

## NPEC Subcommittee SC-3, Operations, Maintenance, Aging, and Testing

### Minutes for Meeting S00-2 Wednesday October 11, 2000 Annapolis, MD

**Members Present:**

George Ballassi  
Paul Colaianni  
Wally Colvin  
Preston Dougherty

Surin Dureja  
Dave Horvath  
John Taylor  
Jit Vora

**Members Absent:**

Millard Allen  
Brij Bharatey  
Lamis Fleischer  
Wayne Johnson

Sonny Kasturi  
Henry Leung  
Steve Parsons  
Carl Weary

**Other Attendees:**

Paul Shemanski

**1. Introduction**

Dave Horvath welcomed everyone in attendance and introduced Surin Dureja who is joining SC-3, representing the QA contingent from SC-8 which has merged with our subcommittee. Dave also presented a few changes to the agenda, which were approved; the final agenda is included as [Attachment 1](#).

**2. Secretary's Report****A. S00-1**

The minutes from S00-1 were approved by acclamation.

## B. Action Item Status

There was one open action item from the previous meeting; it was AI00-1-1. John Taylor said that he would follow up within one month following the meeting. For information, all of the action items from the last meeting are listed below. No new items were added at this meeting.

Item No.	Description	Status
AI00-1-1	J. Taylor to contact non-active SC-3 members.	Closed [See <a href="#">Attachment 2</a> ]
AI00-1-2	D. Horvath to notify NPEC's Chair (Brit Grim), Secretary (Neil Smith), and Liaison to IEEE Standards Board (Mark Zar) of this change in WG numbers.	Closed [See <a href="#">Attachment 3</a> ]
AI00-1-3	P. Colaianni to develop an action plan to satisfy NPEC goal: Develop and Improve Standards to Support Life Extension and License Renewal.	Closed [See <a href="#">Attachment 4</a> ]
AI00-1-4	D. Horvath to send out NPEC list of responsible IEEE Standards and status for revision, affirmation, or withdrawal	Closed [See <a href="#">Attachment 5</a> ]
AI00-1-5	Paul Shemanski (WG-3.4) to confirm acceptability of the SC-3 meeting S00-2 location and date and to provide information on potential meeting locations to the SC-3 Secretary John Taylor.	Closed
AI00-1-6	D. Horvath to contact IEEE regarding adding all eligible SC-3 members to the ballot pool for revision of IEEE 323.	Closed [See <a href="#">Section 6 of Meeting 00-1 minutes</a> ]

## A. Alligator Fund

The Alligator Fund is made up of voluntary contributions from SC-3 members to defray the cost of meeting rooms, refreshments, etc. The balance after S00-2 is \$220.

## B. Membership Table

Wally Colvin, Preston Dougherty, and Surin Dureja were voted in by the subcommittee members that were present. It

was further agreed that the working groups would continue to meet in conjunction with the subcommittee, to allow more working group members to attend the subcommittee meeting.

An update of the membership roster resulting from changes at this meeting [and Action Item 1 above] is included as [Attachment 6](#). The current combined SC-3 and working group roster is included on the IEEE/NPEC website at URL: <http://grouper.ieee.org/groups/npec/private/sc3/sc-3.html>: user name: [REDACTED], password: [REDACTED]. The current breakdown of members by category is as follows:

### **Utility AE/Consultant Gov't/National Labs Total**

5 4 2 11

### **3. Chair's Report**

Dave Horvath reiterated guidelines for SC-3 membership:

- All subcommittee members must be contributing at the Working Group level, or be a subcommittee officer.
- Unless approved by the subcommittee as an exception, missing two meetings in a row will be sufficient grounds for being dropped from SC-3 membership.
- Except in special cases, attendance and participation at a minimum of two work group meetings will be required prior to consideration for SC-3 membership.

#### **A. NPEC Activities**

Dave committed to provide a summary of NPEC Meeting 00-1 after the meeting by email. [This summary is included in [Attachment 7](#).]

#### **B. Future Meeting Locations**

It was decided that the next SC-3 and working group meetings would be held tentatively the week of 2/12/01 in Orlando, Florida, at the Enclave, 6165 Carrier Drive. The exact dates and times of the Subcommittee and Working Group meetings will be announced later. The second meetings of the year are scheduled for the week of 9/10/01 back in Annapolis, Maryland. John Taylor will arrange the meetings and advise the membership.

#### **C. Merger of SC-3 and SC-8**

As discussed at the last meeting, SC-8, Quality Maintenance and Improvement has merged into SC-3. Surin Dureja has joined SC-3 representing the QA subcommittee, SC-8. It was agreed that at the present time, a separate working group

would not be formed. As described in Section 4C below, IEEE Std 336 will be managed by W.G. 3.1 and Surin would become a member of that Working Group. Based on the merger, and in consideration of the current standards for which the subcommittee is responsible, there was a discussion of the SC title. To make a long story short, the members settled on the title of *Operations, Maintenance, Aging and Testing*. Dave will recommend this name change at the next NPEC meeting [Action Item 00-2-1].

#### **D. IEEE NPEC SC-3 Website**

Dave used an LCD Projector to provide a tour of the SC-3 website home page, which is at <http://grouper.ieee.org/groups/npec/private/sc3/sc-3.html> [REDACTED]. This website contains subcommittee/working group names and descriptions, member rosters, past meeting minutes, officer names, current versions of draft standards and PARs (as available), meeting notices, and other useful information.

### **4. Working Group Reports**

#### **A. WG-3.1 Testing**

A report was made by George Ballassi, the new Chair. The working group met on October 12, 2000. A detailed discussion of the need to revise IEEE Std 338 was held at the WG meeting and will be reported on in separate minutes. A new PAR will be issued to describe the changes that are planned.

#### **B. WG-3.2 Security**

The working group did not meet at this time. Acting Chair Dave advised that he is looking for an NRC representative, and Jit Vora took the action to solicit an NRC representative. [Action Item 00-2-2]

#### **C. WG-3.3 Quality Assurance**

As mentioned earlier, the QA working group will not be formed at this time. IEEE Std 336 will be handled by WG-3.1, until the scopes are determined and PARs are issued. IEEE Std 336 was almost reaffirmed a year ago with the status of 3 of 35 voting negative to reaffirm. After some discussion, the subcommittee concluded that it could not support reaffirmation of IEEE 336-1985 in its current form because its focus is initial construction / installation. However, it was noted that IEEE 336 does contain some useful inspection criteria and with the addition of post-modification testing guidance, it could be made into a very useful industry standard.

The subcommittee feels that much of the content of IEEE 336 warrants consideration and recommends that the PAR for IEEE 336 be rewritten to pursue revision of 336 to make it more useful to current industry needs. Dave will make this recommendation to NPEC at its next meeting. [Action Item 00-1-3]

Because of the need to address post-modification testing requirements, the responsibility for revising IEEE 336 will be moved to WG-3.1 whose scope is testing. Depending on future member number and interest level of WG-3.1, at some later time a separate working group may be spun off for IEEE 336 activities.

#### **D. WG-3.4 Aging Assessments**

Chair Paul Colaianni reported on the results of the WG meeting that was held on October 10-11, 2000. Criteria for addressing the action plan developed for responding to NPEC Goal 6 was reported, with a schedule. Additional detail will be in the working group's meeting minutes. IEEE Std 1205 is with the IEEE editor, it should be published very soon. Dave Horvath and Paul are giving presentations on 1205 at the ANS meeting next month in Washington, D.C.

### **5. NRC Liaison Report (See [Attachment 8](#))**

Jit Vora presented the NRC Liaison Report. The important points are highlighted below:

- Jit is a member of the Inter Agency Working Group on Wire Safety. A formal report will be issued soon.
- A public workshop was held on 9/25/00 regarding the Generic Aging Lessons Learned (GALL) tables. These tables evaluate existing documents regarding their support of aging management.
- The EQ Generic Issue is in the process of being closed. The final report by BNL is being reviewed by NRC. The results of the program were presented to the ACRS.

### **6. BNL EQ Report Summary**

John Taylor presented a brief summary of the recent series NRC sponsored EQ testing of cables at BNL. From the preliminary report, there were six potential issues to address:

- Accelerated aging validity
- Activation energy selection
- Testing a single conductor to address multi-conductor cable
- Bonded vs. unbonded cable
- Effective condition monitoring (CM) techniques
- CM ability to predict LOCA survivability.

#### **Preliminary conclusions:**

- Arrhenius is valid when used appropriately.
- Representative activation energies can be determined and used.
- Swelling can cause cracking of bonded jackets.
- Some potential for catastrophic failure does exist.

- Some questions on how best to extend the life of electric insulation still exist.

Note the very preliminary nature of this summary. The report is presently still under review by the NRC.

## **7. EPRI Plant Support Meeting (See [Attachment 9](#))**

Dave Horvath had attended the EPRI Plant Support Engineering Meeting held in Albuquerque, N.M. on 9/13-13/00. A brief summary of that meeting is included as [Attachment 9](#)

## **8. New Business**

No new business items were raised.

The meeting was adjourned.

Prepared by

John Taylor

## **List of Attachments**

1. [Agenda](#)
2. [SC-3 Membership Action Item Result](#)
3. [SC-3 Working Group Number Changes](#)
4. [Action Plan for NPEC Goal 6](#)
5. [Update of NPEC Standards List and Status](#)
6. [Combined SC-3 and Working Group Roster](#)
7. [NPEC Summary for Meeting 00-1](#)
8. [NRC Liaison Report](#)
9. [EPRI Plant Support Engineering Cable Condition Monitoring Meeting Summary](#)

# Agenda

Wednesday, October 11, 2000 1:00 pm

Annapolis, MD 21401

## 1. Introduction - D. Horvath

Opening remarks - D. Horvath

Meeting Agenda - D. Horvath

## 2. Secretary's Report - J. Taylor

S00-1 Minutes

Action Item Status

Alligator fund

SC-3 Membership

## 3. SC-3 Chair's Report - D. Horvath

NPEC Activities

Future Meeting Locations

Merger with other Subcommittees

Tour of NPEC SC-3 Website

## 4. WG 3.1 Report - G. Ballassi

Std. 338 Revision

Planning to Move Towards "Risk-Informed"

## 5. WG 3.2 Report - D. Horvath

Plans for Std. 692 Revisio

## 6. WG-3.3 Report - S. Dureja

Discussion on whether to withdraw IEEE Std. 336

**7. WG 3.4 Report - P. Colaianni**

Publication Status?

**8. Liaison Reports**

NRC - J. Vora

(discuss previous week's EQ ACRS Meeting)

BNL EQ Report Summary - J. Taylor

Summary of EPRI Cable Condition Monitoring (CCM) Meeting - D. Horvath

**9. New Business**

(Open for Input)

**Attachment 2**

**SC-3 Membership Action Item Result**

Subj:	IEEE SC3 MEMBERSHIP
Date:	10/31/00 12:14:33 PM Eastern Standard Time
From:	(Taylor, John H) To: [REDACTED]
	( [REDACTED] )

Dave:

As per my action item at the last meeting, I have contacted 3 members who have not been attending meetings. Here are the results:

(1) Drop Wayne Johnson and Carl Weary from the membership. I contacted both of them, gave them a week and a half to respond, and have not heard from them.

(2) I did speak to Millard Allen. He is in poor health and asked to be removed from the membership. He also asked to stay on the distribution for the minutes and other notices.

John



John H. Taylor  
Special Assistant to the Associate Laboratory Director  
for Basic Energy Sciences

Fax

**Attachment 3**

**SC-3 Working Group Number Changes**

From: [REDACTED]  
Message-ID: <[REDACTED]>

Date: Thu, 2 Mar 2000 21:28:08 EST

Subject: Re: WG Numbers

To: [REDACTED]

CC: [REDACTED]

In a message dated 1/31/00 11:24:22 AM Eastern Standard Time, [REDACTED] writes:

You can change the WG numbers without any approval but it will cause some small confusion, so please inform the following about the change:

- Mark Zar (Standards Coordinator) regarding the standards assigned to the new WGs
- Neil Smith (Secretary) regarding the personnel reassignments and WG chairs
- NPEC membership in your next SC report, which should be given at N00-1

This is to inform you all that SC-3 has voted to do some slight renumbering of working group numbers. WG-3.0/SC-3.0 was too easily confused with SC-3 and WG-3.7/SC-7 falsely implied that SC-3 had at least seven working groups.

Working group numbers 3.1 and 3.2 have not been in used for over seven years. SC-3 voted to make the following changes:WG-3.0 (Periodic Testing and responsible for IEEE 338) to WG-3.1WG-3.7 (Security Systems and responsible for IEEE 692) to WG-3.2WG-3.4 (Aging Assessments and responsible for IEEE 1205) stays the same.

If WG-8.3 transfers to Subcommittee 3, we will likely renumber to WG-3.3.These changes appear to only affect the PES Directory, Mark's Stds Status spreadsheet, and the NPEC website. Affected responsible standards are up for revision initiation this year with primarily all new working group members.WG Chair responsibilities will be as follows:  
 WG-3.1 Dave Horvath: Acting Chair until next meeting of WG-3.1 in SeptemberWG-3.2 Dave Horvath: Chair WG-3.4  
 Dave Horvath: Stepping down as chair after RevCom approves IEEE 1205 (New Chair will likely be Paul Colaianni or George Ballassi)Thanks! [Sorry I missed getting this out before Mark sent out his stdsstatus report.]Dave HorvathSC-3  
 Chair (assuming NPEC Chair appointment approved)

Attachment 4

## Action Plan for NPEC Goal 6

### Assignment: SubCommittee 3 and its Working Group 3.4

Lead Responsibility: Paul Colaianni (Duke Energy), WG-3.4 Task Action Group Chair

**NPEC Goal Statement:** Improve NPEC Standards to be more effective and useful in addressing life extension and license renewal.

#### Action Plan (with measurable approach):

1. Develop criteria via email drafts and finalize at WG-3.4 meeting in *FALL 2000*  
 (WG will work from M. Zar's NPEC Stds list to define scope of the work.)  
 [(20%)]
2. Publish IEEE Std. 1205-2000 (which contains extensive, relevant guidance on life extension and license renewal approaches for electrical equipment) - *September 2000*  
 [20%]
3. Review 50% of Standards - by and at WG-3.4 meeting in *SPRING 2001*.  
 [20%]

4. Review 50-100% of Standards - by and at WG-3.4 meeting in *FALL 2001*.

[20%]

5. Report to SC-3 - at SC-3 meeting in *SPRING 2002*.

[10%]

6. Report to NPEC - at meeting N02-1 in *SPRING 2002*.

[10%]

Prepared by

Paul Colaianni and Dave Horvath / March 3, 2000

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**Attachment 5**

**Update of NPEC Standards List and Status**

From: Dave Horvath[SMTP: [REDACTED]]

Sent: Thursday March 02, 2000 8:44 PM

To: [REDACTED];

[REDACTED];

[REDACTED];

[REDACTED];

[REDACTED];

[REDACTED];

[REDACTED];

[REDACTED];

Subject: Update of NPEC Standards List and Status

Within a couple hours of sending you all the NPEC standards list (in response to an action item at the last SC-3 meeting), I received this update from Mark Zar. Once again it is an Excel 97 Spreadsheet and it includes a status of each standard in terms of reaffirmation, withdrawal, or undergoing revision.

Dave Horvath

SC-3 Chair

**Attachment 6**

### **Combined SC-3 and Working Group Roster**

**IEEE - NUCLEAR POWER ENGINEERING COMMITTEE**

**SUBCOMMITTEE SC-3 MEMBERSHIP LIST**

**OPERATIONS, MAINTENANCE, AGING, AND TESTING**

<b>NAME/COMPANY</b>	<b>ADDRESS</b>	<b>ASSIGNMENT</b>
<b>BALLASSI, G. (GEORGE)</b>  GENERAL DYNAMICS/ ELECTRIC BOAT CORP. D477 		SC-3 (M) WG 3.1(C) WG-3.4(M)

<p><b>BHARTEEY, B.M. (BRIJ)</b></p> <p>SPECTRUM TECHNOLOGIES USA INC.</p> <p>[REDACTED]</p>	<p>[REDACTED]</p>	<p>SC-3(M) WG-3.4(M)</p>
<p><b>COLAIANNI, R.P. (PAUL)</b></p> <p>DUKE POWER CO. - MS-EC12R</p> <p>[REDACTED]</p>	<p>[REDACTED]</p>	<p>SC-3(M) WG-3.4(C)</p>
<p><b>COLVIN, W. J. (WALLACE)</b></p> <p>FIRST ENERGY CORP.</p> <p>[REDACTED]</p>	<p>[REDACTED]</p>	<p>SC-3 (M) WG-3.1(M) WG-3.4 (M)</p>
<p><b>FLEISCHER, L.Q. (LAMIS)</b></p> <p>EXELON CORP.</p> <p>[REDACTED]</p>	<p>[REDACTED]</p>	<p>SC-3(M) WG-3.4(M)</p>
<p><b>DOUGHERTY P. (PRESTON)</b></p> <p>DOMINION GENERATION</p> <p>[REDACTED]</p>	<p>[REDACTED]</p>	<p>SC-3 (M) WG-3.4 (M)</p>
<p><b>DUREJA, S.K. (SURIN)</b></p> <p>BALTIMORE GAS AND ELECTRIC</p> <p>[REDACTED]</p>	<p>[REDACTED]</p>	<p>SC-3 (M) WG-3.3 (C) WG-3.1 (M)</p>

<p><b>HORVATH, D.A. (DAVE)</b></p> <p>ADVENT ENGINEERING SERVICES, INC.</p> <p>[REDACTED]</p>	<p>[REDACTED]</p>	<p>SC-3(C) WG-3.1(M) WG-3.2(C) WG-3.4(PC)</p>
<p><b>KASTURI, S. (SONNY)</b></p> <p>MOS</p> <p>[REDACTED]</p>	<p>[REDACTED]</p>	<p>SC-3(M)</p>
<p><b>LEUNG, C.W. (HENRY)</b></p> <p>ATOMIC ENERGY OF CANADA LIMITED</p> <p>[REDACTED]</p>	<p>[REDACTED]</p>	<p>SC-3(M) WG-3.4(M)</p>
<p><b>PARSONS, S.Z. (STEVE)</b></p> <p>AMERICAN ELECTRIC POWER</p> <p>[REDACTED]</p>	<p>[REDACTED]</p>	<p>SC-3(M)</p>
<p><b>TAYLOR, J.H. (JOHN)</b></p> <p>BROOKHAVEN NATIONAL LAB</p> <p>[REDACTED]</p>	<p>[REDACTED]</p>	<p>SC-3(S) WG-3.1(M)</p>
<p><b>VORA, J.T. (JIT)</b></p> <p>US NUCLEAR REGULATORY COMMISSION</p> <p>[REDACTED]</p>	<p>Office Of Nuclear Regulatory Research</p> <p>[REDACTED]</p>	<p>SC-3(M) WG-3.1 (M)</p>

**IEEE - NUCLEAR POWER ENGINEERING COMMITTEE**

**WORKING GROUP 3.1 MEMBERSHIP LIST**

**TESTING**

**STANDARD IEEE STDs 336 and 338**

NAME/COMPANY	ADDRESS	ASSIGNMENT
<b>BALLASSI, G. (GEORGE)</b>  GENERAL DYNAMICS/ ELECTRIC BOAT CORP. D477 [REDACTED]	[REDACTED]	SC-3 (M) WG 3.1(C)  WG-3.4(M)
<b>COLVIN, W. (WALLACE)</b>  FIRST ENERGY CORP. [REDACTED]	[REDACTED]	SC-3 (M) WG-3.1(M) WG-3.4 (M)
<b>DUREJA, S.K. (SURIN)</b>  BALTIMORE GAS AND ELECTRIC [REDACTED]	[REDACTED]	SC-3 (M) WG-3.3 (C) WG-3.1 (M)

<p><b>HORVATH, D.A. (DAVE)</b></p> <p>ADVENT ENGINEERING SERVICES, INC.</p> <p>[REDACTED]</p>	<p>[REDACTED]</p>	<p>SC-3(C) WG-3.1(M) WG-3.2(C) WG-3.4(PC)</p>
<p><b>TAYLOR, J.H. (JOHN)</b></p> <p>BROOKHAVEN NATIONAL LAB</p> <p>[REDACTED]</p>	<p>[REDACTED]</p>	<p>SC-3(S) WG-3.1(M)</p>
<p><b>VORA, J.T. (JIT)</b></p> <p>US NUCLEAR REGULATORY COMMISSION</p> <p>[REDACTED]</p>	<p>Office Of Nuclear Regulatory Research</p> <p>[REDACTED]</p>	<p>SC-3(M) WG-3.1 (M)</p>
<p><b>WILLIAMS, B.E. (Burl)</b></p> <p>ENTERGY</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	<p>Arkansas Nuclear One</p> <p>[REDACTED]</p>	<p>Proposed WG-3.1 (M)</p>

**IEEE - NUCLEAR POWER ENGINEERING COMMITTEE**

**WORKING GROUP SC-3.2 MEMBERSHIP LIST**



**SECURITY SYSTEMS****STANDARD IEEE-692**

<b>NAME/COMPANY</b>	<b>ADDRESS</b>	<b>ASSIGNMENT</b>
<b>BERTOLETT, C.R. (CRAIG)</b>  CR BERTOLETT AND ASSOCIATES [REDACTED]	[REDACTED]	WG-3.2(M)
<b>HORVATH, D.A. (DAVE)</b>  ADVENT ENGINEERING SERVICES, INC. [REDACTED]	[REDACTED]	SC-3(C) WG-3.1(M) WG-3.2(C) WG-3.4(PC)
<b>PEARSON, EIMAN (Bill)</b>  NIAGARA MOHAWK [REDACTED]	[REDACTED]	WG-3.2 (M)

<p><b>PHELPS, P.A. (PAUL)</b></p> <p>VIRGINIA POWER</p> <p>[REDACTED]</p>	<p>Surry Power Station</p> <p>[REDACTED]</p>	<p>WG-3.2(M)</p>
<p><b>WORRELL, T. M. (Tom)</b></p> <p>VIRGINIA POWER</p> <p>[REDACTED]</p>	<p>Surry Power Station</p> <p>[REDACTED]</p>	<p>WG-3.2 (M)</p>

**IEEE - NUCLEAR POWER ENGINEERING COMMITTEE**

**WORKING GROUP 3.4 MEMBERSHIP LIST**

**ASSESSING, MONITORING, AND MITIGATING AGING EFFECTS ON NPGS EQUIPMENT**

**STANDARDS: IEEE - 1205**

NAME/COMPANY	ADDRESS	ASSIGNMENT
<p><b>BALLASSI, G. (GEORGE)</b></p> <p>GENERAL DYNAMICS/ ELECTRIC BOAT CORP. D477</p> <p>[REDACTED]</p>	<p>[REDACTED]</p>	<p>SC-3 (M) WG 3.1(C)</p> <p>WG-3.4(M)</p>

<p><b>BHARTEEY, B.M. (BRIJ)</b></p> <p>SPECTRUM TECHNOLOGIES USA INC.</p> <p>[REDACTED]</p>	<p>[REDACTED]</p>	<p>SC-3(M) WG-3.4(M)</p>
<p><b>COLAIANNI, R.P. (PAUL)</b></p> <p>DUKE POWER CO. - MS-EC12R</p> <p>[REDACTED]</p>	<p>[REDACTED]</p>	<p>SC-3(M) WG-3.4(M)</p>
<p><b>COLVIN, W. (WALLACE)</b></p> <p>FIRST ENERGY CORP.</p> <p>[REDACTED]</p>	<p>Perry Nuclear Power Plant</p> <p>[REDACTED]</p>	<p>WG-3.1(M) WG-3.4 (M)</p>
<p><b>DOUGHERTY P. (PRESTON)</b></p> <p>DOMINION GENERATION</p> <p>[REDACTED]</p>	<p>[REDACTED]</p>	<p>SC-3 (M) WG-3.4 (M)</p>
<p><b>FLEISCHER, L.Q. (LAMIS)</b></p> <p>EXELON CORP.</p> <p>[REDACTED]</p>	<p>Peach Bottom Nuclear Station</p> <p>[REDACTED]</p>	<p>SC-3(M) WG-3.4(M)</p>
<p><b>HORVATH, D.A. (DAVE)</b></p> <p>ADVENT ENGINEERING SERVICES, INC.</p> <p>[REDACTED]</p>	<p>[REDACTED]</p>	<p>SC-3(C) WG-3.1(M) WG-3.2(C) WG-3.4(PC)</p>

<p><b>LEUNG, C.W. (HENRY)</b></p> <p>ATOMIC ENERGY OF CANADA LIMITED</p> <p>[REDACTED]</p>	<p>[REDACTED]</p>	<p>SC-3(M) WG-3.4(M)</p>
<p><b>LOFARO, R.J. (ROBERT)</b></p> <p>BROOKHAVEN NATIONAL LAB</p> <p>[REDACTED]</p>	<p>[REDACTED]</p>	<p>WG-3.4(M)</p>
<p><b>SANWARWALLA, M.H. (MANSOOR)</b></p> <p>SARGENT &amp; LUNDY</p> <p>[REDACTED]</p>	<p>[REDACTED]</p>	<p>WG-3.4(M)</p>
<p><b>SHEMANSKI, P.C. (PAUL)</b></p> <p>US NUCLEAR REGULATORY COMMISSION</p> <p>[REDACTED]</p>	<p>[REDACTED]</p>	<p>WG-3.4(M)</p>
<p><b>YODER, C. (CARL)</b></p> <p>BALTIMORE GAS AND ELECTRIC</p> <p>[REDACTED]</p>	<p>Calvert Cliffs Nuclear Power Plant</p> <p>[REDACTED]</p>	<p>WG-3.4(M)</p>

Attachment 7

NPEC Summary for Meeting 00-1

1. NPEC met in Key Largo, FL on March 7-8, 2000.
2. NPEC is one of 17 technical committees and six (non-technical) standing committees that report to the IEEE Power Engineering Society (PES) Technical Council. The Technical Council is presently composed of the Chairpersons of the PES Technical Committees, plus the Chairpersons of Standing Committees and is chaired by the Power Engineering Society's Vice President of Technical Activities.
3. An advisory committee has recommended that the Technical Council restructure, replacing its 17 technical committees with 4 "departments" focused on the utility industry structure:
  - Generation & Storage Plants,
  - Power Delivery,
  - Distribution, and
  - Policy & Markets.

Such a change would split up some of the technical committees into more than one department but NPEC would fall under only Generation and Storage Plants and may not be significantly affected. This recommendation is controversial and has not yet been accepted although some feel it would better serve the evolving utility industry.

4. The Technical Council is revising its Operations and Procedures Manual, which is requiring NPEC to revise its own Operations and Procedures Manual. The NPEC changes will be submitted to the Technical Council for approval prior to the end of the year. Many of these changes are related to taking advantage of electronic means for standards revision, review, and approval and for award nominations. These changes also address the proposed consolidation of Subcommittees 3 & 8 and Subcommittees-5 & 7.
5. SC-2 (Qualification) Report: SC-2 met by email for 99-2. Group chose to withdraw IEEE Std 627. Work on IEEE 323's revision continues to be delayed by a sickness in the working group chair's family. IEEE 334 (Motors), 649 (MCCs), and 650 (Battery Chargers and Inverters) were recently reaffirmed. Some resolvable negative ballots on IEEE 383 (Cables) were received.
6. SC-3 (Operations, Maintenance, and Testing) Report: SC-3 had met in February 2000. It decided to renumber its three active working groups to WG-3.1, 3.2 and 3.4 (stayed the same). Work to revise IEEE 338 and 692 is just beginning. Only negative ballot comment on IEEE 1205 was resolved and P1205 was submitted to the IEEE Standards Board.
7. SC-4 (Auxiliary Power) Report: SC-4 met in Key Largo just before the NPEC Meeting. A revision of IEEE 308 is about to be balloted and IEEE 387 is about to be balloted for reaffirmation.

8. SC-6 (Safety Systems) Report: Ballot comments on P379 are being resolved. A revision to 7-4.3.2 is intended and a PAR was initiated and subsequently approved by NPEC after a change to address a need to liaison with IEC 880. Ballot comments on P420 are being resolved.

9. SC-7 (Human Factors) Report: SC-7 met prior to the NPEC Meeting. A PAR to prepare a new standard on Human Reliability Assessment is nearing completion. A revision of IEEE 1023 is continuing. SC-5 (Reliability) will merge with SC-7. SC-7 Chair TJ Voss requests that reliability experts be nominated by NPEC members to join his subcommittee.

10. Jay Forster has been nominated by NPEC for a Standards Medallion Award. NPEC Chair Brit Grim emphasized the need to recommend awards for members of working groups.

11. Joe Fragola is working with IEC to come up with a matrix, which related IEC working groups and standards to NPEC working groups and standards.

12. Future NPEC Meetings:

NPEC 00-2 meeting will be in Washington, DC on November 16-17, 2000 in consort with the ANS/ENS Conference and its embedded topical on Nuclear Plant Instrumentation & Controls and Human Machine Interface Technology (NPIC/HMIT 2000)

01-01 will be in Stateline NV on March 5-6, 2001.

01-02 will be in San Diego, CA on Nov 5-6, 2001 (tentative).

**Attachment 8**

## **NRC LIAISON REPORT**

**J.P. VORA**

### **GSI-168, Environmental Qualification of Electric Equipment**

The research activities that involved LOCA testing of low-voltage I&C cables and the evaluation of various condition monitoring methods have been completed. Two volume draft report entitled, Assessment of Environmental Qualification practices and Condition Monitoring Techniques for Low-Voltage Electric Cables is under

staff review and expected to be published in December 2000. Volume 1 of the report will present the results of the LOCA tests, and Volume 2 will discuss the results of the condition monitoring tests.

### **Federal Programs for Wire System Safety**

In recent months, wire system safety in nations' infrastructures has drawn national attention. Initially, the recommendation was focused on FAA, DOD, NASA aging aircraft programs including aging wiring issues in commercial aviation. Subsequently, it was concluded that aging wiring is an issue of national concern that extends beyond aviation. Therefore, the Office of Science and Technology Policy, Executive Office of the President has established a "Wire System Safety Interagency Working Group" (WSSIWG) under the auspices of National Science and Technology Council's Committee on Technology. WSSIWG is developing a report for the President on wire safety technology and health and safety issues associated with wire systems in the United States. The scope of the report extends beyond aircraft into buildings, consumer products, ground transportation and nuclear power plants.

### **Generic Aging Lessons Learned (GALL) Report and Standard Review Plan (SRP)**

On September 25, 2000, the NRC conducted a public workshop to review and obtain stakeholders comments on the draft version of 1) GALL report, 2) SRP for license renewal and 3) draft regulatory guide DG-1104 that endorses NEI 95-10, Rev. 2.

The chapter VI of the GALL report discusses, A) non-EQ Electrical Cables and Connections with emphasis placed on conductor insulation and connector contacts, and B) EQ equipment. Chapter 3.6 of the SRP provides guidance to the staff on Aging Management of Electrical and Instrumentation and Controls. Chapter 4 provides guidance on Time Limited Aging Analyses with detailed discussion on EQ as a TLAA in section 4.4 of the draft SRP.

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**Attachment 9**

**EPRI Plant Support Engineering**

Cable Condition Monitoring Working Group

September 13-14, 2000 Albuquerque, NM

Attendees

Gary Toman EPRI PSE

Jean-Marie Braun Ontario Hydro Research now Kinectrics

Kent Brown TVA

Thomas Doyle Pacific Sierra Research now Veridian

Ken Gillen Sandia

Roger Assink Sandia

Ken Wadkins BPW

John Wheless Southern Company

Pierre Renaud Hydro Quebec

Ginette Soumis Hydro Quebec

David Epperson Ameren UE Calloway

Greg Klein Ameren UE Calloway

Wells Fargo SCE

Steve Schellin WE

T. Eguchi Mitsubishi

John White TXU/CPSES

PSE Supported by 28 domestic utilities and 6 other entities

Gary Toman is Project Manager for all cable aging issues

Three Cable Aging Activities

Two cable working groups

Natural and artificial aging programs

UConn natural vs. artificial aging programs

Long Term accelerated cable aging

Cable aging database

Cable life program (testing of cable in an ionizable gas TR 112335)

Cable Condition Monitoring Working Group

supports cable aging & monitoring research



reviews status of cable CM R&D

develops recommendations for projects and research to support

plant implementation of condition monitoring

monitor related DOE, NRC, IAES, and other research

Cable Users Group

New group to focus on user needs, identify and resolve cable issues

(not just CM and aging)

NEPO = Nuclear Energy Plant Optimization

Natural vs. artificial aging

Cable bundles in various power plants evaluated after 5 to 10 years (no appreciable aging of insulation detected) on hold until 2004-2005

Long Term Accelerated Cable Aging

Five year oven aging at low temperatures

Using three temperatures to determine activation energy

Cable aging data base

Contract awarded to NUS

Intend to collect and organize cable aging data from all

cooperating sources to facilitate future referral.

Ionizable gas demo

Isolate and seal conduit on both ends and inject ionizable gas

Use 4 kHz to ionize gas and apply 1kV to detect for failures

NEPO Bonded Jacket Failure Issue (Okonite)

Project hopes to find limit of aging at which Hypalon remains capable of withstanding LOCA conditions.

Nutherm will do the testing.

OIT = Oxidation Induction Time

OITP = Oxidation Induction Temperature

POIT = Pressurized Oxidation Induction Time

Research continues on OIT with emphasis on using smaller and smaller samples of jacketing and correlating to internal insulation aging.

Sandia is researching use of nuclear magnetic resonance (NMR) imaging of insulation polymers (Lead is Roger Assink)

Ken Gillen (Sandia) gave detailed presentation on developing empirical data to characterize aging degradation of polymers used in electric cables.

Attempting to improve Arrhenius predictions of polymer lifetimes

Activation energy found to decrease with age (not constant)

Explained Time Temperature Superposition Approach

Extensive test results provided on limiting oxygen diffusion effects

SCRAPS = Sandia's cable Repository for Aged Polymer Samples

Investigating techniques which correlate with elongation results

Modulus (hardness) profiling, density, and NMR

Much work on Jacket material and relationship to internal insulation.

Advent presentation <http://www.adventengineering.com/service/research/insul/Insulation.swf>

on the Void Approach to aging assessment was given. [*Requires Internet Explorer.*]

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