

November 20, 2003

MEMORANDUM TO: Michael Mayfield, Director
Division of Engineering Technology
Office of Nuclear Regulatory Research

THRU: Michele G. Evans, Chief /RA/
Engineering Research Applications Branch
Division of Engineering Technology
Office of Nuclear Regulatory Research

FROM: Steven A. Arndt /AHH For/
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SUBJECT: TRIP REPORT, OCTOBER 12-17, 2003

The International Electrotechnical Commission (IEC) held its annual general standards meeting from October 12 thru 17, 2003, in Montréal, Canada. Over 1,100 delegates representing 45 member countries and 7 associate member countries on 29 technical committees and subcommittees attended the general meeting. The subcommittee and working groups which met during the annual meeting included SubCommittee 45A (SC 45A) "Reactor Instrumentation," and working groups WGA2, "Sensors and Measurement Techniques"; WGA3, "Applications of Digital Processors to Safety in Nuclear Power Plants"; WGA5, "Special Process Measurements and Radiation Monitoring"; WGA7, "Reliability of Electrical Equipment in Reactor Safety Systems"; WGA8, "Control Rooms;" WGA9, "Instrumentation Systems"; and WGA10, "Upgrading and Modernization of I&C systems in NPPs." I was one of the United States representatives to the IEC SC 45A.

During the annual meetings, SC 45A considered starting work on dual logo standards with IEEE, new standards in the security area, and shortening the standards development cycle. There were a total of 27 standards under development or maintenance in SC 45A at this time. A number of potential new standards were under consideration. Of particular interest were standards on software for computers important to safety in nuclear power plants, radiation monitoring equipment for accident and post-accident conditions in nuclear power plants, management of aging, and the new standard on cyber security.

Continued NRC participation in IEC standards activities is recommended.
No actions by the Commission are recommended as a result of this trip.

Attachments:

Trip Report

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INTERNATIONAL TRIP REPORT

Subject: Report on International Travel to attend the International Electrotechnical Commission (IEC) General Standards meeting.

Dates of Travel, Countries, and Organizations Visited:

Dates of Travel: October 12-17, 2003

City/Country Visited: Montreal, Canada

Organization: International Electrotechnical Commission

Authors, Titles, and Agency Affiliation:

Steven Arndt
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Sensitivity:

Not applicable.

Background/Purpose:

On October 12-17, 2003, the International Electrotechnical Commission (IEC) held its 67th annual meeting in Montreal, Canada. 29 Technical Committees and SubCommittees met at this meeting as well as the working groups under those Technical Committees. The subcommittee and working groups which met included SubCommittee 45A (SC 45A) "Reactor Instrumentation," and working groups: WGA2, "Sensors and Measurement Techniques"; WGA3, "Applications of Digital Processors to Safety in Nuclear Power Plants"; WGA5, "Special Process Measurements and Radiation Monitoring"; WGA7, "Reliability of Electrical Equipment in Reactor Safety Systems"; WGA8, "Control Rooms"; WGA9, "Instrumentation Systems"; and WGA10, "Upgrading and Modernization of I&C systems in NPP's." Steven Arndt from RES/DET/ERAB was one of the United States representatives to the IEC SC 45A.

NRC is currently in the process of endorsing IEC 60780 (1998) as part of Draft Regulatory Guide DG-1077, on environmental qualification of microprocessor-based systems used in nuclear power plants.

Summary of Pertinent Points/Issues:

- 1) The NRC has similar concerns and needs as other IEC member countries in the areas of international standards.
- 2) Many of the IEC member countries have completed the design and construction of advanced I&C systems in their new plants and extensive upgrades to existing plants, and are in a position to provide new information and standards to the international I&C community.

Discussion:

The meeting of the working groups and subcommittees took place throughout the week. On October 12, the subcommittee had an informal meeting. Among other topics, the issue of dual logo standards with IEEE, new standards in the security area, and shortening the standards development cycle were discussed. The working groups met on October 16 (Attachment).

There were a total of 27 standards under development or maintenance in the SC 45A at this time. There were also a number of potential new standards under consideration. Of particular interest were the following standards:

Under development or Maintenance:

- IEC 60880 Ed. 2.0 "Software for computers important to safety for nuclear power plants"
- IEC 60951 Ed. 1.0 "Radiation monitoring equipment for accident and post-accident conditions in nuclear power plants," Part 1: General requirements," and associated lower level standards.
- IEC 62342 Ed. 1.0 "Management of aging

Potential New Standards:

- Nuclear specific EMI/RFI standard
- Cable aging standard
- Cyber security standard
- Post accident water level monitoring standard
- Secondary flow rate and temperature measurement accuracy standard

One of the actions for SC 45A to investigate at this meeting was application of the recently signed agreement between IEC and IEEE on dual logo standards. These fall into two categories. The first category is standards for which there are no counterpart standards. For this category the procedure is that the standards body that has the standard will propose to the other organization to adopt the standard directly as a dual logo standard. The second category is where standards exist or are planned by both standards bodies. It was determined that the most appropriate area for this second category would be environmental qualification.

Bruce Cook of Westinghouse was appointed the IEC SC 45A representative to the IEEE NPEC committee and Richard Wood of Oak Ridge National Laboratory was appointed as the IEC SC

45A Working Group 9 representative to work with the IEEE NPEC specifically on the update of IEEE Std. 323.

In addition to the discussions of specific standards there was a general discussion of reducing the time it takes to complete IEC standards, improving and expanding the interactions between IEC and IAEA, and including a new standards project in the area of security. The Chairman congratulated Working Group 10 for proposing the new Cyber Security standard and encouraged the other working groups to work with Working Group 10 on this standard.

The next meeting of IEC SC 45A will be April 11-15, 2005, in South Korea. The Working Groups will have additional meetings as needed between now and then.

Pending Actions/Planned Next Steps for NRC:

Continue interacting with IEC SC 45A. Particularly in working groups 2, 9, and 10. Work with IEC on the development of new standards in areas where endorsing these standards would be in NRC's interest.

Points for Commission Considerations or Items of Interest:

NRC should continue participation in IEC standards activities. Active participation in this area not only provides input into international standards in the electrical and I&C areas, but also provides opportunities to interact with the international community, and gains insights from countries that have more aggressively implemented nuclear power plant I&C upgrades.

Attachments:

Agenda for Subcommittee 45A "Reactor Instrumentation" meeting, October 16th, 2003

"On the Margins"

I held discussions with Arndt Linder on our ongoing cooperative work on the development and assessment of tools to assist in the review of the TELEPERM system. GRS/ISTec has agreed to provide us with the RETRANS code, and will send shortly. GRS/ISTec is also working on additional tools that we may wish to review.



INTERNATIONAL ELECTROTECHNICAL COMMISSION
SUBCOMMITTEE 45A: Reactor Instrumentation

Revised draft agenda for the meeting to be held in Montréal, Canada on 16th October 2003.

Item	Description	Documents
1	Opening of the meeting	
2	Approval of the agenda	45A(Montreal/ secretariat) 11
3	Note the confirmation of the minutes of the meeting held in October 2002 in Beijing	45A/472/RM
4	SC45A general topics	
	4.1 IEC publications issued since the last meeting (2002-10)	
	4.2 Revision of the SC45A scope	45/530/DC 45/536/INF
	4.3 Improvement harmonization of the presentation and terminology for SC45A documents	45A/487/DC 45A/505/INF
	4.4 Development of documents on security	
	4.5 New subcommittee dealing with Nuclear Technologies for Commercial Use	
	4.6 Relationships with IEEE	
5	WGA2 : Sensors and measurement techniques	
	5.1- To receive the report of WGA2	
	5.2 - Project of IEC 60515 Ed. 2.0 publication, Radiation detectors for the instrumentation and protection of nuclear reactors ; characteristics and test methods	45A/491/CD 45A/509/CC
	To discuss next stage	
	5.3 - Project of IEC 60568 Ed. 2.0 publication, Nuclear power plants – Instrumentation and control – In-core instrumentation for neutron fluence rate measurements in power reactors	45A/480/CD 45A/501/CC
	To discuss next stage	
	5.4 - Project of the Amendment to IEC 61468 Ed. 1.0 publication, Nuclear power plants – In-core instrumentation – Complement on characteristics and test methods of self-powered neutron detectors	45A/485/FDIS 45A/489/RVD
	To discuss next stage	
	5.5 - Project of IEC 62397 publication, , Nuclear power plants – Instrumentation and control important to safety - Resistance Temperature Detectors (RTDs)	45A/490/NP 45A/510/RVN

Item	Description	Documents
	5.6- Consideration on future work	
	5.7- Maintenance of standards	45A/503/DC 45A/508/INF
	5.7.1 - IEC 60744 Ed. 1.0, 1983, Safety logic assemblies of nuclear power plants - Characteristics and test methods	
	5.7.2 - IEC 60772 Ed. 1.0, 1983, Electrical penetration assemblies in containment structures for nuclear power generating stations	
6	WGA3 : Application of digital processors to safety in nuclear power plants	
	6.1 - To receive the report of WGA3	
	6.2- Project of IEC 60880 - Ed 2.0 publication, Software for computers important to safety for nuclear power plants	45A/471/CD 45A/488A/CC
	To discuss next stage	
	6.3- Project of IEC 62138 Ed 1.0 publication, Nuclear power plants - Instrumentation and Control – Computer based system- Software aspects of I&C systems important to safety of class 2 and 3	45A/507/FDIS 45A/470/CDV 45A/498/RVC
	To discuss next stage	
	6.4- Consideration on future work	
	6.5- Maintenance of standards	
	6.5.1 - IEC 61500 Ed. 1.0, 1996, Nuclear power plants - Instrumentation and control systems important to safety - Functional requirements for multiplexed data transmission	45A/503/DC 45A/508/INF 45A/493/DC 45A/511/INF
	6.5.2 - IEC 61940 TR3 Ed. 1.0, 1998, Nuclear instrumentation - A review of the application of IEC 60880(1986)	
7	WGA5 : Special process measurements and radiation monitoring	
	7.1- To receive the report of WGA5	
	7.2- Project of TR IEC 62235 Ed. 1.0 publication, Instrument and Control systems of interim storage and final repository of nuclear fuel and waste	45A/404/RVN Working Draft
	To discuss next stage	
	7.3- Consideration on future work	
	7.4- Maintenance of standards	
	7.4.1 - IEC 60768 Ed. 1.0, 1983, Process stream radiation monitoring equipment in light water nuclear reactors for normal operating and incident conditions	45A/503/DC 45A/508/INF
	7.4.2 - IEC 60951-1 Ed. 1.0, 1988, Radiation monitoring equipment for accident and post-accident conditions in nuclear power plants. Part 1:	

Item	Description	Documents
	General requirements	
	7.4.3 - IEC 60951-2 Ed. 1.0, 1988, Radiation monitoring equipment for accident and post-accident conditions in nuclear power plants. Part 2: Equipment for continuously monitoring radioactive noble gases in gaseous effluent	
	7.4.4 - IEC 60951-3 Ed. 1.0, 1989, Radiation monitoring equipment for accident and post-accident conditions in nuclear power plants. Part 3: High range area gamma radiation dose rate monitoring equipment	
	7.4.5 - IEC 60951-4 Ed. 1.0, 1991, Radiation monitoring equipment for accident and post-accident conditions in nuclear power plants - Part 4: Process stream in light water nuclear power plants	
	7.4.6 - IEC 60951-5 Ed. 1.0, 1994, Nuclear power plants - Radiation monitoring equipment for accident and post-accident conditions - Part 5: Radioactivity of air in light water nuclear power plants	
	7.4.7 - IEC 61031 Ed. 1.0, 1990, Design, location and application criteria for installed area gamma radiation dose rate monitoring equipment for use in nuclear power plants during normal operation and anticipated operational occurrences	
8	WGA7 : Reliability of electrical equipment in reactor safety systems	
	8.1- To receive the report of WGA7	
	8.2- Project of IEC 60709 Ed. 2.0 publication, Nuclear power plants – Separation of I&C systems important to safety	45A/475/CDV 45A/499/RVC
	To discuss next stage	
	8.3- Project of IEC 61226 Ed. 2.0 publication, Nuclear power plants - I&C systems important to safety - Classification	45A/481/CDV 45A/506/RVC
	To discuss next stage	
	8.4- Project of IEC 62340 Ed 1.0 publication, Nuclear power plants - Instrumentation and control for system important to safety – Requirements to cope with common cause failure (CCF)	45A/443B/RVN Working Draft
	To discuss next stage	
	8.5- Consideration on future work	
9	WGA8 : Control rooms	
	9.1- To receive the report of WGA8	
	9.2- Project of IEC 62241 Ed. 1.0 publication, Nuclear power plants – Design of control rooms – Alarm system of the main control room of nuclear power plant – Supplement to the IEC 60964	45A/448/CC 45A/492/CDV
	To discuss next stage	
	9.3- Project of IEC 62247 Ed. 1.0 publication, Nuclear power plants – Main Control Room Design – A review of the application of the IEC 60964	45A/478/CC 45A/479/DTR 45A/494/RVC

Item	Description	Documents
	To discuss next stage	
	9.4 – Project of TR comparing IEC 60964 against similar standards on control room design	45A/484/DC 45A/502/INF
	9.5- Consideration on future work	
	9.6- Maintenance of standards	
	9.6.1 - IEC 60960 Ed. 1.0, 1988, Functional design criteria for a safety parameter display system for nuclear power stations	45A/503/DC 45A/508/INF
	9.6.2 - IEC 60964 Ed. 1.0, 1989, Design for control rooms of nuclear power plants	
10	WGA9 :Instrumentation systems	
	10.1- To receive the report of WGA9	
	10.2- Project of IEC 61225 Ed. 2.0 publication, Nuclear power plants – Instrumentation and control systems important for safety – Requirements for electrical supplies.	45A/482/MCR 45A/483/CD 45A/500/CC
	10.3- Project of IEC 62385 Ed. 1.0 publication, Nuclear power plants – Instrumentation and control systems important for safety – Methods for verifying the performance of safety related instrument channels	45A/486/NP 45A/496/RVN
	10.4 - Project of an IEC publication, Nuclear power plants – Instrumentation and control systems – EMI/RFI	
	To discuss next stage	
	10.4- Consideration on future work	
11	WGA10 : Upgrading and modernisation of I&C systems in NPP	
	11.1- To receive the report of WGA10	
	11.2- Project of IEC 62342 Ed. 1.0 publication, Nuclear power plants – Management of aging of NPP instrumentation and control and associated equipment	45A/455/RVN Working Draft
	To discuss next stage	
	11.3- Consideration on future work	
12	Liaison with IAEA	
13	Liaison with IEEE	
14	Information from IEC Central Office	
15	To approve the report to be submitted to TC45	
16	Update the Program of Work of SC 45A as recorded by IEC Central Office	45A/504/PW
17	Any other business	
18	Date and place of the next meeting	
19	Close of the meeting	