piece of paper, a working paper, yet.

21 MEMBER LEITCH: I would think even in  
22 advance of the issuance of the ISG, many utilities  
23 would be aware that these were issues from reviewing  
24 previous applications and the proactive utility might  
25 address these issues, even prior to the issuance.

1 MR. KUO: That is correct. That is  
2 correct.

3 MEMBER SHACK: How widely available is the  
4 draft ISG? I mean, is that posted on the Web site,  
5 too, as a draft?

6 MR. KANG: Yes, sir. We call it proposed  
7 since it's always a public forum. And then either we  
8 have meetings, public meetings, to discuss this,  
9 receive their comments --

10 MR. KUO: Once we have the draft ISG, the  
11 draft ISG is forwarded to all stakeholders, including  
12 NEI and the public, and posted on the public Web site.

13 MR. KANG: Okay.

14 MEMBER SHACK: Is there a formal comment  
15 period or --

16 MR. KANG: No.

17 MEMBER SHACK: No?

18 MR. KANG: There is no federal notice,  
19 say, for instance, to solicit formal comments.

20 MR. KUO: When we do incorporate these  
21 ISGs into improve the guidance document, the next  
22 iteration, we will actually issue for public comments.

23 MR. KANG: Okay. In response to ACRS'  
24 comments on the efficiency of processing license  
25 renewal applications, the staff and the industry have

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1 developed two ISGs. If you can go to ISG number 10,  
2 this is the one. This is the one Dr. Kuo was talking  
3 about, the standard.

4 The NEI developed this in the class 03  
5 standard license renewal application format. It  
6 explains the ISG issues, what the issue is, and the  
7 table, its purpose is, to standardize the license  
8 renewal format for 2003 applicants to make the license  
9 renewal process more efficient. But this is actually  
10 not just for 2003. It's actually beyond. This ISG is  
11 completed in April.

12 Also, if you go --

13 MEMBER LEITCH: I might just add for the  
14 benefit of our members who were not here at  
15 Wednesday's subcommittee meeting, it is that issue  
16 that the NEI made a presentation about at Wednesday's  
17 subcommittee. There seemed to be no disagreement  
18 between the staff and NEI. And, as you say, this one  
19 has completed.

20 MR. KANG: Yes. We had several, I think  
21 two or three, meetings regarding the issues. And the  
22 staff was involved and engaged in formulating this  
23 format.

24 MR. KUO: And also it stemmed from  
25 industries that the applications starting from this

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1 fall, they will be using this new standardized formula  
2 for the application.

3 MR. KANG: Okay. The next ISG is a TLAA.  
4 This is number 16. That is the subject of the next  
5 presentations. Dr. Leitch said Bill Watts of Dominion  
6 briefed on it last Wednesday. I have summarized his  
7 presentations in slide number 10.

8 If you look at the slide number 10, NEI  
9 developed standard license renewal application format  
10 for future applicants. Staff has reviewed and  
11 concurred.

12 Starting in September, the license renewal  
13 application applicants are encouraged to use this  
14 format. And also it will be incorporated into NEI  
15 9510.

16 Any questions on this ISG?

17 (No response.)

18 MR. KANG: My next presentation is on  
19 time-limited agency analysis supporting information.  
20 Last July the Commission met with the ACRS for  
21 potential improvement of license guidance document.  
22 The purpose was to maximize the efficiency of the  
23 license renewal process and to minimize RAIs. Dr.  
24 Leitch talked about it a little bit on these issues.

25 ACRS provided comments that license

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1 renewal applications should contain sufficient  
2 information for the staff to perform its review and  
3 also mentioned TLAA as an example. A TLAA review  
4 guide is in SRP. The guide may not be sufficiently  
5 clear for this concern.

6 On April 22, 2003, staff met with the  
7 industry representative to discuss supporting  
8 information for TLAA. During the meeting, staff  
9 discussed their review experience, particularly number  
10 of RAI questions that were repeated in each  
11 application.

12 If the applicants can address all of those  
13 RAI questions in their applications, staff indicated  
14 that number of RAI could be reduced, which, in turn,  
15 efficiency could be improved a great deal.

16 So during the meeting, staff provided some  
17 RAI questions that were repeated. To document that  
18 those review experience, the participants agreed to  
19 treat this issue as an ISG.

20 So on May 12, 2003, the staff issued the  
21 proposed ISG. And in the ISG, the staff compiled all  
22 of the RAI questions that were repeated in previous  
23 license renewal applications.

24 So in the list, in the attachments of  
25 these proposed ISGs, we have almost addressed seven

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1 areas, where they repeated RAI questions. The first  
2 one is identification of TLAA and reactor vessel in  
3 neutron embrittlement analysis area and the metal  
4 fatigue and so on.

5 MEMBER LEITCH: I think, just to refresh  
6 the Committee, I think there was one applicant where  
7 the neutron embrittlement analysis, all the  
8 documentation we received just said that it meets the  
9 limits, "Don't worry about it." But we were curious  
10 as to how much margin there was. And that information  
11 was not initially provided and required some round of  
12 additional question of RAIs to get that information.

13 And, as it turned out, I think in that  
14 particular case, there was margin but not a whole  
15 bunch. And so it's some of those kind of questions  
16 that have prompted this issue here.

17 MR. KANG: So for ACRS' benefit, to  
18 provide some flavors, what kind of questions, what  
19 type of information staff was looking for, I have  
20 selected three reviewers to come up here, provide some  
21 insights of their RAI questions.

22 Mr. Eliot from EMCB will tell us about  
23 neutron embrittlement issues. The next person will be  
24 Mr. Fair, EMEB, on metal fatigue. And Mr. Ascher from  
25 EMEB will have concrete containment. The first one is

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1 Mr. Eliot.

2 MR. ELIOT: Barry Eliot. I'm going to  
3 talk just briefly about reactor vessel neutron  
4 embrittlement analysis.

5 There are no new positions here. All  
6 we're looking for in our internal staff guidance is  
7 that the applicant provide sufficient information so  
8 that we could confirm that they need the upper shelf  
9 energy requirements of Appendix G and the adjusted  
10 reference temperature and PTS values, RTPTS values of  
11 1050.61 at the end of the license renewal period.

12 Now, this issue has been going on for  
13 years: neutron embrittlement. We resolved this issue  
14 through Generic Letter 9201 and 9201, Supplement 1.  
15 It was resolved in the early '90s.

16 What has happened since then is that in  
17 license renewal, we have new neutron fluence values.  
18 And also in the last ten years, we have put out  
19 guidance as to how to calculate the neutron fluence.  
20 So in that area of neutron fluence, we would be  
21 looking for the methodology and how it complies with  
22 the guidance that we have put out.

23 The second area that we look at is  
24 materials data. What has changed over the last ten  
25 years is plants have been really judicious here

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1 looking for more and more surveillance data and  
2 materials data.

3 They are submitting more data as time goes  
4 on. We would like them to submit it as part of the  
5 application so that we can review it and determine  
6 whether it was adequately reviewed.

7 We have guidance in this area also. The  
8 guidance is fairly general. Plants have a whole bunch  
9 of different ways of meeting that particular guidance.  
10 And so we need to review it.

11 The purpose of this interim guidance is  
12 that we get all of that information, how to analyze it  
13 so we can review it, and confirm that their  
14 conclusions that they meet Appendix G and they meet 10  
15 CFR 5061 and they meet all of the reg guides are true.

16 MR. KANG: Mr. Fair?

17 MR. FAIR: I'm John Fair with the  
18 Mechanical Engineering Branch.

19 I usually review the fatigue TLAA. One of  
20 the questions I normally ask, most license renewal  
21 applicants, even though they do a formal TLAA  
22 evaluation for fatigue also as part of it have what  
23 they call a fatigue-monitoring program where they  
24 monitor the number of design cycles to make sure that  
25 they don't exceed the limits used in design.

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1           Usually they will tell me in the  
2 application that they do monitor the number of design  
3 cycles, but they are not very specific. So a standard  
4 RAI we have been issuing is to ask them to  
5 specifically go through all of the transients listed  
6 in the FSAR and tell me which ones you're monitoring  
7 and if you're not monitoring one of the transients,  
8 why you don't have to monitor it and given the current  
9 cycle counts in these projections.

10           And so this is one of the issues that  
11 would eliminate an RAI if they would provide this with  
12 the application.

13           MEMBER SHACK: Have they been required to  
14 monitor the transients since day one? Do they really  
15 know the number of cycles they have been through?

16           MR. FAIR: Some of them have, and some of  
17 them haven't. Some of them have been estimating the  
18 number of cycles. What usually happens is they do  
19 have logs in the control rooms of the major types of  
20 cycles: start-up, shut-downs, and things like that.  
21 And what they do is they go back, and they reconstruct  
22 the numbers from those logs.

23           Some of the applicants actually have  
24 initiated monitoring programs since the start-up of  
25 the plants. And so they do have pretty good counts on

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1 these.

2 MEMBER LEITCH: I think, for example, in  
3 our Fort Calhoun review the other day, some of the  
4 transients they had monitored, but there was one  
5 particular type -- I don't remember which one it was  
6 -- where they hadn't monitored it from time zero. So  
7 they kind of estimated what it was, and then they're  
8 monitoring it now.

9 But it's way, way lower than the allowable  
10 in that particular category. I think we're up to  
11 about 100, and 4,000 is the limit or something like  
12 that. So it's unlikely they would ever challenge the  
13 allowable number.

14 MEMBER SHACK: Well, they had one where  
15 the calculated usage was .937 for 3 significant  
16 figures.

17 MR. FAIR: Actually, at a lot of the  
18 facilities, they do have usage factors at that level.  
19 And usually what you found out is they --

20 MEMBER SHACK: It's so conservative.

21 MR. FAIR: -- they do conservative  
22 calculations as quickly as they can. And as long as  
23 they're below one, they quit. And when they find they  
24 have a problem where they exceed the number of cycles  
25 and they go back and re-find the calculation, they

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1 usually can show they still have an acceptable usage.

2 MR. KANG: Who is next? Mr. Ascher?

3 MR. ASCHER: In this area, I think I will  
4 try to throw out some kind of a background as to why  
5 we are looking for this particular TLAA. Then I will  
6 talk about what experience we have with the applicants  
7 as to the aforementioned why we have to have the right  
8 number on this particular TLAA.

9 Now, we are suggesting improvised  
10 pre-compression in concrete in the pre-stressed  
11 concrete containments. We have close to about 38  
12 pre-stressed concrete containments in the three  
13 compartments. With concrete extension, you get  
14 internal pressure. That is the whole idea behind  
15 providing pre-stressed in the concrete containments.

16 Steel tendons provide required  
17 pres-stressing. That means the tendons are tension in  
18 the particular level, particular stress level. And  
19 then they are left there for the life of the plant,  
20 just to make sure they provide continuous compression  
21 during the life of the plant.

22 Time-dependent losses affect tendon  
23 forces. Time-dependent losses I'm talking about are  
24 a creep of concrete that occurs; the shrinkage of  
25 concrete occurs; the relaxation of pres-stressing

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1 steel, which is in sustained tension all the time that  
2 occurs. So those are things that are losing the  
3 pre-stressing force.

4 It's not really measurable, but sometimes  
5 it can be quite substantial. And in order to monitor  
6 this type of a behavior, time-dependent losses affect  
7 tendon forces. There are inspection requirements in  
8 the rule 50.55(a), which actually incorporate by  
9 reference Subsection ILL of the ASME code, where the  
10 requirement for the inspections are provided.

11 Now, is 10 CFR 54.21(c) (1) applicable for  
12 this particular license renewal applications? Now, in  
13 4.5, we are delineating what we really look for from  
14 the applicant as far as the data.

15 Now, the basic data we look for in this  
16 area is something similar. This is the worst-case  
17 scenario. Now, this is one year. This is a log  
18 scale. These are log scale here. This is  
19 time-dependent. And these are the pre-stressing force  
20 on the --

21 MEMBER ROSEN: Could you give us that over  
22 so we can see the scale units, the scale on the left?  
23 It says 1,300 something. What are they?

24 MR. ASCHER: Okay. They are pre-stressing  
25 forces. These are the tendon forces that are there

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1 existing at that particular time. I will explain to  
2 you each of the causes here so we have a better  
3 understanding of this.

4 Now, this is PLL LCOR. PLL LCOR is that  
5 after your initial pre-stressing is known. It has  
6 been recorded in the documentation. And there comes  
7 the benchmark. At the zero year, they have something.  
8 A realistic shortening of the concrete takes place as  
9 soon as they try to compress the concrete. And it is  
10 considered in this area.

11 And they are all estimated. They estimate  
12 the shrinkage, loss of the cool Doppler in 40 years  
13 time. They have done the definition for 40 years  
14 earlier. Okay? That can occur. It especially can  
15 occur in 40 years by regression analysis of the  
16 testing and everything else.

17 So they come up with certain estimates in  
18 the TLAA, the predicted lower limit, which means that  
19 the lowest limit that can occur in a pre-stressing  
20 force based on the estimated values of pre-shrinkage,  
21 relaxation, et cetera.

22 Now, this is the value at one year. Okay?  
23 And these are the true measured values. They are much  
24 higher than what we would expect and lower at that  
25 time.

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1 Now, you can see the strength. This is a  
2 plane line. What this project is doing, for example,  
3 the figure you see here, it's trying to turn the trend  
4 downward, much more downward than the slope of the  
5 TLAA will accept.

6 So at about 18 years, it's almost  
7 intersected PLL, but still it is above the minimum  
8 required pre-stress to all internal pressure, to  
9 provide enough compression for the internal pressure.

10 MEMBER FORD: Excuse me. Are those data  
11 points, those crosses?

12 MR. ASCHER: Those are data points.

13 MEMBER FORD: And those are the data  
14 points upon which those curves are based?

15 MR. ASCHER: These are the data points.  
16 What they do is after three inspections, they are  
17 going to -- because the sample size is not very large  
18 when they measure the pre-stressing forces, so what  
19 they do is they do the regression analysis, list their  
20 matter. Then they figure out what is the trend based  
21 on all of the linear data.

22 So right now what we are getting, after 20  
23 years, we get data that is about 5 times each unit  
24 would have gone through some kind of inspection,  
25 measurement of stressing force. Then they can grow

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1 the regression analysis. Based on that, they can grow  
2 this plane line.

3 That plane line has to -- I mean, the  
4 whole idea is the particular time. So in this  
5 particular case, as I told you before, it is the  
6 worst-case scenario.

7 So what we have, it intersects at about  
8 12-13 years. And based on this last year, in this  
9 particular case, the re-tension the tendons --

10 MEMBER FORD: I'm sorry. Why are you  
11 saying that is the worst-case scenario? Based on  
12 data?

13 MR. ASCHER: The reason I am saying it,  
14 most of the applicants I have seen -- I am not naming  
15 the plant here.

16 MEMBER FORD: No.

17 MR. ASCHER: Okay? I am just giving you  
18 general information. Most of the applicants I have  
19 seen, this plane line is almost like this, either  
20 parallel to PLL or a little flatter than PLL. So what  
21 will happen, it will take you through 60 years very  
22 easily. Okay?

23 In this case, it is not. So in this case,  
24 what they have to do is re-tension the tendons. There  
25 is a requirement in the rule which requires them to

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1 re-tension the tendons if the next inspection is going  
2 to see anything less than what is required at 40  
3 years. So that program will apply in 60 years.  
4 That's the reason we ask for this data.

5 MEMBER LEITCH: The data points are not  
6 different plants but different tendons, different  
7 tendons in the same plant?

8 MR. ASCHER: Yes, it's from different  
9 tendons.

10 MEMBER FORD: I guess the thing that  
11 worries me is I see a lot of data points below your  
12 worst-case line. And then the next question I ask  
13 myself is, well, what's the consequence? So what?

14 MR. ASCHER: Yes. Okay.

15 MEMBER FORD: So what is the so what?

16 MR. ASCHER: Let me explain to you that  
17 here. What you see here, what this suggests here,  
18 minimum required pre-stress here. Okay?

19 MEMBER FORD: Yes.

20 MR. ASCHER: That minimum requirement has  
21 been estimated to give enough compression in concrete  
22 to contract the tension produced by general pressure,  
23 designed internal pressure, designed internal pressure  
24 at 60 years out, 45 years, whatever it is.

25 So that is the way it is calculated. So

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1 once it was below, what happens is that in case an  
2 accident occurs, your pre-stressing is trying to be  
3 straight much more than what it is supposed to. And  
4 it might even go up to the strength of the material if  
5 the pressure is higher than that.

6 So in that case, it loses its stress  
7 tendons.

8 MEMBER FORD: Isn't there a requirement to  
9 the number of tendons below a certain minimum? You  
10 said that these are the individual tendons.

11 MR. ASCHER: In the code, in Subsection  
12 ILL of it, there are multiple requirements for  
13 individual tendons as well as for the group of tendons  
14 together.

15 So you have checks and balances in the  
16 current rate that tendons are inspected, but for  
17 time-limited analysis, they are to perform regression  
18 analysis based on the past experience, 3 years if you  
19 would like to consider, 15 to 20 years, whatever they  
20 have. And they provide me with this. That's what I  
21 request them to do. That's my RAI.

22 In all of your RAIs, like Calvert Cliffs  
23 or Oconee, we didn't have enough data. They provided  
24 more information later on. Then in the later one, the  
25 responses started improving, but still they did not

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1 provide adequate data. It was some RAIs.

2 In the last Fort Calhoun that year, I  
3 think the response was much, much better. And it  
4 improved. Still, I had one RAI on this particular  
5 aspect. And it is improving. I mean, they understand  
6 what we are looking for, and they provide us with it.

7 MEMBER FORD: I guess this goes to the  
8 root of a problem I have had for quite some time that  
9 when we hear, for instance, on one-time inspections  
10 for this and numerous other incidences, when we get a  
11 report which is essentially a word report with no  
12 data, we have no way of assessing the depth to which  
13 the analysis has gone.

14 MR. ASCHER: Right.

15 MEMBER FORD: And you have kind of given  
16 us that data. Then that leads to more questions.

17 MR. ASCHER: I know. I understand that.

18 MEMBER FORD: And so we're in a devilish  
19 situation, if you like. Having seen the data now and  
20 had about one minute to think about it, I feel a bit  
21 uncomfortable.

22 MR. ASCHER: It is uncomfortable. This one  
23 is uncomfortable. I agree with you.

24 MEMBER FORD: Yes.

25 MR. ASCHER: That's why I said the

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1       worst-case scenario. This is not the way, standard,  
2       other plants are behaving. I told you that before,  
3       when I started.

4               MEMBER FORD: I guess it's more of a  
5       generic question to the group as to how deeply do we  
6       dig and at what point do we back off?

7               MEMBER LEITCH: But is this as-found data?  
8       In other words, did the plant walk away from it like  
9       that or did they --

10              MR. ASCHER: No, no, no. We would not  
11       allow them to walk away.

12              MEMBER LEITCH: Right. So what I am  
13       saying is --

14              MR. ASCHER: They have a current license.  
15       Actually, these are the current licenses.

16              MEMBER LEITCH: So they're re-tensioned?

17              MR. ASCHER: They re-tensioned their  
18       tendons to make sure that they are according to the  
19       PLL or better. Generally they re-tension them at 70  
20       percent of each tendon.

21              MEMBER LEITCH: So after the  
22       re-tensioning, none would be below that?

23              MR. ASCHER: After re-tensioning, this is  
24       where they would become something like this.

25              CHAIRMAN BONACA: So what you're doing,

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1 you're requesting now sufficient information,  
2 sufficient data that you can do, in fact, this  
3 verification?

4 MR. ASCHER: Correct, correct.

5 CHAIRMAN BONACA: So I think all we can --

6 MR. ASCHER: For 60 years because they are  
7 going for 40 or 60 years. The time-dependent losses  
8 will not increase from 40 to 60 years. There are some  
9 other reasons why we had incidences when the  
10 relaxation loss become much larger.

11 CHAIRMAN BONACA: So all I was going to  
12 say is all we can expect is the staff will require  
13 sufficient data to perform as an independent  
14 verification that, in fact, the observed forces are  
15 going to exceed the minimum for the life of the plant.  
16 I mean, I don't think that ACRS wants to involve  
17 itself in actual verification of the results of the  
18 calculation. We can, but I'm saying that would be a  
19 --

20 MEMBER FORD: But I think I agree with you  
21 entirely. It would be an impossible situation for us  
22 to go over every calculation. The reason why I am  
23 asking a question is that so that when I put my hand  
24 up to vote, I at least have a very reasonable  
25 certainty that an adequate amount of analysis has been

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1 done. That is the reason.

2 CHAIRMAN BONACA: This way we raised the  
3 issue with the Commission a year ago, I mean, that  
4 there should be from the licensees sufficient  
5 information provided to the staff and documented in  
6 the application that they will provide it so that the  
7 staff can perform the independent role that they are  
8 supposed to perform. So I feel comfortable if they  
9 get the information and perform the verification.

10 MEMBER FORD: I just suddenly realized,  
11 when I asked the question, those lines, those trend  
12 lines, they're not based on that data.

13 MR. ASCHER: Trend lines are based on a  
14 measure of tendon forces.

15 MEMBER FORD: Yes, I know, but my question  
16 was, -- I asked you the question earlier on.

17 MR. ASCHER: Okay.

18 MEMBER FORD: Those trend lines, that  
19 hatched line I see going down there, that was not  
20 based on a correlation of the data that is shown  
21 there, is it? It came up from some --

22 MR. ASCHER: Yes, they are. They are.  
23 They are based on the data for 40 years.

24 MEMBER FORD: Oh, I thought it was some  
25 design curve from other --

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1 MEMBER SHACK: The observed trend line is  
2 a lot different than they had initially assumed for  
3 their design.

4 MEMBER FORD: Okay.

5 MEMBER SIEBER: When you re-tension, that  
6 line moves vertically.

7 MEMBER SHACK: I guess my question is, if  
8 he wasn't coming in for a license renewal, does he  
9 report this data to you or that's really his --

10 MR. ASCHER: No, no. Actually, it is a  
11 rule, 50.55(d)(2)(a)(b) or something, where if you  
12 have a current license, it requires that they have to  
13 make sure that during the next inspection, they are  
14 not going to go below this line. If they are going  
15 to, then they will do --

16 MEMBER SHACK: So that's in the current --

17 MR. ASCHER: Like in St. Lucy, you see it.

18 MEMBER SIEBER: So why would you have to  
19 look at it for license renewal when --

20 MR. ASCHER: The reason is they are  
21 extending from 40 to 60 years.

22 MEMBER SIEBER: Yes, but you already have  
23 a program that periodically measures this and takes  
24 corrective action. Why wouldn't that program be good  
25 enough?

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1 MR. ASCHER: Because it is in the rule.  
2 We do not know where each and every plant focuses. We  
3 want to see how they develop the data. During the  
4 plant life, we ask them to implement the rule. They  
5 do. We want to see how they inject the rule and what  
6 kind of data comes out of their past experience so we  
7 can know what can happen in 60 years. There is a  
8 reason we ask it.

9 MR. KUO: Well, if I may add two other  
10 points, these pre-stressed tendon forces are designed  
11 to such a fashion that this trend line is supposed to  
12 go, come down to the minimal level at 40 years. Okay?  
13 That's why we call this TLAA.

14 And now we are going to extend to 60  
15 years. We want to lift that curve so that when it  
16 comes to 60 years, it is at the minimal level. That's  
17 the whole idea.

18 The other point is that these tendons are  
19 in the tech spec also.

20 MEMBER SIEBER: They are?

21 MR. KUO: Yes. As soon as they are below  
22 the line, then they will have to jack it up.

23 MR. ASCHER: Okay. So --

24 MEMBER RANSOM: Excuse me. What is meant  
25 by "lift-off"? Do you hydraulically --

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1 MR. ASCHER: Yes. They start jacking it,  
2 tendon anchorages, pull that sufficiently to get the  
3 pre-stressing in the tendons.

4 MEMBER RANSOM: Out of curiosity, why  
5 don't they just re-tension them when they do that?

6 MR. ASCHER: Well, re-tensioning requires  
7 much more equipment. Okay? They are elongation  
8 measurements, as I mentioned, very correctly done.  
9 Re-tensioning is a slightly involved process.

10 MEMBER RANSOM: Do they have screw-type  
11 fittings or are these some kind of wedge?

12 MR. ASCHER: Well, most of the plants --  
13 and there are three types of re-stressing tendons in  
14 the anchorages. One is the most popular one in the  
15 United States, the BTR, or the buttonette system. In  
16 the buttonette system, what happens is there are  
17 anchorages. There is a buttonette form, a form,  
18 buttonette on the top of it. And it holds the wires  
19 into the tension states. That is proven a very good  
20 experience, in the U.S. experience.

21 There are other ways, like wedging. There  
22 are wedges that form around the strands. There are  
23 some plants with the wedges. There is only one plant  
24 which has bars, re-stressing bars.

25 MEMBER FORD: At what point in your

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1 examination process do you take into account the next  
2 level of questions associated with that? For  
3 instance, why are some of those points so low?  
4 Relaxation kinetics are a little bit dependent; for  
5 instance, where there are cracks. And cracks we know  
6 can form, increase stressing. Now, do you go through  
7 that thought process?

8 MR. ASCHER: Yes, we do. In a way, we do  
9 but indirectly. What we show here is that there is  
10 enough compression in concrete to concrete the tension  
11 that could be there by internal pressure.

12 Now, if the pre-stressing is not enough,  
13 if it is a little low, it's a normal condition.  
14 You're not going to see any cracking because of that,  
15 only when the internal pressure comes on. At that  
16 time you will see the cracking. If I thought that --

17 MEMBER FORD: I am talking about cracking  
18 in the pre-tensioning wires.

19 MR. ASCHER: Oh, yes. I mean, that's the  
20 reason there are so many requirements in the rule  
21 which require them to pull out one wire to see its  
22 methodological factors, to see as to what their  
23 mechanical properties are. I mean, it's a whole  
24 involved special requirement, which is ILL, Subsection  
25 ILL.

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1 MEMBER FORD: Okay. I thank you.

2 MR. KANG: Any more questions?

3 (No response.)

4 MR. KANG: This concludes the staff  
5 portions of the presentations. I understand that  
6 industry has a portion.

7 MEMBER LEITCH: Thank you.

8 MEMBER ROSEN: First of all, my  
9 congratulations, Fred, that we only get one piece of  
10 paper. It's printed on both sides, but it's only one  
11 piece of paper.

12 MR. EMERSON: It shows our environmental  
13 orientation at NEI.

14 MEMBER ROSEN: Congratulations.

15 MR. EMERSON: It's my pleasure to join you  
16 to discuss license renewal. You have heard from Doug  
17 Walters and Alan Nelson previously. Due to an  
18 internal reorganization, the issues were reassigned.  
19 And I have license renewal as well as fire protection  
20 now, which is the subject I am more used to discussing  
21 with you.

22 The talk that I am going to give that is  
23 confined to one piece of paper is four slides, which  
24 present just a very high-level view of the ISG  
25 process. Since it's intended to provide increased

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1 efficiencies in the over license renewal application  
2 and review process, that is generally what I am going  
3 to address at a high level.

4 At the end, I will provide just a quick  
5 summary of where we are with respect to the four ISGs  
6 that Peter indicated were waiting for NEI comment.

7 In general, it's good to have a process  
8 like this. I found this to be true in just about any  
9 regulatory issue where you have a way to deal with  
10 generic issues on a generic basis, rather than having  
11 to go through the more laborious for the applicant and  
12 the staff process of dealing with it on a  
13 plant-by-plant basis. So far this process is I think  
14 a good idea.

15 We have seen examples, both from the  
16 discussion on Wednesday and today, that it's used to  
17 address both process and technical issues. I think a  
18 good example of the success of the process has been  
19 its use for the standard format that you heard about  
20 last Wednesday.

21 The benefit, in addition to hopefully  
22 reducing the amount of time the licensees have to  
23 spend developing responses, to RAIs and the staff has  
24 to create them and go through the RAI response process  
25 is that it provides another forum for industry and NRC

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1 to communicate on issues of generic interest. Again,  
2 these are always best resolved before they impact the  
3 licensee, and hopefully this process will end up doing  
4 that.

5 As we heard last Wednesday, the process  
6 for updating the main guidance documents, the Gall,  
7 the standard review plan, the regulatory guide, it  
8 doesn't occur very often. And it's a good idea for  
9 both the reviewers and the industry applicants, who  
10 are beginning to come in thick and fast, to have a  
11 good idea of what the staff expects. Not only does it  
12 cut down the amount of RAIs, but it helps the licensee  
13 make decisions up front as to how he is going to  
14 approach an issue without having to worry at the back  
15 end whether he did it properly or not.

16 There are a number of things that the  
17 licensees need. There are several factors that are  
18 very important to a licensee. One is the schedule.  
19 He wants to know that he has a stable schedule. He  
20 wants to know that the time he has to develop his  
21 application and then respond to RAIs is not going to  
22 result in a slippage of the schedule because he has a  
23 lot of resources invested in that process. He wants  
24 to be sure that there is a timely resolution of these  
25 generic issues. He would like to see a reduction in

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1 RAIs. He wants to, again, be sure his schedule isn't  
2 impacted by either the process of generic development  
3 of the ISGs or if the process has failed to capture  
4 one the timely completion of the RAI responses that he  
5 has to do. Sometimes this is time-consuming. And we  
6 hope to improve the amount of time through the ISG  
7 process that the licensees take.

8 There needs to be a recognition of the  
9 actual plant configurations and the bases on which  
10 they are submitting information in particular areas.  
11 I am not going to get into specific areas, but there  
12 potentially are a number of areas that are potential  
13 ISGs. And want to be sure we focus on the right ones.

14 As with any process like this, you want to  
15 have it be a living process and be able to respond  
16 effectively to both licensee and staff needs for  
17 process improvements. So that's probably the last  
18 area that we need to maintain.

19 So far we have had a pretty good record in  
20 working with the staff. There has been open  
21 communication on these issues. Not all of them went  
22 the way the industry would like, but we have had good  
23 opportunities for providing input into the process.

24 In the area of the four ISGs that Peter  
25 indicated staff was expecting industry comment on,

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1       probably the first one that we're going to get to them  
2       is next week.

3               The ISG 7 on fire protection scoping,  
4       that's been hanging around longer than either the  
5       license renewal NRC staff would have liked or us. And  
6       we were going to get that resolved by next week. The  
7       other three should follow fairly soon. And we hope to  
8       complete all of those open areas by the end of July to  
9       get the responses back to NRC.

10              MEMBER SHACK: Fred, what was the problem  
11       on ISG for 7?

12              MR. EMERSON: What's the problem?

13              MEMBER SHACK: Yes.

14              MR. EMERSON: I will characterize it as an  
15       interface issue. It wasn't clear for a while whether  
16       it was a fire protection issue or a license renewal  
17       issue. Now there's a nice synergy, and I have both  
18       issues now. Hopefully we can get that. I think that  
19       was part of the issue.

20              There is an issue of how it impacts the  
21       current licensing basis as well as how it impacts the  
22       scoping for license renewal applications. So there  
23       has been some discussion by two different working  
24       groups at NEI on how to deal with that.

25              MEMBER POWERS: When a plant comes in for

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1 license renewal, does it have to be constituted to  
2 fire protection design basis?

3 MR. EMERSON: I don't know that I've been  
4 doing this long enough to answer that question.  
5 Without getting into details, there was a concern that  
6 the way the scoping was posed for fire protection had  
7 an effect on the current licensing basis. And we're  
8 working through that issue now and will be providing  
9 comments to staff next week.

10 MEMBER ROSEN: So have you put together  
11 the two working groups within NEI for a fire  
12 protection and license renewal?

13 MR. EMERSON: We have coordinated.

14 MEMBER ROSEN: The two groups have stayed  
15 as separate entities, but they are coordinating and  
16 giving you input for these ISGs?

17 MR. EMERSON: Right, right. The fire  
18 protection working group is obviously interested in  
19 the impact on the current licensing basis. And the  
20 license renewal working group is interested in the  
21 impact on the scope of the equipment that has to be  
22 included for the license renewal application. And  
23 we're making sure that both of those areas are  
24 addressed when we submit comments to the staff.

25 MEMBER ROSEN: In particular, in the

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1 license renewal working group, do you have a  
2 membership that includes both individuals who  
3 represent companies that have completed license  
4 renewal as well as those who are about to undergo  
5 license renewal review?

6 MR. EMERSON: We have both, yes.

7 MEMBER ROSEN: What I am concerned about  
8 is the ones who have been through will drop their  
9 membership once they get approval. And that would  
10 result in a loss of input for you and the others.

11 MR. EMERSON: Well, in many cases, plants  
12 are doing license renewal. They have more than one  
13 site. And when one plant is finished, they frequently  
14 have another plant in the pipeline. So there is  
15 continuity maintained.

16 MEMBER ROSEN: That's good.

17 MR. EMERSON: Okay.

18 MEMBER LEITCH: Thank you, Fred.

19 Any other questions for Fred or for the  
20 staff?

21 (No response.)

22 MR. EMERSON: Thank you.

23 MEMBER LEITCH: P. T., any closing  
24 remarks?

25 MR. KUO: I hope that we have given

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1 sufficient information about our ISG process. Just  
2 one final point. During Peter's presentation, I don't  
3 know if he had pointed out the ISGs that actually are  
4 in direct response to the Committee's comment or not,  
5 but ISG 10, 12, 16, and 18.

6 MEMBER LEITCH: I think they're asterisked  
7 on our handout.

8 MR. KUO: Asterisked on the summary list.  
9 And this concludes the staff's presentation.

10 MEMBER LEITCH: Okay. Thanks to all of  
11 the presenters. That concludes this presentation.  
12 Back to you, Mr. Chairman.

13 CHAIRMAN BONACA: Thank you.

14 I will go through now a brief overview of  
15 the Fort Calhoun review that we had two days ago. It  
16 will be brief for a number of reasons, most of all  
17 because most of the members who were there are here  
18 today. So there isn't much that I can tell more than  
19 what they know already.

20 Before I proceed with that, I wanted to  
21 let you know that we congratulated Bill Barton for the  
22 good work he has done for us. We are not the only one  
23 to recognize him. He was presented yesterday with the  
24 NRC meritorious service award.

25 I don't know if he is present. Yes, he

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1 is. So we want to congratulate him and thank him for  
2 the good work he has done for license renewal.

3 (Applause.)

4 MEMBER POWERS: Of course, now he's going  
5 to get the big head, and we are not going to be able  
6 to live with him anymore.

7 CHAIRMAN BONACA: He got the big bucks,  
8 too.

9 MEMBER POWERS: Oh, he's taking us out for  
10 drinks tonight?

11 5) SUBCOMMITTEE REPORT ON THE FORT CALHOUN LICENSE

12 RENEWAL APPLICATION

13 CHAIRMAN BONACA: All right. We were here  
14 on Wednesday, June 11th to review the application for  
15 Fort Calhoun. And we heard both from the applicant  
16 and the staff.

17 And I will not go through a lot of details  
18 except Fort Calhoun is a PWR of a combustion  
19 engineering design. It's a 1,500-megawatt terminal,  
20 I believe 475-megawatt electric.

21 Some questions were asked by members  
22 regarding the economic viability of the plant. And  
23 the answer was supportive of continued operation.  
24 Also, both from the applicant and from the staff, we  
25 heard about the good physical conditions of the plant,

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1 which seem to indicate that the plant is investing  
2 money to keep running and running well.

3 We heard, for example, that although they  
4 have inspected the head and they found no leakage and  
5 they are planning also another volumetric inspection  
6 of the head in a reasonably short time, I believe  
7 2005, they are still planning for the placement of the  
8 head by 2006. That is an indication that they are  
9 aggressive in maintaining the plant for future  
10 operations. They are not postponing certain  
11 decisions.

12 This application was particularly  
13 interesting because it relied on the guidance  
14 documents, the standard review plan, and the Gall. It  
15 was the first application that fully relied on those.  
16 And so, therefore, it was actually lessons learned for  
17 the Committee, too.

18 The only surprise for me and other members  
19 was the fact that still the application required 214  
20 RAIs, which seems to be a large number because I  
21 actually went back and looked at St. Lucy. That was  
22 156 RAIs.

23 So the answer we heard was that the RAI  
24 was large because of a lack of familiarity of the  
25 plant, of the staff with the kind of application. My

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1 expectation would be that as we become more and more  
2 familiar with the Gall process and reliance on it,  
3 then the number of RAIs should come down  
4 substantially.

5 Also, I heard from the staff that they  
6 are, in fact, looking at ways to significantly reduce  
7 the number of questions by having early inspections,  
8 which means going in very quickly and define what is  
9 in Gall. So, therefore, that would reduce the number  
10 of questions that you have to develop and paperwork.

11 The review of the staff I believe was  
12 thorough. They had four weeks of inspections that  
13 included, actually, a team that was as large as nine  
14 people. The inspector team included a significant  
15 number of regions on there, five people, and three  
16 from headquarters. That is a significant investment  
17 of resources. I think that if, in fact, inspections  
18 are done even earlier in the process, I would have  
19 expected most of the RAIs were ready for  
20 qualification. And there was not much of a  
21 contention.

22 The other thing that is important, it  
23 seems to me, was the number of open items. I didn't  
24 see any that depended on all the contentious issues  
25 between the staff and the applicant. It was more that

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1 the remaining open items are due to the fact that the  
2 staff needed some time to review the information  
3 already received. So nothing really stands now except  
4 the review, the verification that information is  
5 adequate to the resolution of the SCR.

6 There were a number of instances where the  
7 staff found discrepancies between the methodology for  
8 the scoping and the actual implementation. And so  
9 that brought in additional components into scope.

10 The question was raised of how do we get  
11 comfort that, in fact, all of the components and scope  
12 have been identified? We got reasonable assurance by  
13 the statement that whenever discrepancies were found;  
14 the audit was expanded; and, in fact, most of the  
15 systems were covered, not all of them. I mean, that's  
16 the answer we got. So that gives us comfort that the  
17 evaluation was thorough.

18 Other components were put in because of  
19 the resolution of the issue of seismic 2 over 1. And  
20 I believe that that would be with this guidance here  
21 resolved once and for all for all the future  
22 applicants.

23 Again, this was an application of the law  
24 relied on the standard supporting documents SRP and  
25 Gall. Still, there were a number of items in the

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1 pipeline which were not resolved when Fort Calhoun  
2 made its application. And so we have like, for  
3 example, 2 over 1. That wasn't fully resolved.

4 We saw a presentation on the aging  
5 management problems, significant number of existing  
6 problems, -- a number of them have been modified to  
7 deal with license renewal -- and a number of one-time  
8 inspections.

9 Fort Calhoun I believe is the first  
10 application we have seen where there is a program  
11 called one-time inspection, which reflects the format  
12 of Gall. And we also saw on this application the  
13 Alloy 600 program that really is prompted by license  
14 renewal in a field that is a good initiative for all  
15 applicants. And we are looking forward to seeing them  
16 implementing a program like this earlier, not  
17 necessarily to wait for license renewal. Alloy 600 is  
18 an issue today and I think that having a program that  
19 focuses the attention of the plant on Alloy 600  
20 components.

21 We saw some unique TLAA's; for example, the  
22 weld repair and the pressurizer liquid space  
23 temperature element, just like we saw at St. Lucy.  
24 This is an element which is horizontally inserted in  
25 the shell of the pressurizer. And I believe it's part

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1 of the TLAA.

2 We reviewed the TLAAs, I believe the plant  
3 reactor vessels, embrittlement. I mean, the RTPTS  
4 meets its clinical criteria. We found that the plant  
5 is capable of being analyzed that meets, in fact, the  
6 60 years required for license renewal.

7 Most of the comments from the membership  
8 were, in fact, supported. And we all felt that the  
9 application was thorough, the SCR was good, there was  
10 a real understanding of the part of the staff of the  
11 plant and on the reasons why there is significant or  
12 adequate assurance that the plant can be run for 60  
13 years. The conclusion was that we do not need an  
14 interim letter at this time.

15 And that pretty much summarizes my  
16 overview of the license renewal review of Fort  
17 Calhoun. Any questions? Any questions?

18 MR. KUO: I just want to say I might be  
19 able to answer your question of why St. Lucy has less  
20 RAIs than Fort Calhoun had.

21 CHAIRMAN BONACA: Good. I would like to  
22 hear it.

23 MR. KUO: Because St. Lucy is really a  
24 duplicate of Turkey Point plant.

25 CHAIRMAN BONACA: That is a good answer.

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1 Okay.

2 MR. KUO: Thank you.

3 CHAIRMAN BONACA: All right.

4 MEMBER ROSEN: So without that, we would  
5 have had 400 RAIs on St. Lucy and only 200 on Fort  
6 Calhoun. And then our expectations would have been  
7 more met.

8 CHAIRMAN BONACA: All right. That's a  
9 good point. Very good. Very good.

10 MR. KUO: That helps.

11 CHAIRMAN BONACA: So, with that, we are  
12 ahead of time, which is a wonderful thing. I think we  
13 will go off the record now. We don't need to  
14 transcribe anymore.

15 (Whereupon, at 9:54 a.m., the foregoing  
16 matter was adjourned.)

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**CERTIFICATE**

This is to certify that the attached proceedings  
before the United States Nuclear Regulatory Commission  
in the matter of:

Name of Proceeding: Advisory Committee on

Reactor Safeguards

503<sup>rd</sup> Meeting

Docket Number: n/a

Location: Rockville, MD

were held as herein appears, and that this is the  
original transcript thereof for the file of the United  
States Nuclear Regulatory Commission taken by me and,  
thereafter reduced to typewriting by me or under the  
direction of the court reporting company, and that the  
transcript is a true and accurate record of the  
foregoing proceedings.



---

Eric Hendrixson  
Official Reporter  
Neal R. Gross & Co., Inc.

## Licensee Needs from ISG Process

- Focus on safety
- Clear staff expectations
- Timely resolution of issues
- RAI reductions
- Schedules maintained/improved
- Recognition of industry bases
- Process improvement capability



## ISG Comment Status

ISG Number	ISG Content	Expected Submittal of Industry Comments
ISG - 6	Housing for Active Components	Early July
ISG - 7	Fire Protection Scoping	June 20
ISG - 9	Seismic II/I Piping System Scoping	Mid July
ISG - 16	TLAAs	Late July



# TLAA for Tendon Prestressing Force

- Prestressing Provides Pre-Compression in Concrete
- Counteracts Tension due to Internal Pressure
- Steel Tendons Provide Required Prestressing
- Time Dependent Losses Affect Tendon Forces
- ISIs to Track the Losses – Subsection IWL
- 10 CFR 54.21(c)(1) Applicable for LR
- SRP-LRA 4.5 Delineates Review Requirements

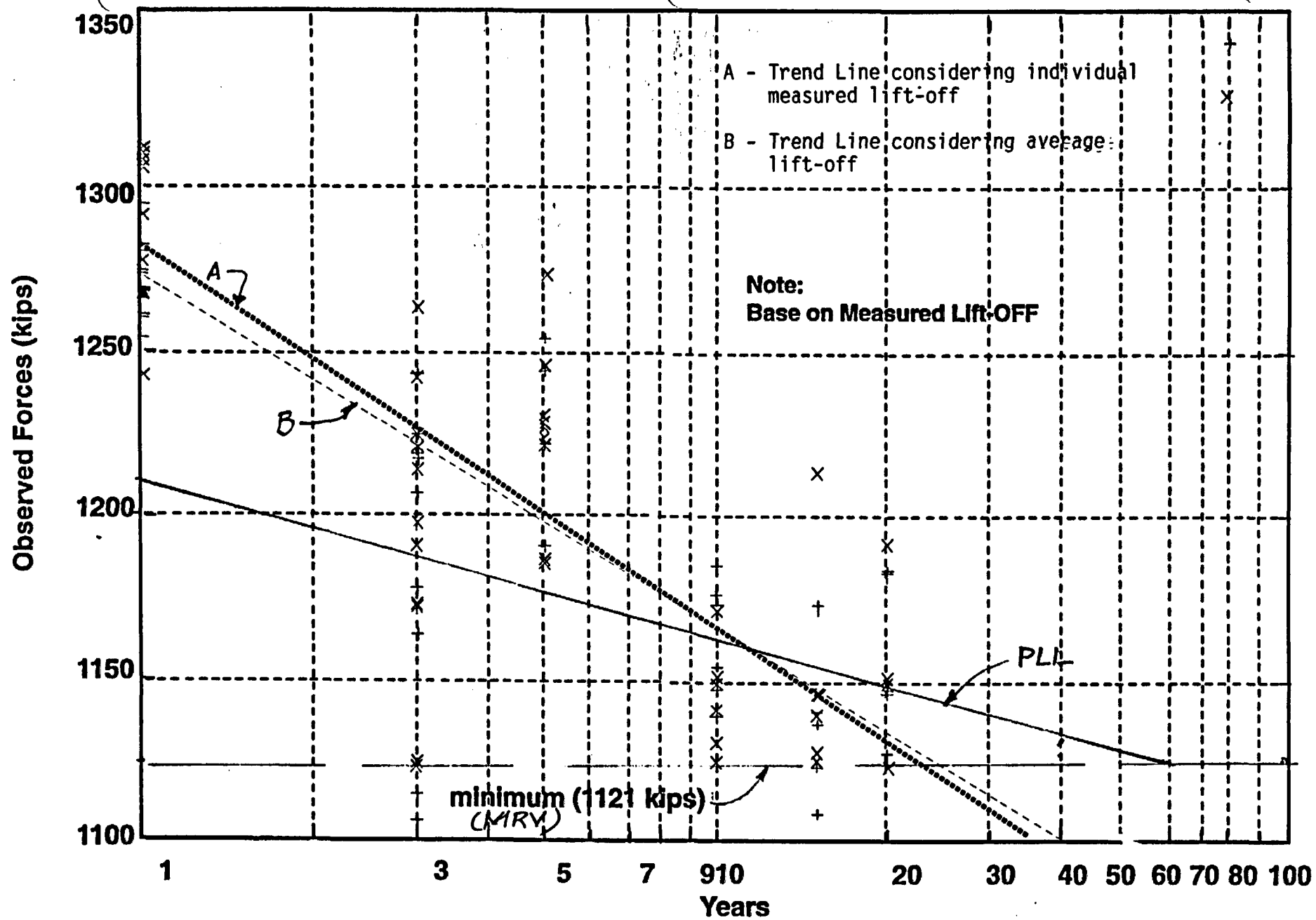
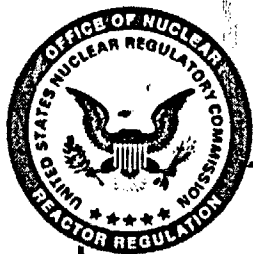


Fig 3 Trend of Prestressing Forces in Horizontal Tendons





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## **ACRS BRIEFING**

**on**

**Interim Staff Guidance (ISG) Process and Status  
and  
Time-Limited Aging Analyses (TLAAs) Supporting Information**

**June 13, 2003**

**Peter J. Kang, Project Manager**

**License Renewal and Environmental Impacts (RLEP)  
Division of Regulatory Improvement Program (DRIP)**

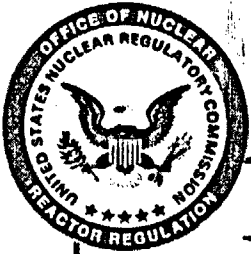
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# Introduction

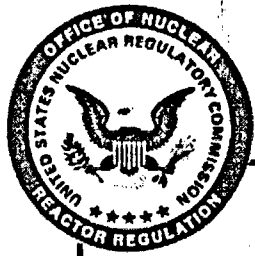
- The purpose of the ISG process is to provide timely guidance to applicants for new staff positions.
- The ISG process includes identification and implementation of the ISGs for current and future applicants.



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## Implementation: Applicants

- ▶ Applicants must address all approved ISGs before the renewed license is issued.
- ▶ Applicants may address ISGs before they are approved.



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## Implementation: Licensees Holding a Renewed License

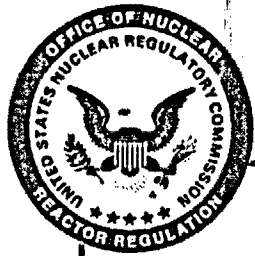
- ▶ Staff tracks ISGs for licensees holding renewed licenses.
- ▶ Staff will evaluate the ISGs for applicability to licensees holding a renewed license.



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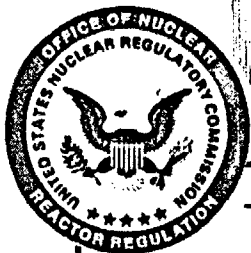
# Summary

- ▶ The ISG process:
  - Captures lessons learned from staff reviews and ACRS comments,
  - Provides timely guidance to applicants for license renewal,
  - When finalized, all ISGs will be incorporated into the license renewal guidance documents (SRP-LR, GALL, and Regulatory Guide 1.188).



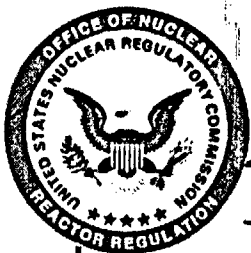
# **Interim Staff Guidance (ISG) Status Update**

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# ISG Status

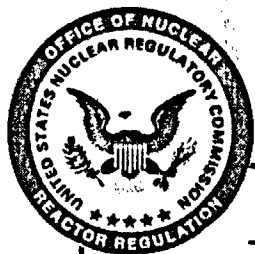
No.	Approved ISG No. ISG Issue	Purpose	Status Issuance Date
1	ISG-01 GALL report contains one acceptable way, not only way	To clarify that GALL report contains one acceptable way, not only way	Completed 11/23/01
2	ISG-02 Station Blackout Scoping (SBO)	To add SBO scoping	Completed 4/1/02
3	ISG-03 Concrete Aging Management Program	To clarify the acceptable aging management programs (AMPs) in GALL and SRP	Completed 11/23/01
4	ISG-04 Fire Protection System Piping	To clarify AMPs X1.M26 and M27	Completed 12/3/02
5	ISG-05 Identification and Treatment of Electrical Fuse Holders	To include fuse clips and fuse block for fuse holders and to add a new AMP for fuse clips (i.e., metallic)	Completed 3/10/03
6	Identification and Treatment of Housing of Active Components	To clarify a need for AMR for housing of fans, dampers, and H/C coils	Awaiting NEI response
7	Scoping Guidance for Fire Protection Systems, Structures, and Components	To clarify fire protection scoping	Awaiting NEI response



## ISG Status (continued)

No.	ISG Issue	Purpose	Status
8	Updating the Improved Guidance Documents, ISG Process	To establish ISG process. Appeal will be a part of ISG process	Deleted from ISG list (non-technical issue)
9	Scoping Criteria 10 CFR 54.4 (a) (2)	To clarify the scoping criteria in 10 CFR 54.4 (a) (2)	Awaiting NEI response
10*	Class of '03 Standard License Renewal Application Format * Response to ACRS Comments	To standardize license renewal format for 2003 applicants to make the LR process efficient.	Completed 4/7/03
11	Aging Management of Environmental Fatigue for Carbon/Low Alloy Steel	To review this fatigue issue as an ISG process, as agreed by 9/18/02 meeting	Under staff review
12*	Cracking of Class 1 Small Bore Piping and one-time inspection * Response to ACRS Comments	To capture experience related to cracking of Class 1 small bore piping and one-time inspection	Under staff review
13	Management of Loss of Preload on Reactor Vessel Internals Bolting Using the Loose Parts Monitoring System	To review use of Loose Parts Monitoring System for management of loss of preload on reactor vessel internals bolting	Under staff development
14	Operating Experience with Cracking on Bolting	To capture experience related to cracking of bolting	Under staff development





## ISG Status (continued)

No.	ISG Issue	Purpose	Status
15	Revision to Generic Aging Lessons Learned (GALL) aging management program (AMP) XI.E2	To incorporate NEI's proposed revision to GALL AMP XI.E2	Under staff review
16*	Time-Limited Aging Analyses (TLAA) supporting information for license renewal applications * Response to ACRS Comments	To maximize the efficiency of the LRA review process and minimize RAIs	Awaiting NEI response
17	Bus ducts (Iso-phase and Non-segregated) for electrical bus bar	To review bus bar Insulation problem due to water intrusion in bus ducts and develop AMP	Under staff development
18*	Revision to GALL AMP XI.E3 for inaccessible cable (medium voltage) * Response to ACRS Comments	Develop AMP to prevent moisture collection in man hole.	Under staff development



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# Standard License Renewal Application (SLRA) format

- ▶ NEI developed the SLRA format for future applicants
- ▶ The staff reviewed and concurred
- ▶ The license renewal applicants to be submitted starting in September are encouraged to use this format
- ▶ The format will be incorporated into NEI 95 ①



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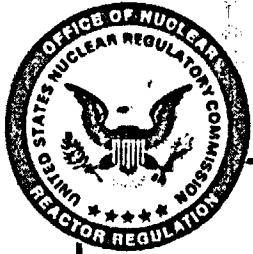
# **Time-Limited Aging Analyses (TLAAs)**

## **Supporting Information**

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- Discussed TLAA supporting information in a meeting with the industry on April 22, 2003.
  - On May 12, 2003, the staff issued "Proposed Interim Staff Guidance (ISG) 16: Time Limited Aging Analyses (TLAAs) Supporting Information for License Renewal Applications"
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## List of Staff's Repeated RAI questions

- Identification of Time-Limited Aging Analyses
- Reactor Vessel Neutron Embrittlement Analysis
- Metal Fatigue Analysis
- Environmental Qualification of Electric Equipment
- Concrete Containment Tendon Prestress Analysis
- Containment Liner Plate, Metal Containments, and Penetrations Fatigue Analysis
- Other Plant-Specific TLAAs



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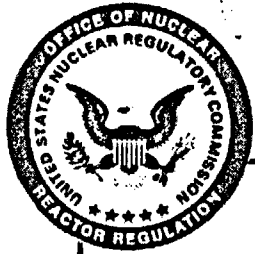
## TLAA Examples:

### 1.) Reactor Vessel Neutron Embrittlement

Provide necessary data for the staff to confirm: Upper Shelf Energy (USE) and Adjusted Reference Temperature (ART) calculations, and RT values for Pressurized Thermal Shock for the period of extended operation.

### 2.) Metal Fatigue Analysis

Provide the details of a fatigue monitoring program (FMP) that tracks the number of operational transient cycles. This information should include the number of cycles, current number of operating cycles, and the number of cycles projected for 60 years of plant operation for each transient and how these cycle counts are determined.



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TLAA Examples (continued):

### 3.) Concrete Containment Tendon Prestress Analysis

Plot the prestressing trend lines for each group of tendons from its past surveillance data and project it for the 60 years of operation.

Plant	Appendix B	Non Appendix B
Calvert Cliffs	x	
Oconee	x	
ANO-1		x
Hatch	x	
Turkey Point	x	
McGuire/Catawba	x	
North Anna/Surry		x
Peach Bottom		x
St. Lucie	x	
Fort Calhoun	x	
Robinson	x	
Ginna	x	
Summer	x	
Dresden/Quad Cities		x



# GALL REPORT

## XI.M32 ONE-TIME INSPECTION

### Program Description

The program includes measures to verify the effectiveness of an aging management program (AMP) and confirm the absence of an aging effect. For example, for structures and components that rely on an AMP, such as water chemistry control, this program verifies the effectiveness of the AMP by confirming that unacceptable degradation is not occurring and the intended function of a component will be maintained during the extended period of operation. One-time inspection is needed to address concerns for the potential long incubation period for certain aging effects on structures and components. There are cases where either (a) an aging effect is not expected to occur but there is insufficient data to completely rule it out, or (b) an aging effect is expected to progress very slowly. For these cases, there is to be confirmation that either the aging effect is indeed not occurring, or the aging effect is occurring very slowly as not to affect the component or structure intended function. A one-time inspection of the subject component or structure is an acceptable option for this verification. One-time inspection is to provide additional assurance that either aging is not occurring or the evidence of aging is so insignificant that an aging management program is not warranted. For example, for structures and components, such as Class 1 piping with a diameter less than nominal pipe size (NPS) 4 inch that do not receive volumetric examination during Inservice inspection, the program confirms that crack initiation and growth due to stress corrosion cracking (SCC) or cyclic loading is not occurring and, therefore, there is no need to manage an aging related degradation for the period of extended operation.

The elements of the program include (a) determination of the sample size based on an assessment of materials of fabrication, environment, plausible aging effects, and operating experience; (b) identification of the inspection locations in the system or component based on the aging effect; (c) determination of the examination technique, including acceptance criteria that would be effective in managing the aging effect for which the component is examined; and (d) evaluation of the need for follow-up examinations to monitor the progression of any aging degradation.

When evidence of an aging effect is revealed by a one-time inspection, the routine evaluation of the inspection results would identify appropriate corrective actions.

As set forth below, an acceptable verification program may consist of a one-time inspection of selected components and susceptible locations in the system. An alternative acceptable program may include routine maintenance or a review of repair records to confirm that these components have been inspected for aging degradation and significant aging degradation has not occurred and thereby verify the effectiveness of existing AMPs. One-time inspection, or any other action or program, is to be reviewed by the staff on a plant-specific basis.

### Evaluation and Technical Basis

1. **Scope of Program:** The program includes measures to verify that unacceptable degradation is not occurring, thereby validating the effectiveness of existing AMPs or confirming that there is no need to manage aging-related degradation for the period of extended operation. The structures and components for which one-time inspection is to verify the effectiveness of the AMPs (e.g., water chemistry control, etc.) have been identified in the Generic Aging Lessons Learned (GALL) report. Examples include small bore piping in the reactor coolant system or the feedwater system components in boiling water reactors (BWRs) and pressurized water reactors (PWRs).

2. **Preventive Actions:** One-time inspection is an inspection activity independent of methods to mitigate or prevent degradation.
3. **Parameters Monitored/Inspected:** The program monitors parameters directly related to the degradation of a component. Inspection is performed in accordance with the requirements of the American Society of Mechanical Engineers (ASME) Code and 10 CFR 50, Appendix B, by using a variety of nondestructive examination (NDE) methods, including visual, volumetric, and surface techniques.
4. **Detection of Aging Effects:** The inspection includes a representative sample of the system population, and, where practical, focus on the bounding or lead components most susceptible to aging due to time in service, severity of operating conditions, and lowest design margin. For small-bore piping, actual inspection locations are based on physical accessibility, exposure levels, NDE techniques, and locations identified in Nuclear Regulatory Commission (NRC) Information Notice (IN) 97-46.

Combinations of NDE, including visual, ultrasonic, and surface techniques, are performed by qualified personnel following procedures consistent with the ASME Code and 10 CFR 50, Appendix B. For small-bore piping less than NPS 4 in., including pipe, fittings, and branch connections, a plant-specific destructive examination of replaced piping due to plant modifications or NDE that permits inspection of the inside surfaces of the piping is to be conducted to ensure that cracking has not occurred. Follow-up of unacceptable inspection findings includes expansion of the inspection sample size and locations.

The inspection and test techniques prescribed by the program verify any aging effects because these techniques, used by qualified personnel, have been proven effective and consistent with staff expectations. With respect to inspection timing, the one-time inspection is to be completed before the end of the current operating license. The applicant may schedule the inspection in such a way as to minimize the impact on plant operations. However, the inspection is not to be scheduled too early in the current operating term, which could raise questions regarding continued absence of aging effects prior to and near the extended period of operation.

5. **Monitoring and Trending:** One-time inspection does not provide specific guidance on monitoring and trending. However, evaluation of the appropriateness of the techniques and timing of the one-time inspection improve with the accumulation of plant-specific and industry-wide experience.
6. **Acceptance Criteria:** Any indication or relevant conditions of degradation detected are evaluated. The ultrasonic thickness measurements are to be compared to predetermined limits, such as design minimum wall thickness.
7. **Corrective Actions:** Site quality assurance (QA) procedures, review and approval processes, and administrative controls are implemented in accordance with the requirements of 10 CFR Part 50, Appendix B. As discussed in the appendix to this report, the staff finds the requirements of 10 CFR Part 50, Appendix B, acceptable in addressing the corrective actions, confirmation process, and administrative controls.
8. **Confirmation Process:** See Item 7, above.
9. **Administrative Controls:** See Item 7, above.

**10. *Operating Experience:*** One-time inspection is a new program to be applied by the applicant. The elements that comprise these inspections (e.g., the scope of the inspections and inspection techniques) are consistent with years of industry practice and staff expectations.

#### **References**

**10 CFR 50.55a, *Codes and Standards*, Office of the Federal Register, National Archives and Records Administration, 2000.**

**ASME Section XI, *Rules for Inservice Inspection of Nuclear Power Plant Components*, ASME Boiler and Pressure Vessel Code, 1995 edition through the 1996 addenda, American Society of Mechanical Engineers, New York, NY.**

**NRC Information Notice 97-46, *Unisolable Crack In High-Pressure Injection Piping*, U.S. Nuclear Regulatory Commission, July 9, 1997.**

# GALL REPORT

## QUALITY ASSURANCE FOR AGING MANAGEMENT PROGRAMS

The license renewal applicant must demonstrate that the effects of aging on structures and components subject to an aging management review (AMR) will be adequately managed to ensure that their intended functions will be maintained consistent with the current licensing basis (CLB) of the facility for the period of extended operation. Therefore, those aspects of the AMR process that affect the quality of safety-related structures, systems, and components are subject to the quality assurance (QA) requirements of Appendix B to 10 CFR Part 50. For non-safety-related structures and components subject to an AMR, the existing 10 CFR Part 50, Appendix B, QA program may be used to address the elements of corrective actions, confirmation process, and administrative controls on the following bases:

- Criterion XVI of 10 CFR Part 50, Appendix B, requires that measures be established to ensure that conditions adverse to quality, such as failures, malfunctions, deviations, defective material and equipment, and nonconformances, are promptly identified and corrected. In the case of significant conditions adverse to quality, measures must be implemented to ensure that the cause of the nonconformance is determined and that corrective action is taken to preclude repetition. In addition, the root cause of the significant condition adverse to quality and the corrective action implemented must be documented and reported to appropriate levels of management.
- Because Criterion XVI of 10 CFR Part 50, Appendix B, requires that measures be taken to preclude repetition of significant conditions adverse to quality, follow-up actions must be taken to verify effective implementation of the proposed corrective action. This verification comprises the confirmation process element for aging management programs for license renewal. For example, in managing internal corrosion of piping, a mitigation program (water chemistry) may be used to minimize susceptibility to corrosion. However, it may also be necessary to have a condition monitoring program (ultrasonic inspection) to verify that corrosion is indeed insignificant. When corrective actions are necessary for significant conditions, follow-up activities are to confirm that the corrective actions implemented are effective in preventing recurrence.
- Administrative controls are the provisions associated with organization and management, policies, orders, instructions, procedures, record keeping, and designations of authority and responsibility that are necessary to ensure operation of the facility in a safe manner. 10 CFR 50.34(b)(6)(ii) and 10 CFR 50.36(c)(5) require that nuclear power plant license applicants include in the final safety analysis report information on the managerial and administrative controls to be used to ensure safe operation. 10 CFR 50.34(b)(6)(ii) and 10 CFR 50.36(c)(5) also stipulate that Appendix B to 10 CFR Part 50 sets forth the requirements for these managerial and administrative controls. Accordingly, programs consistent with the requirements of 10 CFR Part 50, Appendix B, also satisfy the administrative controls element necessary for aging management programs (AMPs) for license renewal.

Notwithstanding the suitability of its provisions to address quality-related aspects of the AMR process for license renewal, 10 CFR Part 50, Appendix B, covers only safety-related structures, systems, and components. Therefore, absent a commitment by the applicant to expand the scope of its 10 CFR Part 50, Appendix B, QA program to include non-safety-related structures and components subject to an AMR for license renewal, the AMPs applicable to such structures and components are to provide alternative means to address corrective actions, confirmation process, and administrative controls. Such alternate means would be subject to review by NRC on a case-by-case basis.

April 2001

III A9-7

NUREG-1801

**III Structures and Component Supports**  
**A9. Group 9 Structures (BWR Unit Vent Stack)**

Item	Structure and/or Component	Material	Environment	Aging Effect/ Mechanism	Aging Management Program (AMP)	Further Evaluation
A9.1-e	Concrete: Below grade; foundation	Reinforced concrete	Exposure to aggressive environment	Cracking, loss of bond, loss of material (spalling, scaling) / Corrosion of embedded steel	<p>A plant-specific aging management program is required only if the below-grade environment is aggressive (pH &lt;5.5, chlorides &gt;500 ppm, or sulfates &gt;1500 ppm). Examination of representative samples of below-grade concrete, when excavated for any reason, is to be included as part of a plant-specific program.</p> <p>If the below-grade environment is not aggressive, this aging effect is not significant. Periodic monitoring of below-grade water chemistry (including consideration of potential seasonal variations) is an acceptable approach to demonstrate that the below-grade environment is not aggressive.</p>	Yes, if an aggressive below-grade environment exists
A9.1-f	Concrete: Above grade	Reinforced concrete	Exposure to aggressive environment	Increase in porosity and permeability, cracking, loss of material (spalling, scaling) / Aggressive chemical attack	<p>Chapter XI.S6, "Structures Monitoring Program"</p> <p>As described in NUREG-1557, aggressive chemical attack on interior and above-grade exterior reinforced concrete is not significant if the concrete is not exposed to an aggressive environment (pH &lt;5.5), or to chloride or sulfate solutions beyond defined limits (&gt;500 ppm chloride, or &gt;1500 ppm sulfate). Therefore, if these conditions are satisfied, aging management is not required.</p>	No, if within the scope of the applicant's structures monitoring program

SALL REPORT