

**IEEE Nuclear Power Engineering Committee  
Subcommittee SC-2, Qualification**

**Minutes of Meeting SC2-07-1  
Sheraton Myrtle Beach Convention Center Hotel  
2101 North Oak Street  
Myrtle Beach, SC 29577  
Ph: 843-918-5000  
*April 17-18, 2007***

Members Attending: See Table 2

Members Absent: See Table 2

Table 1 Guests:	Jonathan Cornelius <a href="mailto:jcorneli@tycoelectronics.com">jcorneli@tycoelectronics.com</a>	Raychem GmbH
	Ralph Conner Ryan Chappell Richard Butwin Craig Irish <a href="mailto:cirish@nuclearlogistics.com">cirish@nuclearlogistics.com</a>	ASCo Draka Comteq Iepson Consulting Enterprises, Inc. Nuclear Logistics, Inc
	Mark Seymour Nitin Patel Rebecca Steinman <a href="mailto:rls@AdventEngineering.com">rls@AdventEngineering.com</a>	Trentec Nuclear Regulatory Commission Advent Engineering Services
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	Eric Novacek <a href="mailto:Eric.novacek@EmersonProcess.com">Eric.novacek@EmersonProcess.com</a>	Rosemount Nuclear
	Bob Minadeo	Areva

**1.0 Call to Order**

The SC-2 Chairman, Nissen Burstein, opened the meeting on Tuesday April 17, 2007 at 8:00 am and welcomed everyone in attendance. This meeting was scheduled for 1½ days; concluding Wednesday April 18, 2007. A role call was taken and it was determined that a quorum was available, with 43 of 51

SC-2 members present, or represented by proxy.

## **2.0 Introduction of Members and Guests**

Open introduction

## **3.0 General Remarks, Review and Approval of Agenda**

The meeting agenda (Attachment 1) was reviewed and no changes were requested. A motion was made by Jim Gleason to approve the meeting agenda. Jim Parello seconded the motion and the SC-2 members approved the agenda unanimously.

The Chairman summarized topics discussed in AdCom the day prior including membership, meeting schedule, and other topics to be discussed.

The Chairman discussed that the membership for 2007-2008 had been finalized. The membership has decreased because the Chairman had reviewed past attendance and noted that the bylaws required attendance at one meeting per year.

The Chairman discussed NPECs desire that SC-2 meet in conjunction with NPEC. Since NPEC and SC-2 meetings are not on the same schedule, it was proposed that the Chairman communicate the issues and willingness of SC-2 to adjust its schedule and that NPEC may have to adjust its schedule to accommodate the 1 ½ days of SC-2. The SC-2 Meeting 7-02 scheduled for November 5-6, 2007, Sheraton Sand Key, Clearwater, FL, would not be affected.

Rebecca Steinman has updated the subcommittee's website. It can be reached by [www.ieee.org](http://www.ieee.org)

Search for NPEC. NPEC's home page is <http://grouper.ieee.org/groups/npec/index.html>

Go to:

[NPEC Subcommittee and Working Group Areas](#)

User: npec

Password: npec99

## **4.0 Review and Approval of Meeting Minutes (06-2)**

The minutes of the previous SC-2 meeting 06-2 were discussed and no changes were made. Jim Gleason made motion to approve the minutes, which was seconded by Tom Hincey and the minutes were approved unanimously.

## **5.0 SC-2 Chairman's Report**

The Chairman distributed the History of Finances, attachment 2.

The alligator fund balance prior to meeting 07-1 was \$1297. .

An initial contribution of \$40 was requested from each of the members for this meeting. Of the 29

members physically present at the meeting, 28 contributed the requested \$40. In addition, 3 guests contributed \$40. A total of \$1240 was collected on 4-17-07. On 4-18-07, the chairman noted that an additional \$10 per attendee was needed. Of the members present, 22 members contributed the requested \$10 for \$220. In addition, 5 guests contributed \$10 for \$50. The total collected was \$1240 + \$270 = \$1510. These funds are held by the Chairman, SC-2.

## **6.0 SC-2 Secretary's Report**

The Secretary reviewed the SC-2 List of Action Items, discussing the following status:

- AI-04-1-1: A booklet of biographical data on SC-2 members has been prepared for the majority of the SC-2 Members. The Secretary will advise Fred Roy to send all who have not responded the guidance for preparing the data, which will have a 6/1/2007 deadline for responses.
- AI-05-1-1: SC-2.1 is preparing a statement of QA requirements for the next IEEE-323 revision and **this item is closed.**
- AI-06-1-2: SC-2.1 will seek guidance from NPEC on 627. A new PAR for P627 has been opened and Dave Horvath will be chairman SC 2.10. **This item is closed.**
- AI-06-2-1: AdHoc QA committee presented QA statement and **this item is closed.**
- AI-06-2-2: Jim Gleason reported that the review of DG-1142 was completed and comments were consolidated and sent by NPEC in December 2006 and **this item is closed.**
- AI-06-2-3: Jim Gleason reported that the review of Format for Risk Informed 10 CFR 50 was completed and comments were consolidated and sent by NPEC in December 2006 and **this item is closed.**

## **7.0 Discussions and Updates**

### **7.1 European vs. US EQ/QA Standards**

Nissen Burstein discussed differences between European and US EQ/QA Standards. This could impact equipment qualified in Europe since European vendors do not require Appendix B QA.

An Ad Hoc group has been formed to look into this. The members of the group are Erick Novacek, Chairman, Jim Gleason, Robert Queenan, Bill Newall, Steve Casadevall, Steve Benson, Marek Tengler, Jim Parello, Serena Jagtiani-Krause, and Dennis Dellinger.

### **7.2 Use of safety terms**

John Wheless has been heading up this effort. Jim Gleason provided the status that all relevant documents have been reviewed. At SC 2.1 the consensus was that the term "important to safety" is favored by the majority over "safety-related", but there is some disagreement. NRC has used both. At NPEC 07-01, there was strong opposition for using "important to safety" from the IEEE Std 603 working group. There also appears to be strong support for the term safety-related for the new plants, since it is extensively used in the DCDs.

SC-2 has decided to transfer this safety term discussion to the IEEE 627 Working Group.

### **7.3 Development of Joint IEEE/IEC Standards.**

Kjell Spang discussed this topic.

IEEE 323 and IEC 60780 cannot be a joint logo standard because of the IEEE/IEC agreement addressed new standards only.

Richard Wood has been selected to lead the revision to IEC 60780. They will consider IEEE 323-2003 and work with SC 2.1. Richard Wood is on both IEC and SC-2.

Kjell Spang is developing a new work product for condition monitoring, which is a new topic for which neither IEEE nor IEC standards exist. This will likely be the first joint project. SC 2.1 has agreed to participate. Kjell is likely to get authority to commence work this fall.

Attachment 3 contains the draft new work item proposal and its annexes A and B.

#### **7.4 Discussion of DG-1145, GD-1142( RG 1.209- IEEE Std 323-2003)**

Jim Gleason discussed that comments were received, consolidated and sent out by NPEC in December 2006.

#### **7.5 Risk-based report**

Jim Gleason discussed that the comments from SC2 and SC 2.1 had been incorporated from SC-2 meeting 06-02 for the risk-informed treatment of 10CFR 50 and delivered to NRC in December 06 through NPEC. The IEEE position noted that it was too premature to risk inform 10CFR50, the proposed risk informed draft was too reliability centric, and did not recognize the IEEE qualification standards in addressing common mode failures.

Jim noted that SC-2.1 was proposing to consider adding a reliability factor as an annex to IEEE Std 323. This appeared to be the best choice for SC-2.1 to add a significant contribution to the risk-informed process.

#### **7.6 Westinghouse AP1000 EQ Program**

Suresh Channarasappa presented the Westinghouse AP1000 EQ Program. Attachment 4. Jim Parello assisted in the presentation. The AP1000 is a simplified passive design with modular construction. It has microprocessor, digital technology based I&C. It has passive decay heat removal, passive safety injection, passive containment cooling and passive HVAC. AP1000 has approximately 50% less valves, 83% less safety grade pipe, 87% less cable, 35% less pumps and 50% less seismic building volumes than an equivalent conventional reactor. Seismic qualification is per IEEE Std 344-1987 and EQ is per IEEE Std 323-1974. EMC is per RG 1.180 Rev 1.

#### **7.7 GE ABWR and ESBWR EQ Programs**

Ed Mohtashemi and Jeff Suggs presented the GE ABWR and ESBWR EQ Programs, Attachment 5. The ABWR is a 1300 MWe Class Standard/ Modular Design, which was certified by NRC in 1997. The ESBWR is a 1500 MWe Class Standard/ Modular Design. ESBWR is a passive design. The recirculation systems were eliminated due to natural circulation; service water is no longer safety-related; safety-related diesel generators have been eliminated. I&C is digital. Seismic qualification is per IEEE Std 344-1987 and EQ is per IEEE Std 323-2003.

## **7.8 Areva US EPR EQ Program**

Nissen Burstein presented the Areva US EPR EQ Program, Attachment 6. Unless there is a compelling negative reason, the latest version of regulatory guides and IEEE standards will be utilized. The EQ program includes NSSS, BOP, Electrical, I&C, Seismic Sequence Methodology and Mechanical components. Planned use is 80% US qualified equipment.

## **8.0 NRC Report**

Tom Koshy presented the NRC report. The NRC website now contains the listing of regulatory guides and groups for updating. Changes to NUREG-0800 SRP were issued in March 2007. RG 1.209 was on the fast track list and was issued in March 2007. There was some confusion about RG 1.209. NEI thought it had been delayed. NRC did not delay it and has issued RG 1.209. The guidance on record storage was changed to a facility instead of on site.

Tom Koshy, NRC and Niten Patel, NRC noted that the NUREG-0800 SRP has been updated in March 2007 and all industry comments have been considered.

## **9.0 Working Group Reports**

### **9.1 IEEE Standard 323 (SC-2.1 - WG on Environmental Qualification)**

Jim Gleason indicated that the WG has made progress in three main areas: (a) providing clarification of the safety terms used, such as important to safety, safety significant, RISC-3, etc.; (b) adding a QA clause that includes the functional requirements of 10 CFR Part 21 and personal liability; and, (c) including an EQ reliability index.

The safety term issue and QA clause will be shifted from SC 2.1 to the IEEE P627 Working Group.

SC-2 voted to allow SC 2.1 to proceed with reaffirmation of IEEE 323. SC 2.1 will continue work on a reliability factor for EQ, but will likely seek a PAR after the reaffirmation process. SC 2.1 will work with IEC on IEC 6-780 and the condition monitoring standard.

### **9.2 IEEE Standard 334 (SC-2.2 - WG on Motors)**

Bill Newall reported that IEEE Std 334 has been issued and they were planning the next changes.

### **9.3 IEEE Standard 382 (SC 2.3 - WG on Valve Operators)**

Ed Mohtashemi is the new chairman and IEEE Std 382 has been issued

### **9.4 IEEE Standard 383 (SC 2.4 - WG on Cables)**

Nissen Burstein reported for John White that IEEE Std 383 will likely go for re-affirmation in 2008.

### **9.5 IEEE Standard 344 (SC 2.5 - WG on Seismic Qualification)**

Jim Parelo, the WG Chairman, informed SC-2 that, while there was no new activity on this standard, they expect NRC to issue a revision to RG 1.100 in December 2007 and will then work on changes

because of the revisions to RG 1.100, Attachment 8. There is a new issue with high frequency during earthquakes, which will be covered in the presentation by John Richards, Duke Energy.

**9.6 IEEE Standard P627 (SC 2.10 - WG on Design Qual)**

The Chairman of the WG, Dave Horvath, said that they had received authorization to proceed with P627 and held the first meeting in conjunction with SC-2 07-01.

**9.7 IEEE Standard 572 (SC 2.11 - WG on Connectors)**

There was no report. IEEE 572 was published in 2006.

**9.8 IEEE Standard 650 (SC 2.13 - WG on Battery Chargers)**

Dennis Dellinger, the WG Chairman, reported that the revised standard was published in 2006.

**9.9 IEEE Standard 649 (SC 2.14 - WG on Motor Control Centers)**

The Chairman of the WG, Robert Francis, said that the standard was published in 2006.

**9.10 IEEE Standard P-1682 (SC 2.15 - WG on Fiber Optic Cable)**

The Chairman of the WG, Jan Pirrong, said that progress is being made and a full draft may be available for SC-2 at 08-01.

**10.0 Action Item Status**

Action items from previous SC-2 meetings were reviewed at this meeting. Table 3 provides a listing and the status of action items from past meetings, along with new action items identified at this meeting.

**Table 3 - List of Action Items**

<b>Item No.</b>	<b>Description</b>	<b>Responsible</b>	<b>Status</b>
<b><i>Action Items from Meeting 04-1</i></b>			
AI-04-1-1	Provide biographical data for SC-2 member's book. (All who have not responded will be identified, guidance provided and input collected by 6/1/2006.)	All delinquent SC-2 members	OPEN
<b><i>Action Items from Meeting 05-1</i></b>			
AI-05-1-1	WG 2.1 to address the use of 10CFR50 Appendix B and alternative quality standards in the next revision to IEEE 323.  SC 2.1 drafted QA statement.	Jim Gleason	Closed
<b><i>Action Items from Meeting 06-1</i></b>			

Item No.	Description	Responsible	Status
AI-06-1-2	<b>The SC-2 Chairman agreed to seek NPEC guidance on the revision or re-affirmation of IEEE-627</b>	Satish Aggarwal	Closed
<i>Action Items from Meeting 06-2</i>			
AI-06-2-1	<b>Ad hoc QA Committee to provide recommended QA Statements at 07-01 Meeting.</b>	James Gleason	Closed
AI-06-2-2	<b>Review DG-1142 and provide comments to James Gleason prior to 11/24/06. James Gleason to submit comments to NPEC.</b>	All / James Gleason	Closed
AI-06-2-1	<b>Review Format for Risk Informed 10 CFR 50 and provide comments to James Gleason prior to 11/24/06. James Gleason to submit comments to NPEC.</b>	All / James Gleason	Closed
<i>Action Items from Meeting 07-1</i>			
AI-07-1-1	NPEC will be provided an option for SC-2 to meet at least once per year with NPEC.	Nissen Burstein	Open
AI-07-1-2	A letter will be prepared to NPEC to consolidate qualification standards for 535, 317, 628 and C3798 under SC-2	Nissen Burstein	Open
AI-07-1-3	Develop scope for EQ QA AdHoc committee	Eric Novacek	Open
AI-07-1-4	SC 2.10 (627) will consider adding the QA statement developed by SC 2.1.	Dave Horvath	Open
AI-07-1-5	SC 2.10 (627) will consider incorporating the safety term information developed by SC 2.1.	Dave Horvath	Open

## 11.0 New Items

### 11.1 New Plant Seismic Issues

John Richards, Duke Energy presented New Plant Seismic Issues, Attachment 7. Previously the seismic ground motion was developed per RG 1.60. EPRI and LLNL hazard studies have identified that the Central and Eastern US Uniform Hazard Spectra has less low frequency content and more high frequency content than the RG 1.60 developed spectra. This will impact new plants at hard rock sites. GI 199 "Implications of Updated Probabilistic Seismic Hazard Estimates in Central and Eastern United States" has been issued. An NEI/EPRI task group is working to perform hazard improvements and alternative performance-based methods; incoherence reductions; qualitative evaluation of structural items; and

screening for potentially high frequency sensitive items.

### **11.2 Japan Combined Environments**

Toshio Yamamoto presented results on Japan results on combined environments testing on cables.

### **12.0 Next Meeting**

The SC 2.1 07-2 meeting will be held at Sheraton Sand Key, Clearwater, FL on November 5-6, 2007.

### **13.0 Adjournment**

At approximately noon on Wednesday April 18, 2007 a motion was made to adjourn and meeting SC2-07-01 was adjourned.

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Minutes Prepared by:  
James Gleason  
Secretary, IEEE/SC-2

Attachments: All attachments can be found at the IEEE.org Working Group web site  
[NPEC Subcommittee and Working Group Areas](#).



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X = Attended  
P = Attended by Proxy