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IEEE

Broadcast Technology Society Newsletter

The technologies to deliver information and entertainment to audiences worldwide, at home and on the go.

From the President

William Meintel, BTS Newsletter Editor

As you may recall from my last column, I discussed the fact that I was at that time both BTS President and editor of the Society's **Newsletter**. I also noted that holding both positions was probably not in the best interest of the Society (or for that matter, my sanity). I'm now very happy to report that the **Newsletter** has a new editor. Not only do we have a new editor, but also one who is much more qualified for that position than I am.

One of our frequent contributors, James O'Neal, has volunteered to take the reins and move us forward. In addition to his contributions to the Newsletter, many of you, I'm sure, are familiar with James in his role as the technology editor of the trade publication, **TV Technology**. With his skills in the publishing business and knowledge in the technical area, I anticipate a major improvement in the **Newsletter**. James, thanks for taking on the job and welcome aboard.

As previously reported, Ted Kuligowski, who had been working with me on the **Newsletter**, and who was largely responsible for the improvements made in recent years had to step aside due to health reasons. I'm happy to report that Ted is doing well and his situation continues to improve.

I'm also very glad that our new senior society administrator, Lisa Weisser, is now on board. She's doing a great job and making my life much easier. For more background, please take a moment to read the article on Lisa elsewhere in this issue.

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From the Editor

James E. O'Neal, BTS Newsletter Editor

It's an honor to have been selected this summer as the editor of the **BTS Newsletter**. I know that I've got some big shoes to fill in taking over this responsibility. Society president Bill Meintel has been doing a very admirable job in this position for some time now, but presidency of the organization is almost a full-time job, as is editorship of this four-times-per-year periodical. During my Society membership I've watched the **Newsletter** publication grow from little more than just an occasional reproduction of a just few black and white pages of text into a full blown slick paper magazine with numerous photos, spot color, and an attractive layout. Commensurate with the growth of the Society, the size of the Newsletter has also grown, with dozens of pages now appearing in each issue.

We're living in an era of rapid change and this is mirrored in the **Newsletter's** content, with articles

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Inside

IEEE

From the President continued from page 1

As we move toward the fall season, the BTS continues to be very busy. Once again, we're on the program at the IBC in Amsterdam in September with a tutorial on Connected TV. The tutorial, which was put together by Yiyan Wu, will feature high-level speakers from Canada, China, Japan and Germany. Following the IBC will be the 61st Annual BTS Broadcast Symposium being held Oct. 19–21 at the Westin Hotel in Alexandria, Va., just south of Washington, D.C. Thanks to the Symposium co-chairs, David Layer of the NAB, and Paul Shulins of Greater Media, this will once again be a must-attend event. It features a great program, as well as an excellent opportunity to network and catch up with old friends. For further details see the included announcement.

During the past few years the BTS leadership has endeavored to expand the reach and visibility of the Society, especially in areas outside of the United States. We are continuing to work on establishing relationships with other organizations and events worldwide having ties to our industry.

One such event is the Future of Broadcast Television (FOBTV) Summit scheduled for Nov. 10–11, 2011 in Shanghai, China and hosted by the National Engineering Research Center of Digital Television, China. The BTS is one of the founding organizations of the FOBTV Summit, along with 10 other organizations representing North and South America, Europe and Asia. FOBTV's purpose is to foster global collaboration in exchanging technical advances in the rapidly converging areas of terrestrial broadcasting, consumer electronics and networking technologies, which may lead to the development of common strategies for the future of terrestrial broadcasting.

The FOBTV is co-chaired by Mark Richer, president of the Advanced Television Systems Committee, and Keiichi Kubota, director general of NHK Science & Technology Research Laboratories. BTS Transactions Editor Yiyan Wu is serving as co-chair of the FOBTV program committee, along with Philip Laven, chairman of the Digital Video Broadcast Project (DVB). BTS vice-president Bill Hayes and I are both scheduled to appear on the program at this major event.

The other major priority of the BTS is education. To that end, as noted above, the BTS continues to sponsor tutorials and other educational events. In addition, the BTS has been working in developing a course to provide practicing engineers with the practical knowledge necessary for effective deployment, management and maintenance of

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From the Editor continued from page 1

on variety of new developments in the field of broadcast communications authored by some of the major players in this field. It is my hope to include even more timely stories about our profession and to see the **Newsletter** expand even more to accommodate these. However, this is not possible without your help. I welcome both completed manuscripts and suggestions for stories.

On a slightly more personal note, I wish Ted Kuligowski well in connection with his medical issues and want to thank him for all of the encouragement that he's offered me in connection with preparing stories for the **Newsletter** during the past five years or so, and lately priming me to take over as its editor. As many of you know, for some time Ted has been assisting with the "nuts and bolts" elements of getting the **Newsletter** into print, and unfortunately, has had to step aside due to some health considerations. My relationship with Ted goes back about a quarter of a century now (time moves way too fast) when he was my boss during a very frenetic rollout of a global satellite-delivered television network. I wish both Ted and his wife

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Newsletter Deadlines

The BTS Newsletter welcomes contributions from every member. Please forward materials you would like included to the editor at *BTSeditor@ieee.org* Here are our deadlines for upcoming issues:

Issue	Due Date
Fall, 2011	20 July 2011
Winter, 2012	07 Nov. 2011
Spring, 2012	20 Jan. 2012
Summer, 2012	04 May 2012

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BTS Readies for Oct. 19–21 Annual Broadcast Symposium

Alexandria, VA.

Plans are being finalized for the 61st Annual IEEE Broadcast Symposium. The preliminary program includes presentations by industry experts on such cutting-edge topics as "connected TV" and its rapid evolution, IBOC radio, Mobile DTV, RF infrastructure and much more. Delivery of more than two dozen papers is planned for the three-day event, which is scheduled for Oct. 19–21 (Wednesday-Friday) at the Westin Alexandria hotel here.

In addition to technical presentations, the Symposium provides participants with a chance socialize, network with colleagues and enjoy quality musical entertainment during evening receptions. Three luncheon presentations are also part of the program, with guest speakers including media consultant John Luff and the FCC's media bureau audio division chief, Peter Doyle. The Friday luncheon event includes an awards presentation, and Thursday's luncheon is a joint BTS/AFCEE effort.

Wednesday's activities include two half-day tutorials—"Connected TV," chaired by Rich Chernock, Triveni Digital, and Yiyan Wu, CRC; and "HD Radio," chaired by Bob Surette, Shively Labs.

Continuing Education Units (CEUs) will be offered to attendees at this year's Symposium, with up to 2.5 CEUs available to those registering all three days of the event. Complete instructions for obtaining CEU credit, as well as complete Symposium registration information, is available at the Symposium Website, *http://bts.ieee.org/broadcastsymposium*.

Symposium sponsors include Comrex, du Treil, Lundin & Rackley Inc., Electronic Research Inc. (ERI), Harris, Jampro, Myat Inc., Radian, RFS, Richland Towers, and Tieline Technology.

A complete Symposium program schedule was unavailable at press time: however, the preliminary schedule presented below provides a good indication of the scope of technical presentations and other activities planned. Please check the Symposium Website for the most up-to-date information.

61st Annual IEEE Broadcast Symposium Tentative Program

Oct. 19–21, 2011
Westin Alexandria Hotel, 400 Courthouse Square, Alexandria, VA 22314
All events in the Edison Ballroom unless otherwise noted

Wednesday, 19 October 2011

8–9 AM
Continental breakfast

9 AM–noon
Tutorial–Connected TV
Session co-chairs: Rich Chernock, Triveni Digital Yiyan Wu, CRC
Papers include:

- *Connected TV: The U.S. Broadcast Perspective*–Skip Pizzi (NAB)
- *Emerging International Standards for Internet Television*–John Simmons (Microsoft)
- *The Connected TV Technology Landscape*–Scott Lincke (Yahoo!)
- *Dynamic Broadcast: Joint Optimization of Network Planning and Content Delivery Scheduling*–Junge Qi (Technical University Braunschweigh), Javier Morgade (University of the Basque Country)

Noon – 12:30 PM
Box lunch

John Luff
Television Technology Consultant
HD Consulting

12:30–1 PM
Keynote luncheon speaker
Bridging the Gap–New IEEE BTS Initiative
Speaker –John Luff
Introduction by Ralph Hogan

1–5 PM
Tutorial –HD Radio
Session chair: Bob Surette, Shively Labs
Papers include:

- *A Method for Measuring Hybrid FM IBOC Signals on Transmission Systems with Independent Digital and Analog Transmission Lines* – Randy Mullinax (Clear Channel Radio)
- *Power Measurement for HD and Analog FM Signals* – Lynn Strube (Bird Electronics)
- *Auxiliary Data Services for HD Radio –The Artist Experience* – Allen Hartle, (Jump2Go)
- *The Business Side of HD Radio Technology*– Rick Greenhut (iBiquity Digital)
- *New FCC Part 74, 101 Rule Changes Affect Broadcast Link Design* – Larry Miller (Schwartz, Woods and Miller)
- *A Brief Review and Update on Environmental Due-diligence Requirements for Tower Siting* – Kenneth Rosenbaum, Jr. (Environmental Resources Management)

6–8 PM
Welcome reception (Wright room)
Entertainment by Da Vinci Strings

Thursday, 20 October 2011

8–9 AM
Continental breakfast

9–11:45 AM
Radio Engineering & RF Infrastructure
Session chair: Roz Clark, Cox Radio

9–9:30AM *FM Transmitter Cooling Technologies and Tradeoffs*
Gary Liebisch, Nautel

9:30–10 AM *Asymmetrical Sideband Broadcasting using FM HD Radio*
Paul Shulins, Greater Media

10–10:30 AM *Report from Brazilian Association of Broadcasting about the Test Results in AM and FM Stations that use the IBOC Standard*
Ronald Siqueira Barbosa, Valderez Donzelli, ABERT

10:30–10:45 AM Coffee break

10:45–11:15 AM *Efficiency Enhancement Technology for Linear RF Power Amplification*
Geoff Mendenhall, Harris

11:15–11:45 AM *Tips and Tricks to make TIA-222-G Work for You*
Adam Jones, Shively Labs

Peter Doyle
Chief, Audio Division, Media Bureau FCC

Noon–2 PM
Joint BTS/AFCCE Luncheon (Salon ABC room)
Keynote speaker: Peter Doyle, Chief, Audio Division, Media Bureau, FCC

2–3 PM
Network Distribution
Session chair: James O'Neal, TV Technology

2–2:30 PM *Pitch Blue™: A Real Time HDTV Store and Forward Program Delivery System*
Robert P. Seidel, CBS Television Network

2:30–3 PM *CBC's Next Generation Converged Network*
Pascal Marcoux, CBC

3–3:15 PM Coffee break

3:15–5:15 PM
Mobile DTV
Session chair: James O'Neal, TV Technology

3:15–3:45 PM *Service Protection, Conditional Access and Digital Rights Management in Mobile DTV Systems*
Adam Goldberg and Robin Wilson, AGP, LLC

3:45–4:15 PM *Field trials for Advanced T-DMB Systems*
Yun-Jeong Song, Young-su Kim, Hun-Hee Lee, Byungjun Bae, Kwang-Yong Kim, Joungil Yun, ETRI

(Thursday continued)

4:15–4:45 PM *Parameters for Coverage Maps of ATSC Mobile/Handheld Digital Television*
John Kean, NPR Labs

4:45–5:15 PM *Service Prediction Modeling for ATSC M/H*
Bill Meintel, Meintel, Sgrignoli & Wallace

6–9 PM
Manufacturer's reception (Wright room)

Friday, 21 October 2011

8–9 AM
Continental breakfast

8:30–11:45 AM
DTV Implementation
Session chair: Charles Einolf, Consultant

8:30–9 AM *Taming DTV Interference to Co-Sited Adjacent-Spectrum Users*
S. Merrill Weiss, Merrill Weiss Group, and Greg Best, Greg Best Consulting

9–9:30 AM *Single Frequency Network (SFN) Experiences in NYC*
Jerome David, Thomson Broadcast

9:30–10 AM *An Overview of the ISDB-T in Brazil*
Laisa C. C. De Biase, Marceo G. De Biase, Marcelo K. Zuffo, University of Sao Paulo

10–10:15 AM Coffee break

10:15–10:45 AM *New Results for ISDB-B in the VHF Band*
Gunnar Bedicks Jr., Renato de Mendonça Maroja, Francisco Sukys, Edson Lemos Horta, Gustavo de Melo Valeira, and Cristiano Akamine, Mackenzie Presbiterian University

10:45–11:15 AM *SVC over DVB-T2 with Differentiated Robustness*
Cornelius Hellge, Estibaliz Guinea Torre, David Gómez-Barquero, Thomas Schierl, and Thomas Wiegand, Fraunhofer Institute/Technische Universität Berlin

11:15–11:45 AM *Update on FCC National Broadband Plan*
Bill Meintel, Meintel, Sgrignoli & Wallace

Noon – 2 PM
IEEE BTS Awards luncheon (Salon ABC room)
Keynote speaker: Sterling Davis Recently retired VP, Engineering, Cox Media Group

2–4:45 PM
Future of DTV
Session chair: Bill Hayes, Iowa Public TV

2–2:30 PM *Broadcasting – The Technology and the Medium*
Mark Aitken, Sinclair Broadcasting

2:30–3 PM *Reassessing Short-term Requirements for New Mobile Broadband Spectrum*
Steve Crowley, Steven J. Crowley, P.E.

3–3:15 PM Coffee break

3:15–3:45 PM *Augmented Data Transmission for the ATSC Terrestrial DTV System*
Sung Ik Park, Hyoungsoo Lim, and Heung Mook Kim, ETRI

3:45–4:15 PM *ATSC 2.0–What's Next?*
Rich Chernock, Triveni Digital

4:15–4:45 PM *ATSC 3.0–Next Generation Broadcast Television*
James A. Kutzner, PBS

ATSC Completes Work on Mobile DTV Recommended Practice

By Jerry Whitaker Vice President of Standards Development ATSC


Jerry Whitaker

The Advanced Television Systems Committee (ATSC) has published a new Recommended Practice (RP) on the ATSC Mobile DTV system. Due to the complexity of Mobile DTV, it was recognized that guidelines for implementers would be beneficial. Recommended Practice A/154 was developed to address this need.

The ATSC Mobile DTV A/153 service shares the same RF channel as the standard ATSC broadcast service described in ATSC A/53 ("ATSC Digital Television Standard, Parts 1 – 6"). The purpose of the new RP is to describe how the technology is documented in the standard, explain what is enabled by in the standard (technically and functionally), and to provide recommendations for the emission systems.

ATSC Mobile DTV (also known as ATSC M/H, "mobile/handheld") provides for mobile/pedestrian/handheld broadcasting services using a portion of the ~19.39 Mbps ATSC 8-VSB payload, while the remainder is still available for HD and/or multiple SD television services. ATSC Mobile DTV is a dual-stream system—the ATSC service multiplex for existing digital television services and the M/H service multiplex for one or more mobile, pedestrian, and handheld services.

ATSC Mobile DTV is built around a highly robust transmission system based on vestigial sideband (VSB) modulation coupled with a flexible and extensible Internet Protocol (IP) based transport system, efficient MPEG AVC (ISO/IEC 14496-10 or ITU H.264) video, and HE AAC v2 audio (ISO/IEC 14496-3) coding. The standard describes the methodology for new services to be carried in digital broadcast channels along with current DTV services without any adverse impact on legacy receiving equipment.

The A/153 standard is modular in concept, with the specifications for each of the modules contained in separate Parts. The major Parts are as follows:

- **Part 1** – Mobile/Handheld Digital Television System
- **Part 2** – RF/Transmission System Characteristics
- **Part 3** – Service Multiplex and Transport Subsystem Characteristics
- **Part 4** – Announcement
- **Part 5** – Application Framework
- **Part 6** – Service Protection
- **Part 7** – Video System Characteristics
- **Part 8** – Audio System Characteristics

Part 1 describes the overall ATSC Mobile DTV system and explains the organization of the standard.

In addition, a new Part 9 has been approved by ATSC and specifies a Scalable Full-Channel Mobile Mode (SFC-MM), which describes use of A/153 in a manner that permits use of up to the full channel bandwidth of 19.4 Mbps for mobile services. This standard was approved by the ATSC Membership in June. Publication was pending as this issue of the IEEE BTS **Newsletter** went to press. Additional information will be provided in a future issue of the **Newsletter**.

The initial release of the A/154 RP provides an overview of the system and guidance for Parts 3, 4, and 6 of the ATSC Mobile DTV Standard. Guidelines covering additional Parts of A/153 are expected to be added via revision of the document at a later date.

The current version of the RP covers the following major elements:

- ATSC Mobile DTV system overview
- Data transport
- Signaling data delivery and usage
- Announcement data delivery and usage
- Streaming data delivery
- File delivery
- Application framework

Since the ATSC A/153 Mobile DTV Standard was approved in October 2009, implementation efforts have moved forward, with a big push to get stations on the air currently underway across the United States. At the same time, receiver manufacturers have developed dozens of devices, ranging from cell phone receivers to laptop computer receivers to in-vehicle receivers.

Mobile Receiver Performance Guidelines RP Draft Progressing

Many readers will be familiar with the ATSC RP A/74, "Receiver Performance Guidelines." This document, recently updated and published, focuses on the fixed receiving environment. A companion effort to produce a similar document for the mobile DTV environment has reached a milestone with approval of a first level ballot, (the Technology and Standards Group's ballot as a Proposed Recommended Practice. Issuance of this ballot was pending at press time.) Like A/74, the working draft "Recommended Practice on Mobile Receiver Performance Guidelines" emphasizes expected signal conditions affecting reception. It also discusses the performance expected of signal recovery circuitry, from the antenna through demodulation. This effort has been coordinated with a complementary Engineering Guide being written in CEA.

Major sections of the Mobile Receiver Performance Guidelines RP include:

- Sensitivity and antenna considerations
- Multi-signal overload
- Selectivity
- Multipath
- Single- and multiple-frequency networks
- Relative performance of A/153 mobile modes

If all goes as planned, this RP could be approved and published this fall.

Get Involved

Work within ATSC is open to all organizations with a direct and material interest. If you would like to be involved in ongoing work of the organization, please contact the author.

All ATSC Standards, Recommended Practices, and informational documents are available at no charge from the ATSC Website: *http://www.atsc.org.*

Erlangen, Germany IEEE BTS BMSB 2011 Symposium Draws International Crowd

By Christian Forster, Dipl.-Ing.

The IEEE International Symposium on Broadband Multimedia Systems and Broadcasting 2011 (BMSB 2011) was held June 8–10, 2011 in Erlangen, Germany.

This year's symposium continued the success story of the BMSB conference. As it is one of the world's premier international events in this field following important trends in multimedia systems and broadcasting, we received 145 papers from 27 countries and regions throughout the world were submitted and finally 100 papers were accepted. This means a paper rejection rate from about 31 percent. The conference drew some 170 participants. We also invited well-recognized industry leaders as keynote speakers and panelists, which included: Wenjun Zhan, Shanghai Jiao Tong University, China; Ulrich Reimers, DVB technical module chair, Germany; Bernhard Grill, head of audio coding department, Fraunhofer IIS, Germany Heinz Gerhäuser, director of Fraunhofer IIS, Germany

Presentations were organized in 18 oral sessions and one poster session. Papers covered areas of mobile TV, IPTV and internet TV, video coding and processing, 3D video, signal

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This year's social event took place at the marvelous imperial castle of Nuremberg.

Pablo Angueira taps the second keg.

Bill Hayes poses with Dr. Xiang Feng from Agilent.

Getting ready at the BTS Booth with Lisa are Lili Dong and Xiao GU from Shanghai Jiao-tong University.

The technical sessions were packed with participants.

Fabulous student workers

Symposium Chair Albert Heuberger welcomes the group to a delicious barbeque.

It was actually a pig roast.

GOLD Chair Wout Joseph encourages participation.

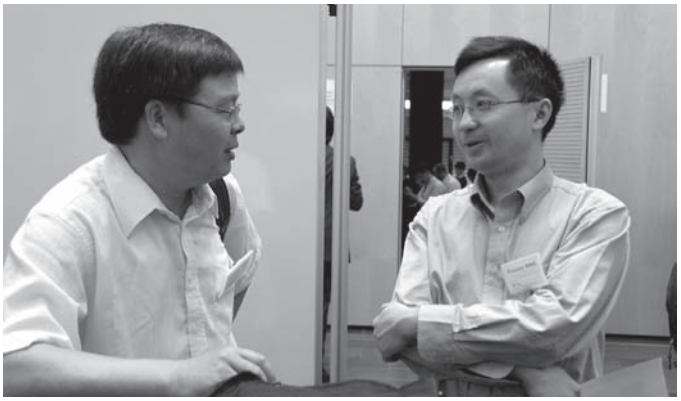
We're having a great time.

Bill Hayes taps the first keg.

Session Chair Bo Liu introduces a paper presentation.

Prost! (l-r), Matteo Anedda (Universita degli Studi Cagliari, Italy), Jose A. Arenas (University of the Basque Country, UPV/EHU, Spain), Gorka Berjón (University of the Basque Country, UPV/EHU, Spain), Pablo Angueira (University of the Basque Country, UPV/EHU, Spain), Albert Heuberger (Fraunhofer Institute IIS, Erlangen, Germany), Jon Montalban (University of the Basque Country, UPV/EHU, Spain)

Many of us stayed near the Old Town of Nuremburg, a short drive to Fraunhofer IIS in Erlangen



Liang Zhang and Ce Zhu

IEEE Transactions on Broadcasting Editor-in-Chief, Yiyan Wu.

The poster session was well attended.

Yiyan Wu, Xiao Gu and Demin Wang

There was a lot of networking during the session breaks.

(l-r) Liang Zhang, Wenjun Zhang, Yiyan Wu, Demin Wang, Pablo Angueira

Young engineers networking at the cocktail hour before the banquet.

BTS AdCom member Bob Plummer poses with Bernhard Grill, one of the developers of MP3 technology.

A beautiful Franconian buffet

Transactions Editor-in-Chief Yiyan Wu and BTS Vice President Bill Hayes present the Best Paper Award to Gabriel-Miro Muntean.

The technical and organizational committee was presented with IEEE service awards. (l-r) Marco Breiling, Aharon Vargas Barroso, Lili Dong, Susanne Ruhland, Christian Forster, Bob Hayes, Alexander Ihlow, Markus Mehnert

It was a bittersweet BMSB for Kathy.

Capella Antiqua enriched the Gala dinner playing melodies from medieval times.

Demin Wang and Byeungwoo Jeon

Participants making connections at the social events

The BMSB 2011 Syposium co-chairs appear together at the end of a very successful conference. The BMSB 2011 symposium co-chairs (l-r): Bob Plummer (BTS), Albert Heuberger, Bill Hayes (BTS), Yiyan Wu, Pablo Angueira, and Ulrich Reimers.

Byeungwoo Jeon gets the group ready for next year's BMSB in Korea.

The timing of BMSB coincided with Bergkirchweih, an annual fair and beer festival in Erlangen.

Ce Zhu and Pablo Angueira visit during the Editors Day at the Old City of Regensburg, which is today regarded as Germany's only surviving medieval city.

Lisa and Kathy enjoying the tour of Regensburg

Boat trip through the Danube gorge to the monastry of Weltenburg Weltenburg Kloster

Inside the abbey church

BTS vice president Bill Hayes "serves" the society's members at the Weltenburg monastery, which dates back to 1050 and is considered to be the oldest such brewery in the world.

Inside the Church

Erlangen, Germany IEEE BTS BMSB 2011 Symposium Draws International Crowd continued from page 6

processing and transmission, content protection, networking and QoS, field trials and test results, channel coding, modulation and multiplexing, display technology, propagation and coverage, traffic and performance monitoring, mobile portable and handheld and performance evaluation.

One special highlight for the conference guests was the Conference Banquet which was held at Nuremberg's Imperial Castle Kaiserburg.

Not only the old Middle Age palace impressed the participants, moreover, the Capella Antiqua took them on a journey into the adventurous world of exotic sounds, melodies and instruments brought back by crusaders, and played as they were

played a thousand years ago. The sound of more than 40 medieval instruments—bagpipes, bladder pipes, symphonia, flutes of various sizes, harps, pommers, fiddles, base drum, and shawm—made this a very special evening.

We would like to thank the BMSB'2011 local host, Fraunhofer-Institut for Integrated Circuits, and student volunteers. They spent countless hours to make this conference successful. Special thanks are extended to Christian Forester, technical program committee (TPC) co-chair; Jian Xiong, TPC co-chair and finance chair; Susanne Ruhland, organizational chair; Janina Heppner, organizational chair; Marc Briele, publicity chair; and also the local student volunteers.

The BMSB now is in its sixth year and is now recognized worldwide and has proven to be a very successful endeavor. A number of institutions have lined up to host future symposiums.

BTS Showcase at BroadcastAsia 2011

By Ce Zhu

BroadcastAsia 2011 was held June 21–24, 2011 in Singapore. Some 10,080 visitors from 88 countries and regions across Asia-Pacific, Europe, North America, and the Middle East attended the event. 661 exhibitors from 42 countries showcased innovative solutions in 3D HDTV, IPTV, digital asset media, mobile broadcasting and professional audio technologies. Two conferences for BroadcastAsia 2011, the BroadcastAsia 2011 International Conference and the Creative Content Production Conference, attracted 363 delegates and 96 speakers during four days of rigorous discussions on the most recent trends and developments in the broadcasting and creative content creation industries.

IEEE BTS was represented at BroadcastAsia 2011 with a membership and information showcase run by volunteers from the BTS IEEE Shanghai Chapter and local Singapore IEEE personnel. This BTS booth was active during the entire event providing information, membership forms and literature about the IEEE and BTS. Several international visitors signed up or indicated strong interest in joining the IEEE and BTS at a special IEEE rate available for new members at trade shows.

YueGuo Zhang and Yuanyuan Xu assist international visitors at the BTS booth.

Lili Dong and Yuanyuan Xu assisted at the BTS booth at BroadcastAsia 2011.

YueGuo Zhang and CheenHau Tan, also volunteered to staff the BTS Booth at BroadcastAsia 2011.

The BroadcastAsia 2012 will be back from June 19–22, 2012 in Singapore. For the latest information about BroadcastAsia 2012, please visit its official Website at *http://www.broadcast-asia.com/*

David Layer Addresses Buenos Aires BTS Chapter

As part of the BTS Distinguished Lecturer Program (DLP), David Layer traveled to Argentina this summer to provide information on digital radio transmission to the Buenos Aires BTS chapter. Layer is senior director of advanced engineering at the National Association of Broadcasters and his presentation was the latest in this ongoing program in which well known authors and educators in the field of broadcast technology share information with others.

Layer's presentation, "Digital Radio—Looking Back, Looking Forward,"

began with a review of the history of digital radio, focusing on the "enabling technologies" needed to make digital radio viable. Much of Layer's talk centered on the In-Band/On-Channel (IBOC) digital radio system which has become the U.S. standard for digital radio broadcasting. He spoke for about three hours to members of the Buenos Aires BTS chapter on July 11.

Fellow distinguished lecturer and frequent BTS Broadcast Symposium contributor, Dr. Valentin Trainotti, had invited Layer to address the Buenos Aires chapter. During the presentation, Dr. Trainotti assisted with translation and otherwise helped contribute to the discussion by offering his own insights into digital radio systems and the transition to digital radio broadcasting worldwide

Since its inception, 10 distinguished lecturers have made a combined total of 20 presentations. The BTS Distinguished Lecturer Program was formed in 2009 to provide a means for BTS chapters to have access to individuals who are well known educators and authors in the fields of broadcast technology.

Requests for Distinguished Lecturer visits are initiated by the local BTS chapter chairperson and submitted to the Distinguished Lecturer program chair, Rich Chernock. Each year the BTS Adcom sets aside funds to cover travel expenses for Distinguished Lecturers. For additional information, visit the DLP Website at *http://bts.ieee.org/distinguished-lecturer-program.html.*

(l-r) Valentin Trainotti and David Layer.

USTTI Students to Attend Fall Symposium

Some special guests will be attending this fall's annual BTS Symposium. Jerry Berman, long time coordinator of an outreach program for broadcast technical personnel from developing nations, has requested permission for his 2011 broadcast technology students to attend some of the sessions.

Berman coordinates technical presentations, field trips and other activities for students that come to America under a special program established by the United States Technical Training Institute (USTTI). Normally, the USTTI program occurs in the summer months; however, this year due to funding difficulties, the classes have had to be pushed back until this fall, coinciding in part with the BTS Symposium. In July Berman requested permission for students to sit in without charge on some of the technical papers being presented at the Symposium and to take part in evening social activities. BTS members unanimously applauded the effort.

2010 USTTI Students and invited lecturer, James O'Neal.

USTTI students come from many different nations, with representation typically from Africa, the Middle East, and Asia. All travel and other expenses for the students are covered by USTTI funding. The sessions last about three weeks and include lectures from experts in several fields of broadcasting and teleproduction, as well as visits to Washington area broadcast facilities such as Sirius/XM and Washington, D.C. television station, WUSA. A regular USTTI classroom lecturer on television camera and lens technology is BTS Adcom member James O'Neal.

IEEE Publishes 802.22-2011 Standard For Wireless Regional Area Networks In Tv Whitespaces

IEEE announced in July that it has published the IEEE 802.22 standard. IEEE 802.22 systems will provide broadband access to wide regional areas around the world and bring reliable and secure high-speed communications to under-served and un-served communities.

This new standard for Wireless Regional Area Networks (WRANs) takes advantage of the favorable transmission characteristics of the VHF and UHF TV bands to provide broadband wireless access over a large area up to 100 km from the transmitter. Each WRAN will deliver up to 22 Mbps per channel without interfering with reception of existing TV broadcast stations, using the so-called white spaces between the occupied TV channels. This technology is especially useful for serving less densely populated areas, such as rural areas, and developing countries where most vacant TV channels can be found.

IEEE 802.22 incorporates advanced cognitive radio capabilities including dynamic spectrum access, incumbent database access, accurate geolocation techniques, spectrum sensing, regulatory domain dependent policies, spectrum etiquette, and coexistence for optimal use of the available spectrum.

The IEEE 802.22 Working Group started its work more than six years ago, following the Notice of Inquiry issued by the United States Federal Communications Commission on unlicensed operation in the TV broadcast bands. At the outset, broadcasters, and BTS in particular, were invited to participate. Tom Gurley serves as the liaison between BTS and the 802.22 Working Group.

Adcom Group Meets to Select Fall Papers

Chicago

A group of 16 BTS Adcom assembled at the Hilton Chicago O'Hare hotel on June 15 to winnow down the large number of abstracts received that were received during the call for papers to be presented at the annual IEEE BTS Fall Symposium event.

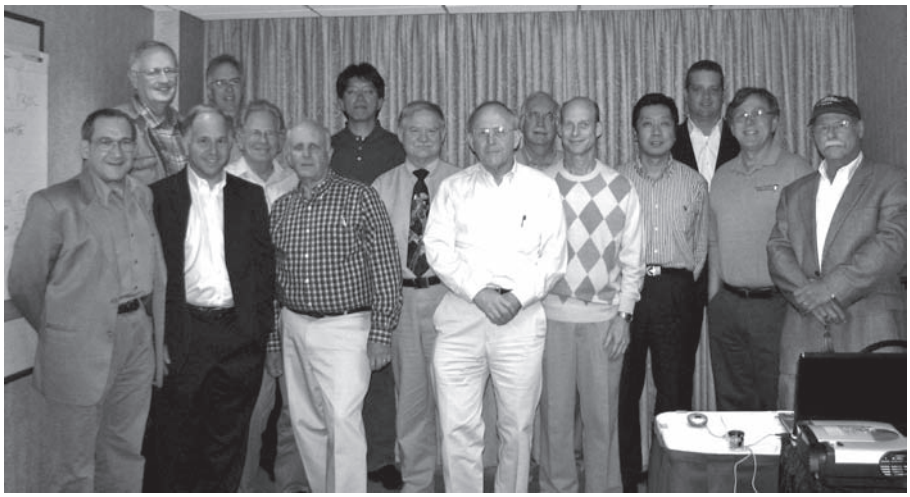
Prior to the Wednesday business session, Adcom members gathered for a group dinner and socializing on Tuesday evening, with some getting the opportunity to meet the new BTS senior administrator, Lisa Weisser, for the first time.

David Layer and Paul Shulins co-chaired the all-day abstract evaluation meeting. In all, more than 50 abstracts were reviewed, with a total of 22 proposals being accepted for the Symposium program. Plans were also made in connection with the Oct. 19 tutorial sessions planned in connection with the Symposium, as well as the naming of session chairs and selection of luncheon speakers.

Other business included a discussion of proposals for providing some amount of Web access to the Symposium for IEEE members and non-members who are unable to attend in person. These ranged from live streaming of the entire event to access to PowerPoint slides and synchronized audio from the speakers' individual presentations.

Lisa Weisser presented an update on the BTS budget and Website.

In addition to Mssrs. Layer and Shulins, the following Adcom members also participated in the Chicago meeting: Greg Best, Charles Einhoff, James Fang, Tom Gurley, Bill Hayes, Ralph Hogan, Bill Meintel, James O'Neal, Tom Silliman, Jian Song, Bob Surette, Eric Wadel, Merrill Weiss, Ed Williams.



IEEE BTS Adcom members (l-r) Merrill Weiss, Charlie Einolf, Paul Shulins, David Layer, Ed Williams, Bill Meintel, James Fang, Ralph Hogan, James O'Neal, Tom Gurley. Greg Best. Jian Song, Eric Wandell, Bill Hayes, Tom Silliman.

Frequency and Earth Conductivity as Factors in MW Field Intensity

by Richard J. Fry, CPBE

It is common knowledge and experience that, even for identical transmitter powers and antenna system parameters, the groundwave coverage areas of AM broadcast stations can vary significantly. AM stations at the lower end of the AM broadcast band have greater coverage areas than those at the upper end, other things equal.

This variation in groundwave coverage area with frequency is related to the conductivity of the earth along the propagation path, and the differing loss that this conductivity produces for different AM broadcast frequencies.

Earth conductivity along a groundwave path is dependent on the basic composition, moisture and mineral content present at, and below the surface of the earth. Groundwave radiation in the AM broadcast band travels along the surface of the earth, and also can penetrate the earth to a depth of several tens of meters.

The portion of the radiated groundwave that penetrates the earth encounters losses, causing the wavefront to tip forward slightly in the direction of its travel – which is useful in providing coverage beyond the radio horizon. Poorer earth conductivities and higher broadcast frequencies result in greater losses.

Table 1 lists the descriptions, dielectric constants and conductivities for various land types common in the US, in descending order. For reference, sea water has a dielectric constant of 80, and conductivity of 5,000 mS/m.

The amount of AM broadcast coverage difference that results from earth conductivity and frequency can be difficult to appreciate fully, without a detailed analysis. For this reason a set of graphs is included as Figures 1 through 4 to show these effects visually.

The graphs lead to some interesting observations. For example, Figures 1–3 show that a 1 kW AM station on the lowest AM frequencies can have a greater radius to its 0.5 mV/m daytime contour than a 50 kW station on the highest AM frequencies.

However this does not mean that a high power, high frequency AM station has *no* advantage in comparison to a low power, low frequency station. The high power, high frequency station can have significantly more field

TABLE I

Type of Terrain	Dielectric Constant	Conductivity, mS/m
Pastoral low hills, rich soil, typical of Dallas, TX and Lincoln, NE	20	30
Pastoral low hills, rich soil, typical of Ohio and Illinois	14	10
Flat country, marshy, densely wooded, typical of Louisiana near Mississippi River	12	7.5
Pastoral, medium hills and forestation, typical of Maryland, Pennsylvania and New York State, except mountainous territory and seacoasts	13	6
Pastoral, medium hills and forestation, heavy clay soil typical of central Virginia	13	4
Rocky soil, steep hills typical of New England	14	2
City, industrial areas, average	5	1
City, industrial areas, maximum attenuation	3	0.1

Source: Federal Register, July 1939

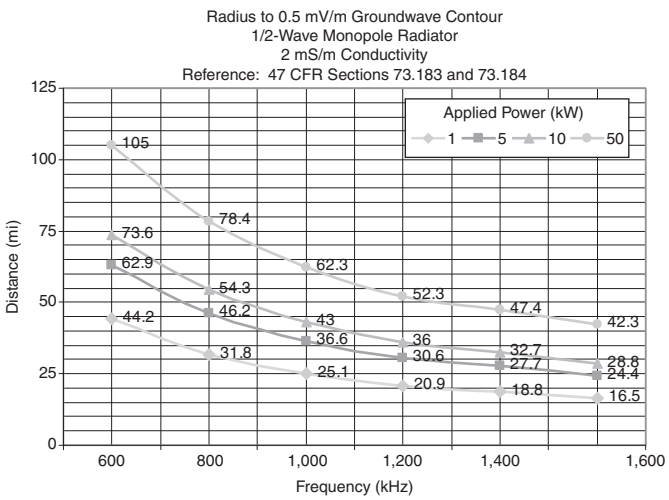


Fig. 1 – 2 mS/m

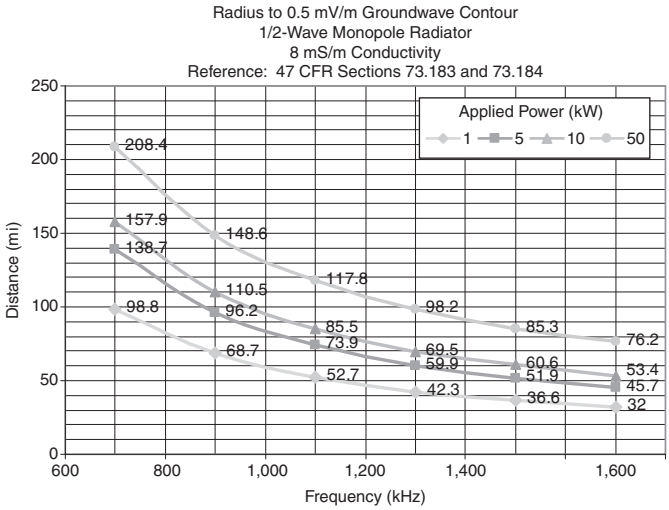


Fig. 2 – 8 mS/m

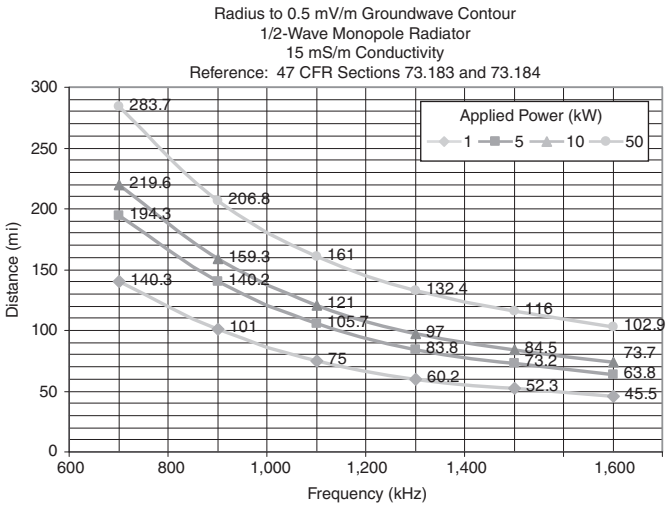


Fig. 3 – 15 mS/m

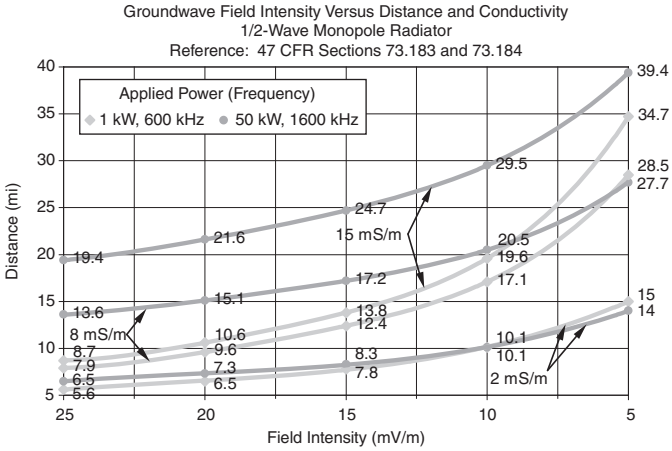


Fig.4 –

intensity ranging to 40 or more miles from the transmit site, which serves a large portion of the city of license and surrounding area.

This effect is shown in Figure 4, where the distances to equal field intensities for a radius of at least 26 miles and conductivities of 8 mS/m and 15 mS/m are greater for a 50 kW station on 1600 kHz than for a 1 kW station on 600 kHz.

Probably this advantage to high power, higher frequency stations is more important to them and their local advertisers than the distances to their 0.5 mV/m contours.

London Calling....

by Mike Bennett, AdCom Member, IEEE, BTS Representative on the IBC Partnership Board

This is a timely reminder that IBC2011 is on the horizon and takes place Sept. 8–13 this year. The Broadcast Technology Society is a partner and has part ownership in this event. Please attend if you can and make plans to visit the IBC Partnership Village at Amsterdam's RAI facility where you can meet members of your Adcom. I look forward to seeing you there.

Visitors

IBC is the leading global tradeshow for professionals engaged in the creation, management and delivery of broadcasting media and entertainment. The event's unparalleled exhibition and agenda-setting conference encompass the very latest developments in broadcasting, mobile television, IPTV, digital signage and R&D, making it essential for everyone's understanding of the industry and its future.

Why Visit IBC?

IBC features an extensive exhibition that unites more than 1,300 cutting-edge companies in 13 halls with products that drive the electronic entertainment industry forward. IBC also includes a peer-reviewed conference that has built an enviable reputation for thought leadership in analyzing the current and future state of the industry.

IBC's potent mix of innovations, discussion and debate, attracts more than 48,000 attendees from more than 140 countries. It spearheads the industry's strategic agenda, with both conference and exhibition providing a host of invaluable networking opportunities in a professional and supportive environment. With a proven track record of pioneering show initiatives, demonstrations, certified training sessions, big screen movies and much more, your visit to IBC promises to be educational, enjoyable and compelling.

Exhibition

Some of the world's largest companies supplying equipment to the electronic entertainment industry exhibit at IBC. Joining them are a large number of

specialist companies, all experts in their fields, including TV, computer, mobile, digital signage or cinema. These companies will be exhibiting established products and launching new ones in more than 250 product categories, allowing attendees to better meet project requirements, achieve efficiencies, close deals and truly experience the IBC advantage.

Conference

The IBC conference attracts thought leaders and decision makers in the industry from around the world. Rigorously peer-reviewed and carefully streamed, it has established itself as the international forum for analysis and understanding of the current industry, where you can debate and discuss the directions the industry will take in the future. Every year it features some of the highest caliber speakers in the industry, providing participants not only with exceptional insight, but also unrivalled networking opportunities.

For further information please visit *www.ibc.org.*

Chapter Reports:

The **IEEE Broadcast Technology Society Newsletter** is interested in reporting news from BTS chapters, both in the United States and worldwide. Reports submitted for publication should be addressed to *BTSeditor@IEEE.org* and must be in the form of a Word attachment. Any accompanying photos should be sent as either JPG files and must be sufficiently large for publication (at least 250 KB; 1 MB preferred). Please do not embed photos within Word documents. All persons visible in photos must be clearly identified. Reports must contain the name of their author and his or her position within the chapter. While we will try to publish all chapter reports received in a timely fashion; however, due to space considerations and the date received, some reports may have to be published in future **Newsletters**. We reserve the right to edit reports for clarity and to fit space requirements.

Dr. Hsiao-Chun Wu Addresses IEEE PCJS BT Chapter Meeting

Submitted by Joe Stack

PCJS BT

Dr. Hsiao-Chun Wu, Ph. D., BTS distinguished lecturer and associate professor of the Department of Electrical and Computer Engineering at Louisiana State University, addressed members of the PCJS BT chapter at Bell Labs in Murray Hill, N.J. on Dec. 15, 2010. His presentation was entitled "Constellation Subset Selection—New Adaptive Modulation Method," with attendees learning why adaptive modulation is crucial in cognitive radio and media independent networks.

In the hour-long lecture by Dr. Wu, the audience learned that there are two different approaches to adaptive modulation: adaptive coded modulation and adaptive uncoded modulation. Dr. Wu's presentation focused on adaptive uncoded modulation technology using a special constellation subset selection technique, with standard constellations used in digital communication systems categorized and analyzed in a generalized mathematical framework. By using this framework, Dr. Wu showed how new theories can be derived and efficient algorithms can be designed. This new adaptive uncoded modulation technology using constellation subset selection was demonstrated to be very effective, especially for today's telecommunication applications which require large constellation sizes to adapt to a wide variety of channel conditions.

The presentation was followed up with a questions and answers session, with ensuing discussions showing that the attendees are becoming more aware of the important role that modulation efficiency plays in the increasingly crowded RF spectrum.

The IEEE PCJS BT chapter was pleased to host BTS distinguished lecturer Dr.Wu for this interesting presentation and discussion. Also, special thanks go out to Hong Jiang and Bell Labs for their part in hosting the December BT chapter meeting.

Argentine BTS Chapter Stages DTV/3DTV Course

Submitted by Valentin Trainotti

Argentina

The IEEE's BTS Argentina chapter organized classes this spring that covered both digital television and 3DTV. Professor Rafael Siciliano, a well-known television technology expert, presented three evening sessions on these topics on May 4, 11 and 18 in downtown Buenos Aires.

Topics covered by Professor Siciliano included an introduction to television principles, digital fundamentals including sampling and quantizing, video compression, digital formats used today, MPEG and JPEG, advanced fiber optic links, ISDB-Tb (the digital transmission system adopted by Argentina), three-dimensional vision systems, and stereoscopic/autostereoscopic 3D.

The classes were well attended, with good participation from those working in Buenos Aires television broadcasting operations.

Toronto Chapter Remains Active With Frequent Presentations

Submitted by Xavier Fernando
Chair Toronto Communications and Broadcast Technologies Joint Society

Toronto

Following the Section initiative to affiliate more societies, the Toronto communications society chapter in 2010 transformed into a joint chapter of the communications and broadcast technology societies. In addition to attracting members from both groups, this merger also makes good sense from the technical point of view, as communication networks increasingly embrace multimedia services while media broadcasting often uses wireless networks.

This joint chapter has been active. There were eight technical talks organized in the past year, including on such topics such as sensing and identification in the Internet era presented by distinguished lecturer Prof. Hossam Hassanein from the Queen's University; body area wireless sensor networks presented by Dr. Ashay Dhamdere from Australia; signal processing methods for brain connectivity modeling by the UBC's Z. Jane Wang from UBC; trends in the telecommunications industry presented by Celia Desmond, past President of the IEEE's Communications Society (ComSoc); and a lecture on multi-gigabit wireless multimedia communications presented by Prof. Vijay Bhargava, current President of ComSoc.

The chapter chair serves as a member in the ComSoc Education Board working group in wireless communications. The chapter also played a significant role in the ComSoc wireless communication certification initiative (WCET).

The Chapter also maintains a Website at *http://toronto.ieee.ca/chapters/commsoc.htm*.

Vancouver Chapter Activities Include Distinguished Lecturer Presentation

Submitted by Alon Newton

Vancouver

Chapter events during the past year have included a very successful IEEE distinguished lecturer presentation by Dr. Richard Chernock, and also a major history milestone ceremony at Vancouver's Mount Seymore. Additional information and photographs may be foundat the following Website: *http://chapters.comsoc.org/vancouver/IEEE%20Vancouver%20Joint%20Communications%20Chapter%20events%202010.html*

The chapter is planning a tour of one of the local television stations this fall and is also exploring a group visit to the Society for the Preservation of Antique Radio in Canada (SPARC) museum, which is located in Coquitlam, British Columbia, near Vancouver.

From the Editor continued from page 2

Sally all the best in making speedy recoveries.

Putting any issue of a publication to bed for the first time is always a challenging experience and I'll not soon forget the readying of this **Newsletter** for the printer. I started my post-retirement career in publishing six years ago, right in the shadow of Hurricane Katrina—another event not easily forgotten, even though the U.S. East Coast was spared from its direct effects. There's been a feeling of déjà vu during the past week or so, with things down to the wire in terms of wrapping up this **Newsletter**, and nature repeating herself with a one-two punch in the form of the first major East Coast earthquake in modern times followed in rapid succession by Hurricane Irene and the destruction and loss of life it's left behind. The earthquake was more or less a ho-hum, pick the books and papers up off the floor sort of thing; however, Irene was a real show-stopper in terms of power failure and loss of Internet connectivity—elements absolutely essential in all of our lives and just about all of our endeavors these days, especially in publications. As I write this there are still hundreds of thousands of East Coast homes without electric power and some communities are almost completely isolated due to high water and washed out roads and bridges. My heart goes out to all of those who have been suffering due to fallout from this disaster.

On a more positive note, the East Coast earthquake and storm have been good teachers, driving home the fact that what our profession is all about—broadcasting on a one-to-many basis—is still very viable in the 21st century. I was out for a walk when the earthquake hit and almost immediately after the vibration and noise ended, I pulled out my cellphone to call my wife, something that proved to be a totally useless effort. Cell sites around my office became saturated within seconds by the high volume of attempted calls. It took almost half an hour before I finally got any calls through. However, when I did get to speak with her, she mentioned that the number one news station in this area—WTOP radio—had been on the case ever since the quake hit, and continued to broadcast information to anyone with a radio with no "maxing out" issues, and also totally free of charge. Ditto the situation before, during, and after the hurricane a few days later. Both radio and television broadcasters met the challenge of providing storm news, emergency information, and in general a sort of "hand-holding" level of reassurance to the public, making us feel that there was really someone out there who cared about our safety and welfare; something not readily apparent in the wireless communications service provider community.

It's impossible to put a price tag on this sort of service to the community that broadcasters provide. I believe that they truly lived up to the government's mandate when broadcasting licenses first started to be issued—that stations exist to serve *the interest, convenience and necessity* of the American public. This is a concept that some current rule and policy makers seem to have overlooked in the rush to yank spectrum from broadcasters and auction it off to a high bidder who sees it only as a source of revenue. It's my hope that someone will get the message and wake up to the fact that cell phones don't always work, usually failing in times of an emergency, and that wireless service providers aren't really driven to serve the public interest.

Interesting times these. I'm glad to have spent my life in broadcasting and look forward to editing a publication that tracks the latest technical developments in this wonderful field of endeavor.

James E. O'Neal
BTSeditor@ieee.org

Lisa Weisser Named BTS Senior Administrator

The IEEE Broadcast Technology Society extends its welcome to Lisa Weisser, the organization's new senior administrator. She replaces Kathy Colabaugh in this position. Ms. Weisser assumed her new role in mid-May, and became fully immersed in BTS operations a few weeks later at the 2011 IEEE International Symposium on Broadband Multimedia Systems and Broadcasting (BMSB) in Germany.

Ms. Weisser will serve as the BTS liaison within the IEEE organization, and will manage day-to-day BTS administrative activities in coordinating society planning, symposiums, meetings, projects and new initiatives with the AdCom officers and members, committees, society members and prospective members. She will also be

working with Jennifer Barbato, BTS publications coordinator.

In addition to her day-to-day IEEE BTS office activities, Ms. Weisser will also support the BTS committees in connection with planning, coordinating and staffing the annual IEEE Broadcast Symposium and the IEEE International Symposium on Broadband Multimedia Systems and Broadcasting. She also serves as the focal point for coordinating plans, tutorials, logistics and BTS representation in connection with the International Broadcasting Convention in Amsterdam and the National Association of Broadcasters Convention in Las Vegas.

Ms. Weisser previously worked at Rutgers University as the communications and outreach specialist for Central New Jersey's Bio-1 (now Bio-1Stop) initiative, in a federally funded program aimed at growing the bioscience industry in New Jersey. She also published and distributed a monthly e-newsletter that provided news and information about the project. Prior to this position, Ms. Weisser was employed as a marketing strategist and senior program director by the American Management Association, a leading professional development organization. She has also worked at New Jersey's Brookdale Community College, where she developed and launched the Electronic Health Records training program and established a Healthcare IT advisory committee.

Nominate a Colleague for IEEE Fellow, Class of 2013

IEEE Fellow is a distinction reserved for select IEEE members whose extraordinary accomplishments in any of the IEEE fields of interest are deemed fitting of this prestigious grade elevation.

Election to IEEE Fellow grade is one of the highest honors that can be bestowed upon an individual by the Institute. Only one tenth of one percent of the total IEEE voting membership—excluding students and associates—may be elected each year.

Nominations for the IEEE Fellows Class of 2013 are now being accepted. Nominate a colleague, co-worker or friend whose career and body of work you consider eligible for elevation to the IEEE Fellow Grade. Online application is available, as are all the forms that may be needed. The deadline for accepting nominations is March 1, 2012.

Whatever their careers, candidates must have made an outstanding contribution to the electrical and electronics engineering profession. Candidates from any field, including academia, government, and industry, may be nominated if they meet the following requirements at the time the nomination is submitted:

1) The candidate must be an IEEE Senior Member
2) The candidate must have completed five years of service in any IEEE grade (Note: IEEE affiliate membership does not apply)
3) The candidate's membership dues must be paid in full.

Any person is eligible to serve as a nominator with the following expectations: members of the IEEE board of directors, members of the IEEE Fellow committee, IEEE technical society/council Fellow evaluating committees (only if a nomination will be reviewed by their committee) or IEEE staff.

Before Submitting an IEEE Fellow Nomination Form:

As a nominator, you initiate the process to nominate a colleague who has made outstanding contributions to the advancement or application of engineering, science and technology. The

first thing is to fill out a nomination form; however, completing the form is not an easy task. You will need to check and see if the nominee meets all the requirements, then assemble the names of the individuals who will be supporting your nomination, and then explain why the nominee's contributions are worthy of this honor. This requires some amount of effort, so allow plenty of time to do it right. To avoid mistakes, use the following checklist prior to submitting your nominations:

(1) **Meet the deadline:** All forms (nomination, reference, endorsement) must be received no later than March 1. When preparing your nomination, be sure to allow adequate time for references and endorsers to complete their forms. Waiting until the last minute is not a good idea.

(2) **Make sure your nomination forms are current:** Unfortunately, nominations submitted on old forms will not be accepted. We strongly encourage you to use the online nomination process to avoid this problem. This guarantees that all the forms (nomination, reference, endorsements) are current.

(3) **Make sure the nominee is eligible for nomination:** The nominee must be an IEEE Senior Member or IEEE Life Senior Member in good standing with dues current, and someone who has been an IEEE member for five years or more preceding Jan. 1 of the year of proposed elevation. Don't assume that your colleague holds the correct member grade, that he/she is in good standing, or has met the minimum requirement for membership years. All forms are checked thoroughly and candidates that do not meet the requirements will be rejected. The actual date that the nominee joined IEEE versus the years of service noted on the IEEE membership cards will be checked; system validation counts by date the individual joined the organization.

(4) **Pay attention to the spelling of the nominee's name:** Many times nominees' names are misspelled and/or the first and last name transposed. Pay special attention to international names with special characters and/or names that are hyphenated. This can cause problems later on in the nomination process. Our system validates the nominee's name against the IEEE membership database.

(5) **Check references eligibility:** A reference must be an IEEE Fellow or IEEE Life Fellow in good standing, with an exception being made for Region 9 (Refer to instructions for an explanation). In addition, verify that your references do not currently serve on boards or committees that would make them ineligible to support the nomination. You are strongly encouraged to solicit the maximum of eight references rather than five. This strengthens the chance of fulfilling the reference requirement in the event that some references are disqualified.

(6) **Listing endorsers on the nomination form:** When entering the name of an endorser, input the last name, first name and e-mail address in the appropriate fields. If you are entering the name of a society, corporation, chapter or region, input the information in the "organization name" field and leave the "first name" field blank, then enter the e-mail address for the contact issuing the endorsement.

(7) **Entering e-mail addresses:** Input only a single e-mail address for references and/or endorsers. Entering multiple e-mail addresses causes system errors.

(8) **Nominees that are self-employed or retired:** Do not enter anything in the "organization's name" field.

(9) **Proposed Citation:** This should always begin with the word "*for*"; e.g. *for* contributions to…; *for* the development of….

(10) **Printable version:** Prior to submitting the nomination form, remember to hit the printable version button and print a copy of the completed nomination form for your records.

To nominate a Senior or Life Senior Member for IEEE Fellow, please visit the Fellow Website at *http://www.ieee.org/fellows.*

Letters to the Editor:

The **IEEE Broadcast Technology Society Newsletter** welcomes correspondence from its readers regarding articles published in the **Newsletter** or other subject matter that may be of interest to BTS membership. All correspondence will be read and acknowledged; however, due to space limitations there is no guarantee that every letter will be published. Please limit your comments to no more than 600 words. We reserve the right to edit letters received for clarity and to fit space requirements. The Newsletter assumes no responsibility for any statements made by its correspondents. E-mail comments should be addressed to *BTSeditor@IEEE.org*.

Transmitter Power Supplies

Editor:

I seldom enjoy an article in the **BTS Newsletter** as much as I did the article about radio transmitter power supplies, mostly, but not all about motor/generator sets.

I had an encounter with one of those while in the Navy. I was told to install a shipboard transmitter at a shore station. This was after WW II, but the transmitter was probably designed when I was a young boy. I wired it as per the instructions, but when it was time to start the motor, I was frankly scared—what if there was a ground missing and there was 3,000 Volts DC between some part and another part?

The Chief Petty Officer came in at that point and told me to activate the motor. I did, but it didn't sound right and none of the meters on the transmitter panel was indicating. The old Chief said he knew what was wrong and struck one of the DC generators a great blow. The motor loaded down and the meters went up. We were on-the-air.

This really impressed me!

I knew at once that he had shaken up the disoriented magnetic domains. Without a doubt, that generator had been degaussed by the Navy. He told me that is what his Chief had done when he installed a transmitter decades ago. He hadn't a clue why it worked, but he did know how to fix it. That impressed me. Navy Chiefs may not have understood everything, but they knew how to get results.

When I joined Tektronix, selenium rectifier stacks were being used in the oscilloscopes. Each scope had five regulated voltage power supplies. The selenium rectifiers were phased out in favor of silicon diodes within a few months of my arrival in 1956.

Charlie Rhodes

Editor:

It was very interesting to read about transmitter power sources in the Spring Newsletter, as it brought back many memories from my years at WTAM (and at KYW during the nine years [in which] NBC and Westinghouse had swapped their Cleveland and Philadelphia stations.)

WTAM radio used batteries for all power sources in the mid 1920s.

The 6,000 Volt plate supply and filament and bias supplies were switched in parallel banks overnight to recharge (Willard storage batteries of course [as Willard owned the station then]). In 1929 a new RCA 50-B 50 KW transmitter (serial #2) was installed and it used motor generators for the filaments and bias voltages, and a bank of [type] 869 mercury rectifiers for the 17,000 Volt plate supply. I know the troubles these tubes often presented. NBC purchased the station in 1930. I started work at this transmitter in 1948 and spent the next several years maintaining this old classic. In early 1949 the motor-generator sets were replaced with AC supplies, making life easier. Watching over the water-cooling system in Ohio's frigid winters and hot summers required constant care.

After Westinghouse and the KYW takeover in 1955, plans were made to replace the 50-B with a Westinghouse 50-HG2 which used selenium rectifier banks for the 11,000 Volt plate supply.

These rectifier stacks were located in the main air duct that cooled the transmitter tubes, and sometimes a cell would arc and emit selenium fumes into room, which was a concern to the operating technicians. Westinghouse engineers designed replacement banks with silicon rectifiers and all went well. Perhaps other 50-HG transmitters initially used selenium rectifiers also.

Those were the days.

I retired from NBC in 1983.

J. Kirk Sanderson
(*ksanderson4@juno.com*)
IEEE member
Former NBC Transmitter
technical director

BTS IEEE Broadcast Technology Society

IEEE

61st Annual IEEE Broadcast Symposium

19-21 October 2011 **Alexandria, VA USA**

SAVE THE DATE!

Please mark your calendar to attend the **61st Annual IEEE Broadcast Symposium** to be held at the Westin Hotel in Alexandria, Virginia on 19 -21 October 2011. This Symposium is produced by the IEEE Broadcast Technology Society.

The IEEE Broadcast Symposium is focused on technical areas important to broadcast engineers and professionals with an emphasis on leading edge technology of interest to broadcasters.

The annual IEEE Broadcast Symposium is one of the world's preeminent technical conferences on broadcasting technology. In its 61st year, the Broadcast Symposium this year will offer attendees an exciting, timely, and informative three-day program with tutorials on:

- Connected TV and HD Radio in-band/on-channel digital radio technology

And technical sessions on:

- Radio Engineering & RF Infrastructure, Network Distribution, Mobile DTV, DTV Implementation, and the Future of DTV

Broadcast engineering experts from around the world will be presenting at the Symposium.

This event will offer Continuing Educations Units (CEUs) for attending the technical sessions. Most consultants and PE's know that those are often required to maintain professional engineer licenses. Please feel free to request the CEU accreditation when you register for the conference.

For details about the conference, visit the Broadcast Symposium web site:
http://bts.ieee.org/broadcastsymposium/

For more information about the IEEE Broadcast Technology Society, visit our web site:

bts.ieee.org

FOBTV
FUTURE OF BROADCAST TELEVISION

FUTURE OF BROADCAST TELEVISION SUMMIT

FOBTV2011
Call for Participants
10-11 November 2011, Shanghai, China

Future of Broadcast Television (FOBTV) will be held to foster global collaboration that may lead to the development of common strategies for the future of terrestrial broadcasting and to exchange technical advances in the rapidly converging areas of terrestrial broadcasting, consumer electronics and networking technologies. Industry technology leaders are to be invited to work together to share their visions of the future of broadcasting. Bringing together the collective perspectives of experts worldwide should benefit industry leaders as they identify their optimum national path for terrestrial broadcasting.

Host Organization:
National Engineering Research Center of Digital Television, China (www.nercdtv.org)

Main Sessions:
- The Role of Broadcasting in the Broadband Ecosystem
- Attributes of a Next Generation Terrestrial Broadcast System
- The Spectrum Squeeze
- Technologies on the Horizon
- Roundtable/Panel Discussions on the Future of Broadcasting

Venue:
Shanghai International Convention Center
Add: 2727, Riverside Avenue, Pudong, Shanghai, China

Contact:
Ms. Lei Xu, National Engineering Research Center of Digital Television
Tel: (86-21) 60897266-5015
Email: fobtv2011@nercdtv.org

International Founding Organizations:
NERCDTV ATSC CRC DVB EBU-UER IEEE NAB NHK ETRI PBS

Supporting Organizations:
上海交通大学 HDIC SMG SMET SIGA BBEF Hisense CHANGHONG Haier TCL KONKA Skyworth

For further information, please visit www.fobtv.org

IEEE International Symposium on Broadband Multimedia Systems and Broadcasting

27-29 June 2012, Seoul, Korea

The IEEE International Symposium on Broadband Multimedia Systems and Broadcasting 2012, the 7th in the series, will be held in Seoul, Korea (http://www.ieee-bmsb2012.org). The symposium will be a premier forum for the presentation and exchange of technical advances in the rapidly converging areas of multimedia broadcasting, telecommunications, consumer electronics, and networking technologies.

The symposium seeks technical papers on the following topics:

1. Multimedia systems and services
1.1 Mobile TV
1.2 IPTV & Internet TV
1.3 DTV and broadband multimedia systems
1.4 VoD, interactivity, datacasting
1.5 Field trials and test results
1.6 Content management
1.7 Service deployments

2. Multimedia devices
2.1 Display technology
2.2 Acquisition technology
2.3 Set-top box and home networking
2.4 Mobile, portable, and handheld devices
2.5 Program guides and navigation

3. Multimedia quality: Performance evaluation
3.1 Performance evaluation
3.2 Objective evaluation techniques
3.3 Subjective evaluation techniques

4. Multimedia processing
4.1 Audio technology
4.2 Video coding and processing
4.3 Content adaptation and scaling
4.4 Error resilient and concealment
4.5 Rate control
4.6 Retrieval and indexing
4.7 3-D and multi-view video
4.8 Content protection and watermarking

5. Transmission and networking
5.1 Channel modeling and simulation
5.2 Channel coding, modulation, multiplexing
5.3 Signal processing for transmission
5.4 Propagation and coverage
5.5 Congestion control
5.6 Traffic and performance monitoring
5.7 Networking and QoS

Call for Tutorials: Proposals for half-day tutorials are also solicited based on the topics listed above. **Call for Panels**: Proposals are solicited for panels on technology, application, business, and policy-related issues and opportunities for multimedia and broadcasting industry. **Prospective authors** are invited to submit extended abstracts of about 1000 words by e-mail to bts@ieee.org. Each abstract must include at least two key words chosen from the topics mentioned above. **Please indicate that the abstract is submitted to the IEEE International Symposium on Broadband Multimedia Systems and Broadcasting 2012**, and includes the corresponding author's full name and contact information including: Affiliation, address, e-mail, and phone number.

Important dates:
Submission of extended abstracts: November 30, 2011
Notification of acceptance: February 28, 2012
Submission of camera-ready paper: April 27, 2012

From the President continued from page 2

modern digital broadcast facilities. The course, which has been dubbed "Bridging-the-Gap," is now nearly complete. The initial pilot class was presented in the Washington, D.C. area in April, and a second pilot class is scheduled for Sept. 20–21, 2011 in Portland, Ore. The feedback from the April class was very positive, with suggestions from that group being used to improve the course material, as will any suggestions received from the September class. It is anticipated that a full-scale launch of the course will take place early in 2012. One of the things learned from this project is that there's a need for additional such courses, and BTS will be considering the best approach to satisfy that need and further our educational outreach efforts.

Along with our new editor, we welcome your feedback and recommendations for topics or articles for the **Newsletter** and as society president about issues affecting BTS in general.

Bill Meintel
President/former editor
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IEEE Broadcast Technology Society Organization

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We have redesigned our Website!!!!

Please visit our new Website at *http://bts.ieee.org/* to see all the changes that have been made. If you have any suggestions for our Website please send an e-mail to *L.weisser@ieee.org*