

Broadcast Technology Society Newsletter

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

From the President

William T. Hayes, President, IEEE Broadcast Society



Greetings BTS members. If you noticed that you are receiving this newsletter a little later than you usually do, I have to apologize as it is entirely my fault. This issue's President's column has been exceptionally difficult for me to write because there is so much going on and I don't think I have ever been as busy as I am right now.

In one of the most exciting projects that I am involved in, I am representing both BTS as the Society President and Iowa Public Television as the Director of Engineering. BTS has underwritten a program on digital television reception that is being produced at Iowa Public Television. The program is targeted at helping lay people deal with some of

the challenges of digital reception. The program is made up of three and four minute segments where consulting engineer Gary Sgrignoli and I explain the differences in digital reception and how to improve the reliability and guarantee stable digital television. The program is slated to be completed in mid-December and will be made available to any organization that wants to broadcast it in its entirety or use segments on their broadcasts or use it on their websites. The first audiences that will see it will be in the United States but the segments relate to digital reception and will apply globally as people everywhere deal with changing from analog television to digital television.

Another event that we are looking forward to is the 2009 IEEE BTS International Symposium on Broadband Multimedia Systems and Broadcasting that will take place 13–15 May 2009.

This will be the fourth annual multimedia symposium but what makes it exceptionally exciting is that this will be the first BTS conference hosted outside of the United States. This year's symposium will take place in Bilbao, Spain and the team working

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From the Editor

William Meintel, BT Newsletter Editor



The 58th ANNUAL IEEE BROADCAST SYMPOSIUM is now history but once again it was, from my point of view, a tremendous success. Everyone I talked to was enthusiastic about our new venue and we look forward to returning there next year. The technical program was great thanks to Ed Williams and James Fang and with two high profile luncheon speakers including the "godfather" of U.S. digital television Dick Wiley on Thursday

followed by Peter Fannon on Friday I think the Symposium Committee once again has raised the bar.

Sadly our Symposium chair for the past four years, Guy Bouchard will be stepping down. Congratulations Guy for a great Symposium and many thanks for all your hard work over the past four years. Fortunately Guy will not be far away as he will be taking over as Chair of the Awards committee being vacated by Sid Shumate. We are also sorry to see Sid leaving that position where he has also done an outstanding job – many thanks to Sid also.

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From the President continued from page 1

on it, led by Pablo Angueira, is very excited not only about the new location but also about the program. For more information visit the BTS website (www.ieee.org/bts) and follow the link to the Broadband Multimedia Symposium. Please make plans to join us at this very exciting event in May.

Another event that BTS is sponsoring also has an international destination. As you know, BTS is one of the partnership organizations in the IBC. BTS has partnered with two other IBC partnership organizations, SMPTE and IABM to sponsor the Global Summit on Emerging Technologies which will take place 21–22 May 2009 in Prague, Czech Republic. This event will pull together global leaders from the industries and organizations that are focused on the creation and distribution of content. The focus will be on developing the strategies to insure the growth and development of the media and entertainment industries for the next decade and beyond. For more information on this Summit, follow the link at the BTS website.

On a final note, our educational initiatives continue to work through development and I have reviewed some preliminary plans for our first course which looks very exciting. Education Committee Chair Ralph Hogan and BTS Past President Tom Gurley are working closely with the IEEE staff on the development of a course designed to bridge the gap between broadcast engineers and information technology engineers.

The process in and of itself has been educational for all of us involved in the project. As we have met with industry professionals and discovered the breadth and depth of the issues, we have been at times overwhelmed by the magnitude of the task we have undertaken. In the near future we plan on conducting some test classes to make sure that what we have developed so far accomplishes what we had planned but we have also recognized, as we have peeled back the skin of this onion, is that there may be a lot more here than we initially thought. I fully expect that educational development will become one of the most important functions of the BTS and rather than continuing as an initiative it will become a significant part of what BTS is.

I have kept this message somewhat short because so much of what I am writing about and involved in is work in progress and I cannot report with any certainty what the final outcomes will be. I expect that my next President's Column will focus on the digital television conversion in the United States since that is my day job. I hope to report some real success, not in a flawless transition since no one expects it to be flawless, but how BTS has helped many people deal with the challenges of converting to digital.

Until next time, take care.

Bill Hayes
President
Hayes@iptv.org

From the Editor continued from page 1

Although Guy is stepping down he is leaving the job in very capable hands as Tom Silliman and Eric Wandel have agreed to chair next year's Symposium. I had a chance to talk with Tom during the Symposium and he has already begun to work on next year's event. I will not go into the details but from our conversation it sounds like we will be in for another great 3 days next October so please begin making your plans to be there. I don't think you will be disappointed.

As you will read in this and future newsletters, much is going on in the BTS with many positive steps being taken that I believe are revitalizing our Society. Although the world economic situation is grim at the moment we are fortunate that the BTS is in very good shape financially. Therefore, we should be able to weather this storm and continue to provide more benefit to our membership.

Here in the U.S. we are in final weeks before the February 2009 transition to digital television and the shut-off of all full power analog television stations. One U.S. television market, Wilmington, NC, made the switch early and the results were either good or bad depending on the interpretation. However, considering that this market had been saturated with preparation and education concerning the transi-

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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 wmeintel@computer.org. Here are our deadlines for upcoming issues:

Issue	Due Date
Spring, 2009	20 January 2009
Summer, 2009	04 May 2009
Fall, 2009	20 July 2009
Winter, 2009	02 November 2009

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The 58th Annual IEEE BTS Broadcast Symposium is a Great Success!

33 Papers presented with attendance of 155 from 10 countries



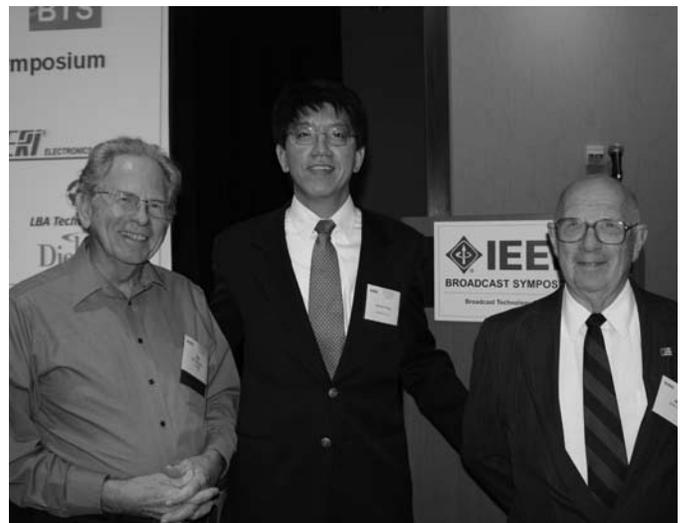
Jenn Barbato (BTS staff) and Alicia Zupeck (IEEE Mtg Planner) are happy to assist at the Broadcast Symposium registration table.



John Yazinsky leads off the Symposium with the Cisco tutorial "Understanding Computer Networking"



Greg Best used his own equipment to demonstrate results, during his tutorial "Status of IEEE DTV Emission Measurement Draft Standard P-1631"



Technical program co-Chairs Ed Williams and James Fang enjoy the company of John Reiser, our sound technician.



"The Jazz Trio" entertained guests at the Wednesday evening welcome reception.



What is a reception without good food?



Networking at the Welcome Reception are Bill Meintel, BTS Vice President, Ron Scotto, Robert Seidel and Dennis Wallace



Some of the BTS AdCom having fun. L-R: Jinyun Zhang, James Fang, Tom Gurley, Stella Trainotti and Tino Trainotti



Guy Bouchard, 2008 Broadcast Symposium Chair, greets welcome reception attendees.



Ralf Hinz, Byron St. Clair, Rich Chernock and Sesh Simha enjoy refreshments and networking.



Meeting old friends and new friends. L-R: Pascal Marcoux, Martin Quenneville, SungHo Lee and Sungho Jeon



Mark Aitken speaks to a packed audience on the subject of mobile DTV.



The joint BTS/AFCE luncheon was filled to capacity, thanks to Keynote Speaker Richard Wiley.



The head table featured AFCCE and BTS officers.



Keynote Speaker Richard Wiley chats with BTS President, Bill Hayes, over lunch.



Kathy Colabaugh, BTS Administrator, and Tom Silliman, BTS Secretary, discuss plans for next year's Symposium.



Panel discussion about loudness issues in digital television. Participating panelists included Robert Seidel, CBS Television Network, Steve Lyman, Dolby, Jim Starzynski, NBC Universal, and James Johnston, Neural Audio Corp.



John Reiser works his magic with the sound mixing and recording.



James O'Neal, BTS Historian, talks about Scott Helt and the history behind the Scott Helt Award for the best paper published in the IEEE Transactions on Broadcasting.



The panel discussion moderated by Jim Kutzner, PBS.

Unusual Awards Luncheon Held at the 2008 Broadcast Symposium

By Sid Shumate, Chair, BTS AdCom Awards Committee

The Scott Helt Award for the best paper published during the past year in the IEEE-BTS Transactions was announced, and the Matti M. Siukola Award for the best paper presentation at the 2007 Broadcast Symposium was presented, at the BTS Awards Luncheon, held during the 58th Annual IEEE Broadcast Symposium on 17 October 2008.

Matti S. Siukola Memorial Award

The 2008 Matti S. Siukola Memorial Award was presented to David Plets, for his paper on “Evaluation of Performance Characteristics of a DVB-H Network for Different Reception Conditions”, presented at the 57th Annual Broadcast Symposium.

David Plets was born in 1983 in Torhout, Belgium. After an education in mathematics and sciences in secondary school, he began his engineering study in Ghent. Five years later, he finished his final year dissertation on the development of an iDTV framework for sport coverage on the Multimedia Home Platform (MHP) and he obtained a Master in Electrotechnical Engineering, with ICT as main subject. Currently, he is a member of the WiCa research group (Department of Information Technology—INTEC, Ghent University), where he mainly focuses on DVB-H.

The Matti S. Siukola Memorial Award was established in 1982 “to encourage presentation at the Annual Fall Broadcasting Symposium of technical papers for excellence by authors engaged in the field of broadcast engineering.” The recipient is presented with a plaque at the following year’s Annual Symposium Awards Luncheon. To determine the winner, ballots are distributed at each Technical Session during the Symposium.

Scott Helt Memorial Award

The 2008 Scott Helt Memorial Award is unique this year, as for the first time in its more than 50-year history, it was not to be awarded at the IEEE Broad-



David Plets Accepts the Matti S. Siukola award from Sid Shumate, BTS Awards Chair

cast Symposium. The Scott Helt Memorial Award was established in 1957 by the IRE Professional Group on Broadcast Transmission Systems, the precursor of the Broadcast Technology Society. The purpose of the IEEE Scott Helt Memorial Award is to recognize exceptional publications in the field, and to stimulate interest in, and encourage contributions to, the fields of interest of the Society. Papers, selected from those published in the IEEE Transactions on Broadcasting, are nominated by reviewers and voted upon by the entire BTS Publications Committee. This year, the winning paper was published in the 2007 Special Issue on Mobile Multimedia Broadcasting. As a result, while the winning paper was announced at the Broadcast Symposium Awards Luncheon, the plaque was officially turned over to Pablo Angueira, Co-Chair of the 2009 IEEE International Symposium on Broadband Multimedia Systems and Broadcasting, to be presented at the first awards ceremony to be held at the Multimedia Symposium. A first best-paper-presented award will also

be made at the next Broadband Multimedia Systems Symposium, to be held in Bilbao, Spain, on 13-15 May 2009, and the Scott Helt Memorial Award will be presented there to Michael Kornfeld and Gunther May, for their paper entitled “DVB-H and IP Datacast – Broadcast to Handheld Devices”, published in the IEEE Transactions on Broadcasting Special Issue on Mobile Media Broadcasting, Vol. 53, pages 161-170, March, 2007.

To complete this year’s award ceremony, James E. O’Neal, Technology Editor at TV Technology magazine, was invited to the podium to give a report on his research on the history of Scott Helt. James is also a broadcast historian, retired broadcast engineer, and frequent contributor to the Broadcast Technology Society Newsletter. He has been researching Scott Helt, the Dumont network television engineer and author for whom the award is named, and gave a short and entertaining report on his progress so far. We hope to soon see a full article on Scott Helt, by Mr. O’Neal, in the Newsletter.

Bill Hayes Wins the SBE 2007 Educator of the Year Award



Karen Schaeffer, Bill Hayes' assistant, accepting on behalf of Bill the SBE 2007 Educator of the Year plaque. The plaque was presented by Barry Thomas, President of the SBE.

The Society of Broadcast Engineers has announced the winners of its 2007 National Awards. Bill Hayes was honored by the SBE with its 2007 Educator of the year award.

Educator of the Year recognizes the SBE Member who is dedicated to the education of broadcast engineers through personal writings, teachings, programs and employment and who furthers the goals and objectives of the Society.

The awards were presented at the Society's National Awards Dinner on 15 Oct. 2008 in Madison, WI. The 2007 SBE Educator of the Year Award plaque for Bill Hayes was accepted on his behalf by his assistant Karen Schaeffer at the dinner. Bill was unable to attend the SBE National Awards Dinner due to schedule conflict where, in his capacity as President of the IEEE Broadcast Technology Society, he was committed to be in Washington, DC at the same time for the 58th Annual IEEE BTS Broadcast Symposium.

The SBE plaque given to Bill Hayes reads:

Society of Broadcast Engineers
EDUCATOR OF THE YEAR
WILLIAM T. HAYES
IN RECOGNITION OF HIS CONTRIBUTIONS TO THE BROADCASTING INDUSTRY AND TO FURTHERING THE GOALS OF THE SOCIETY
2007

Bill has been the Director of Engineering and Technology at Iowa Public Television since 1999. He started his broadcasting career in 1973 and later re-

ceived his Bachelors Degree in Communications from Loyola University in 1997. He is currently responsible for the planning and development of all technology projects at Iowa Public Television including RF transmission facilities and studio origination facilities.

Bill is the 16th recipient of this award. Prior winners are:

- 2006 John Bisset
- 2005 Gary Sgrignoli
- 2004 Lawrence Bloomfield
- 2003 Donald Borchert
- 2002 Terrence Baun,
- 2001 Steven Keeler
- 2000 Michael Scott
- 1999 Steven Keeler
- 1998 Michael Scott and Bruce Ziemien-ski, (tie)
- 1997 Richard Farquhar
- 1996 Michael Scott
- 1995 Michael Scott
- 1994 Douglas Garlinger
- 1992 Dr. John O'Neill

For information about SBE, visit its web site at www.sbe.org.

From the Editor continued from page 2

tion, there were still enough problems to cause some serious concerns about what will happen in February.

At the recent Symposium I made a presentation detailing the various potential problems that could come together to form the "perfect storm" come February 2009. However, no one of knows for sure how these things will play out but by the time I write my next column we will know the answer. If things go well, and I hope they do, it will be because of the dedication of many hard working broadcast engineers. Either way we definitely should have some interesting stories to tell – so take notes and send me yours.

Another issue affecting television that I discussed in my last column is the potential use of unlicensed devices in the broadcast spectrum. Even in the face of some significant opposition,

it appears that the U.S. Federal Communications Commission is moving toward allowing this to happen. At the moment this is a U.S. problem but as was pointed out at the Symposium this could easily become a problem for the television broadcast industry worldwide. If these devices become prevalent in the U.S. they will undoubtedly quickly spread to other countries.

The supporters of this technology have made it clear that they do not believe there is a need for over-the-air television service. However, with the advent of digital television and the ability to provide multiple program streams over a single RF channel, most of the United States has access to a significant number of free over-the-air program offerings. In a poor economy where many families may no longer be able to afford cable or satellite service inter-

ference from these unlicensed devices have the potential to take away their ability to receive free over-the-air television. In fact, due to ingress into television receivers, these devices could very likely impact cable and satellite service as well as over-the-air service. For more information on this subject go to interferencezones.com

My solution to this problem is for proponents of this technology to compete in the market place for the spectrum that will become available once the DTV transition is completed. (TV channels 52-69 in the U.S. are being reallocated for other use). That's my idea – let me hear your idea on this or any other subject that is related to our industry.

Bill Meintel
Editor

wmeintel@computer.org

London calling... IBC2008 attendance breaks all records!

Mike Bennett, AdCom member representing BTS on the IBC Partnership Board

As members of the Broadcast Technology Society (BTS) you should be aware that the Society is a Partner/Stakeholder in the prestigious International Broadcasting Convention (IBC).

This event takes place every year in September, in Amsterdam, the Netherlands.

The short report below reflects news and observations made during the recent IBC2008. Some of the information given has been taken from official press releases of the event.

This year, IBC2008 has proved to be a record-breaking event in visitor attendance, the number of registrations and exhibitors taking part. IBC recorded 77,041 registrations and 49,250 visitors attended the show, breaking all previous records by nearly 5%. Visitors came from over 130 countries worldwide to experience unmissable events, compelling propositions and to gain an insight into future opportunities.

It was a show to remember with many stimulating presentations and showcases, world first demonstrations, a prestigious awards ceremony and an excellent themed conference programme, which included free sessions covering technologies such as IPTV, Mobile and Digital Signage.

The IEEE Broadcast Technology Society was responsible for presenting a 3 hour tutorial at the beginning of the IBC Confer-

ence. The title of the tutorial was "Quality Issues in IPTV". This tutorial attracted over 200 attendees.

The exhibition housed over 1400 exhibitors from all over the world, providing exclusive showcases, business critical content, one-to-one meetings and first-rate networking opportunities.

Highlighting the success of the conference, David Crawford, conference chairman said, "This has been, yet again, a fantastic and truly stimulating conference. IBC has proved itself to be the definitive global forum for everyone involved in the multimedia and broadcast business". This year's conference keynote was presented by a previous recipient of the IBC International Honour for Excellence, Dr Leonardo Chiariglione who examined the successes and weaknesses demonstrated by broadcasters in this age of universally available technology.

One of the hot topics this year to make its debut alongside Mobile and IPTV as a zone and Business Briefings was Digital Signage. Creating new business opportunities for broadcast technology vendors and system integrators, digital signage presented forward strategies and business models.

The IBC awards ceremony was once again a great success with honours going to projects as diverse as a multi-platform

content distribution: a simple idea to save studio lighting bills and a system to bring 16 times the resolution of HD to our screens.

The IBC2008 International Honour for Excellence was awarded to Oscar® nominee and multiple award-winner, Jeffrey Katzenberg, CEO of DreamWorks Animation SKG. This was the first-ever transatlantic telecast in high definition 3D to be broadcast live from Los Angeles transmitted to an audience in the IBC Big Screen Auditorium, RAI (Congress Centre), Amsterdam. Conducting the interview was Elizabeth Daley, Professor and Dean of USC's School of Cinematic Arts, in a session that explored Mr Katzenberg's view of motion picture production in the age of diverse distribution channels as well as the impact of 3D technology in theatres, in the home and across other platforms.

This year's Special Award was for the first international transmission of Super Hi-Vision Content. Presented on behalf of the partnership to Dr Keiichi Kubota, director general of the Science & Technical Research Laboratories of NHK. The super Hi - vision project is a partnership between BBC, RAI (Italy) and the EBU. Other companies that participated in this demonstration were Cable and Wireless, Eutelsat, Siemens and SIS outside broadcast.

Other award winners can be found at www.ibc.org



BTS Members enjoy IBC. L-R: Rich Chernock, Patrick Waddell, Yiyang Wu, Pablo Anguiera and Dmitry Tkachenko



The newly redesigned Partnership Village at IBC

IBC played host to a range of companies showcasing audio and video innovations and solutions in the 1800-seat world class Big Screen. Leading suppliers such as, Red, Panasonic and Doremi demonstrated their latest developments and technology to an auditorium packed with excited visitors and exhibitors.

Courtesy of Warner Bros International, Walden Media & New Line Cinema, the IBC Big Screen showed Journey to the Center of the Earth - in 3D, the first live action motion picture to be shot in digital 3D. It was the big screen directorial debut of Academy Award-winning visual effects veteran Eric Brevig. Eric introduced the movie and led a question and answer session after the screening; together with Richard Welsh from Dolby - who supplied the 3D presentation system.

The popular Training Zone also returned this year to IBC and was brought to you by Avid Technology, in association with Intel, HP and VET. The free sessions in the Training Zone proved popular throughout IBC2008 adding even more value to visitors attending the show. IBC was pleased to welcome UK Trade Minister Lord Digby Jones. Lord Digby Jones chose IBC2008 as the venue to launch the Benelux network, a new trade initiative between the UK, Holland, Belgium and Luxembourg.

IBC also welcomed Ambassador James Culbertson, the 64th Ambassador of the United States of America to the Kingdom of the Netherlands. On his visit to IBC2008, Culbertson spoke at length to various exhibitors, interacted with some of the technology on display and walked around the halls to get a feel for the amazing size of IBC.

About IBC

Established in 1967, IBC has evolved from its roots in terrestrial broadcasting to become the leading event for professionals involved in the creation, management and delivery of entertainment and news content worldwide. The exhibition attracts over 1400 exhibitors including all the major equipment suppliers. IBC draws over 49,000 attendees from more than 130 countries that visit each year to see the state-of-the-art. The world-renowned IBC conference tackles all the hot creative, management and technical issues.

The IBC mission statement is "For the Industry, By the Industry".

Mike Bennett
AdCom Member

IEEE BTS Tutorial at IBC2008

By Hong Liu, CRC Canada

IBC 2008 took place in Amsterdam, Netherlands from 11-15 September 2008. This year's IBC conference and exhibition was a great success, with over 49,250 people attending and more than 1400 companies all over the world showcasing their latest technologies and products in broadcasting and media. IPTV and Mobile TV continued to be the hottest topics in the event.

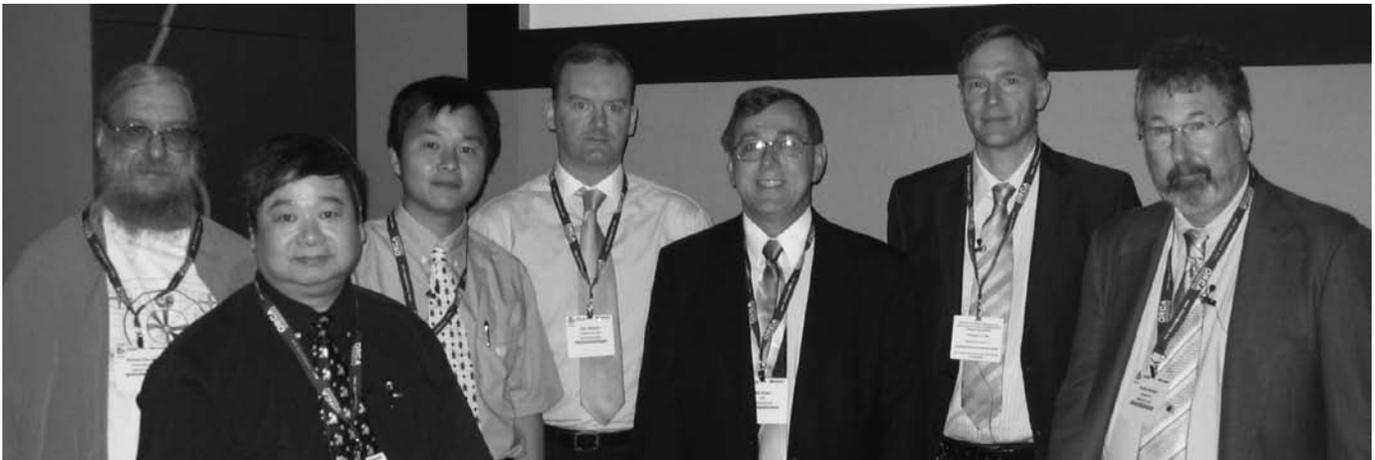
With increasingly widespread deployment of IPTV worldwide, assuring high quality of video viewing experience is a key issue to attain IPTV service subscribers. However it involves the whole IPTV service chain from the video encoder and decoder, video transport, the IP delivery network and the digital set-top box etc.

Therefore it is a quite comprehensive and complicated concept. In order for the industry to better understand it, the IEEE Broadcast Technology Society (BTS) presented a tutorial entitled "Quality issues with TV and Multimedia over IP" on 11 September. This tutorial was chaired by Dr. Yiyang Wu. There were five invited speakers giving feature presentations, which included Mr Hong Liu from Communications Research Centre Canada, Patrick Waddell from Harmonic Inc, USA, Nick Fielibert from Scientific Atlanta/Cisco, Rich Chernock from Triveni Digital, USA, and Alan Delaney from Tandberg Television. Their topics were focused on the areas of media compression and synchronization, network QoS, digital set-top box

design and so on. Following the presentations, there was a panel discussion. Many people from the industry brought forward their questions concerned with quality issues in the IPTV deployment. Our speakers gave them satisfactory answers. Over 200 people attended the tutorial.

In whole, this tutorial was not only well presented throughout, but it was also well received by the audience. This successful tutorial gives special thanks to the efforts and support of BTS President William Hayes, Administrator Kathy Colabaugh and Dr. Yiyang Wu.

If interested in the presentation slides, you can download them from the web site: <http://ieee.org/organizations/society/bt/ibc08.html>



Presenters for the BTS tutorial "Quality Issues with TV and Multimedia over IP." L-R: Rich Chernock – Triveni Digital, Yiyang Wu – BTS Tutorial Chair, Hong Liu - Communications Research Centre Canada, Alan Delaney - Tandberg-Ericsson, Bill Hayes – BTS President, Nick Fielibert - Scientific Atlanta/Cisco, Patrick Waddell - Harmonic Inc

BTS Supports IEEE Milestone Event Related to Broadcasting

By Eric Wandel

BTS AdCom member and Principal Engineer Wavepoint Research, Inc.

The IEEE Broadcast Technology Society (BTS) recently sponsored an IEEE Milestone Event Award Program at Brant Rock, Massachusetts, to commemorate what was billed as the “First Wireless Radio Broadcast” by Canadian-born American inventor Reginald A. Fessenden in 1906. This broadcast event took place on 24 December 1906, and is touted as the first radio broadcast for entertainment and music to the general public. Reginald Aubrey Fessenden is credited for years of development work leading to his building a complete system of wireless transmission and reception using amplitude modulation (AM) of continuous electromagnetic waves. The significance of this development

was that it represented a revolutionary departure from transmission of dots and dashes in widespread use at the time.

Dr. John S. Belrose was among presenters at the Milestone Event held on 13 September 2008, at Marshfield and Brant Rock, Massachusetts. Belrose spent a career as a researcher at Communications Research Center (CRC) in Canada, and he spoke of the history behind the development efforts of Fessenden. It is clear that Fessenden was a true broadcast engineer employing scientific methods to advance the level of understanding of radio transmission.

Reportedly, on the night of 24 December 1906, Christmas Eve, Fessenden transmitted voice and music to an audi-

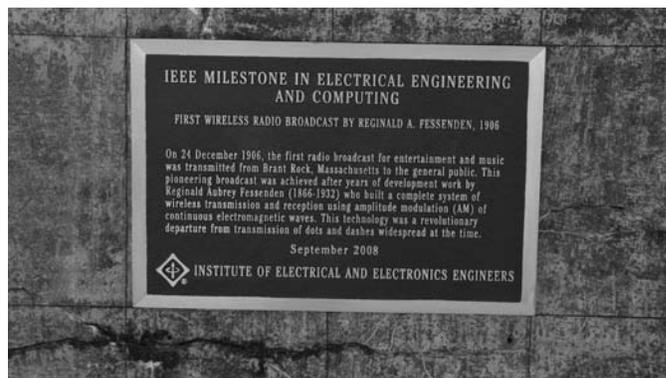
ence of listeners on ships up and down the East coast of the United States as far south as Guantanamo Bay, Cuba. It was the first scheduled voice-and-music radio broadcast in history.

A plaque was mounted on the tower base rock to commemorate the milestone (picture inset). The Broadcast Technology Society gives its salute to Reginald Fessenden for his accomplishment of helping to launch the broadcast industry. Attending on behalf of BTS were AdCom members Eric Wandel and James Fang as well as Publications Coordinator Jenn Barbato.

More details about Fessenden as written by Dr. Belrose can be found at: http://ewh.ieee.org/reg/7/millennium/radio/radio_radioscientist.html



Eric Wandell and James Fang BTS representatives



IEEE Milestone Plaque mounted at base where the Brant Rock tower stood



Gil Cooke, Chair of the Boston Sections History Committee



Dr. John S. Belrose, Keynote Speaker



Eric Wandel, Member of BTS AdCom, addresses the attendees at the Fessenden Milestone Event



Group photo of Milestone event attendees

Join an IEEE BTS Chapter

The local branch of your IEEE Broadcast Technology Society

A Chapter is the technical subunit of one or more IEEE Sections

- The BTS Chapters consist of Members who share technical interests and geographical proximity.
- Chapter activities may include guest speakers, workshops and seminars as well as social functions.
- Chapters provide Society members with valuable opportunities to network at a local level enabling their personal and professional growth.

For a list of BTS Chapters worldwide, visit the BTS web site at: <http://iee.org/organizations/society/bt/chapters.html>

For assistance, contact Jennifer Barbato, BTS Chapter Coordinator at j.barbato@iee.org

BTS TECHNICAL TRAINING COURSES FOR ENGINEERS FROM DEVELOPING COUNTRIES

Gerald A. Berman, Former BTS President

In 1999 the Broadcast Technology Society became co-sponsor, joining the Voice of America (VOA), in offering two technical training courses through the United States Telecommunications Training Institute (USTTI), a non-profit joint venture between leaders of the U.S. telecommunications, broadcast and IT industries and ranking officials from the federal government.

Michael Gardner, United States Ambassador to the International Telecommunication Union Plenipotentiary Conference in Nairobi, Kenya established the USTTI in 1982. He, along with industry and government leaders on the U.S. delegation, recognized the compelling need in developing countries for senior-level managerial and technical training in telecommunications and broadcasting. In order to respond to this need, Ambassador Gardner asked leaders of major, and often competing, U.S. communications corporations to join together to provide tuition-free training to qualified communications professionals, regulators and entrepreneurs from the de-

veloping world. U.S. industry leaders and government officials enthusiastically responded with the USTTI's first curriculum offering in 1983, which featured thirteen courses. From these humble beginnings USTTI expanded its curriculum and now boasts of 86 courses that address the radical technological changes that have shaped the telecommunication and IT sectors in the past twenty-five years.

VOA was one of the founding organizations of USTTI and in 1983 committed to sponsoring two courses annually. The courses focused on shortwave broadcasting and radio studios respectively and were 3 weeks and 2 weeks in duration. Because of my career as a university professor before joining VOA, I was given major responsibility for developing, coordinating and teaching the courses.

I structured the courses to include lectures, field trips and some hands-on practice. I enlisted the aid of numerous engineers and managers mostly from within VOA and a few from industry

to provide lectures in the areas of their expertise. Field trips were arranged to private sector radio and TV stations in the Washington, DC area and, up until a several years ago, a visit to VOA transmitting facilities in North Carolina was also included.

The courses are dynamic and I make changes every year to ensure that they remain current and relevant to the needs of the participants. They have evolved into 2 1/2 weeks each and are now respectively "New Technologies in Broadcasting" and "Radio and TV Studio Design, Operation and Management."

As the name implies the "New Tech" course focuses on evolving broadcasting services. Topics include digital radio and television, terrestrial, satellite, wide-band, cable and IP delivery systems and computer applications. The "Studio" course focuses on studio design issues. Topics include acoustics, building noise, microphones, camera and lighting issues, digital equipment selection, testing



New Technologies in Broadcasting Participants 2008. Front Row: Mark, Joseph & Joshua Berman; Nodir Tursunzade (Tajikistan) Second Row: Yunir Gataullin (Uzbekistan); Johannes Kgampe (South Africa); Boniface Takou (Cameroon); Jacob & Gerald Berman; Diane Berman; Rabi KC (Nepal) Third Row: Viliame Rasumu (Fiji); Lemma Hurisa (Ethiopia); Anthony Gakpey (Ghana); Gigado Ibrahim (Nigeria); Waqar Ahmad (Pakistan); Juan Rodas (Equidor)



Radio and TV Studio Design, Operation and Management Participants 2008. Front Row: Max Grubb, Management Consultant, Kent State Univ.; Daniel Nzeuche (Cameroon); Sandra Stewart, Program Administrator VOA; Gerald Berman Second Row: Hari Bhandari (Nepal); Tsogtsaaikhan Buyandelger (Mongolia); Johathan Aina (Nigeria); Rabindra Parajuy (Nepal); Isaac Nkwanga (Uganda); Guy Bang (South Korea); Fidelis Uzinyia (Nigeria); Alvin DeAsis (Philippines); Francis Obikoya (Nigeria) Third Row: Mahfuzal Haq (Bangladesh); Alfred Shikany, Coordinator USTTI; Kevin Tembo (Zambia); Michael Senteza (Uganda); Ernesto Canales (Peru) Fourth Row: Calvin Jarvis (Antigua/Barbuda); Jay Chauhan (India)

and maintenance, and management.

With the incredibly rapid changes in technology that have occurred in recent years it has become necessary to use more and more experts from industry and rely less on VOA engineering staff to cover the material. Unabashedly, I called on my "friends" from the IEEE Broadcast Technology Society to help. Response has been wonderful and many engineering professionals from BTS come back year after year. Because of the committed involvement of these volunteers I suggested that the Society become a co-sponsor along with VOA and officially share in the credit for the humanitarian effort. In 1999 the Society agreed and is now prominently listed as a co-sponsor in all of USTTI's literature. Aside from the volunteer help of BTS members, BTS also provides each participant with a one year free membership in IEEE and the Society. Many of the participants renew their membership and are proud to remain connected.

VOA provides a classroom and computer facilities at its offices in Washington, and all supplies, books, refreshments, transportation, phone, fax, e-mail, shipping and complete administrative and logistical support.

We typically receive from 75 to 125 applications for each course. The list of countries reads like the world atlas. After careful review of each applicant I extend invitations to about 40 individuals who are most qualified and for whom participation would provide the greatest personal benefit and benefit to his or her country. Attrition due to visa and financial problems reduces class size to a manageable number. Rarely do we end up with more than 15 individuals.

While some countries and organizations have sufficient resources to cover the travel and living expenses of their attendees, most developing countries do not and these applicants must seek scholarship help from USAID and other

funding organizations in order to attend. Both VOA and BTS provide limited financial assistance to a few participants who demonstrate the most promise.

The screening process is quite rigorous and is based on the applicant's educational background, job responsibility, potential for growth and potential for influencing policy and technical decisions within his or her organization and country. To aid in the evaluation each applicant is required to submit a brief essay of why it would be beneficial for them to attend. Sometimes, we receive a direct request from a country to admit an individual of their choice. Also, in the past, some organizations such as the Asia Pacific Broadcasting Union helped identify and fund several highly qualified applicants.

It is amazing to see how our courses have affected the lives of the people who have attended. I remain in e-mail contact with many and occasionally have met a few at an NAB or IBC convention when

they dropped by the IEEE/BTS booth to say hello. Invariably their story is the same. As a consequence of participation they have made advances in their organizations through promotions and increased responsibility in making or influencing major technical decisions.

In addition to the technical training, another important part of the course is the opportunity the participants have of experiencing American culture and ideas. This occurs through shopping excursions, meetings with VOA language service staff serving their countries, luncheons and other social events.

One such social event is a dinner party I host at my home for each class. The home atmosphere provides a setting where the participants can comfortably tell about themselves, their families and their philosophies of life. They develop friendships and are amazed to see that they are more alike in their aspirations, feelings and views than different, despite their

diverse cultural backgrounds. They also see America and Americans in a different light. The "personal" diplomacy afforded by the social interaction is priceless. Since recently moving to a retirement community, my home is no longer large enough to host the party. My son and daughter-in-law have volunteered their home and so the tradition continues. Using their home has proven to be very successful. The participants get to see an extended American family and get to meet my grandkids and their huge dog (160lbs) as well. It has been a boon for the kids as they get to meet people from all over the world.

Conducting these courses and touching the lives of the hundreds of participants over the years has been one of the most satisfying aspects of my career.

A more thorough description of USTTI and a description of our courses and those of the numerous other sponsors can be found in a course catalog published and distributed worldwide by USTTI.

The materials can also be viewed on the USTTI web page at "www.ustti.org." Our courses are also addressed on the IEEE/BTS web page under training, where you can see the day-by-day schedules.

Assuming budget approval from VOA, I will shortly be planning for the 2009 season. If you have suggestions for topics or for volunteering to present a lecture or two please contact me at g.a.berman@ieee.org.

Finally, if you know anyone in a developing country who you feel would benefit from attending either of our courses, or any of the other USTTI offerings, please encourage them to apply. Application instructions can be found at the USTTI web page, and applicants are encouraged to submit their materials by E-mail.

The accompanying pictures are of the 2008 classes. The first picture shows the "New Tech" participants at the dinner party in my son and daughter-in-law's home. The second picture is of the "Studio" participants at graduation.

BTS Argentina Chapter Report

By Valentin Trainotti, Chair

On 2 October 2008 at 6 PM the IEEE BTS Argentina Chapter hosted a presentation by Eng. Alberto Lewandowski at IEEE/Cicomra meeting room in Cordoba 744 1º downtown Buenos Aires.

His presentation, "Signal Compression for Digital TV" covered the following topics:

- Compression systems MPEG-2 and MPEG-4 are available for video transports services
- Communications systems by satellite, terrestrial, cable and telco.
- System development and future markets.

Alberto Lewandowski earned his degree in Electronic Engineering from Buenos Aires University and Post Degree in Telecommunications. He is the Latin America Regional Manager of Scopus Video Networks. He has eleven years experience in broadcasting marketing and video networking from the video signal to the RF reception.

On November 12, 2008 at 6 PM the IEEE BTS Argentina Chapter hosted a presentation by Eng. Carlos Simoni at IEEE/Cicomra meeting room in Cordoba 744 1º downtown Buenos Aires.

Presentation: "Optical Fibers, Broadcast and Communication Applications."

Summary:

Optical Fiber technology has applications on a lot of telecommunication networks for Broadcast and Communications with reduced cost in equipments and installations. This permits increased bandwidth and distances compared with the traditional copper lines or radio links.

Several technologies were be presented for Analog and Digital Apoplications.

Eng. Carlos Simoni has an Engineering Degree from Buenos Aires University and he is the founder and president of Serprotel Argentina.

His company provides Training and Services in Telecommunication Technologies.

He has more than fifteen years of experience in the Telecommunication Market in Argentina.

On December 4, 2008 at 6 PM the IEEE BTS Argentina Chapter hosted a presentation by Engs. Martin Fabris and Gustavo Boado at IEEE/Cicomra meeting room in Cordoba 744 1º downtown Buenos Aires.

Presentation:

"ARSAT an Argentine Satellite Company for Broadcast and Communication Activities"

Part I: Project Description. (Eng. Martin Fabris)

Arsat Objective and Mission
Strategic plan of development
Argentine Satellite System Architecture
Description
Space Segment
Terrain Segment

Part II: Satellite description (Eng. Gustavo Boado)

Arsat Satellite Architecture
Satellite General Characteristics
Subsystems Details

Martin Fabris is an Electronic Engineer from University of Buenos Aires and Master in Telecommunications from Universidad Catolica Argentina.

He is Senior Engineer of Satellites and Ground Station at ARSAT Argentina.

Gustavo Boado is an Electronic Engineer from University of Buenos Aires (1996). His task is Orbital Dynamic and Satellite Engineering of ARSAT Argentina.

IEEE BTS Japan Chapter Report

By Shuji Hirakawa, Chair

The BTS Japan Chapter had one joint meeting below with the Institute of Image Information and Television Engineers (ITE) during February 2008 to April 2008. A technical meeting was held on February 22-23, 2008, at Sunrise Kujukuri, Chiba, Japan. There were 9 technical presentations on general topics for broadcasting technology and one special topic for broadcasting earthquake early warnings by Hideaki Arimori (NHK).

The BTS Japan Chapter had two joint meetings below with the Insti-

tute of Image Information and Television Engineers (ITE) during May 2008 to July 2008. A technical meeting was held on June 20, 2008, at Kikai Shinko Kaikan, Tokyo, Japan. There were 3 technical presentations on general topics for broadcasting technology and one special topic for HDTV Camera on board Moon Orbiter KAGUYA by Seiji Mitsuhashi (NHK). Another technical meeting was held on July 31 – August 1, 2007, at Hokkaido University, Sapporo, Japan. There were 11 technical

presentations on general topics for broadcasting technology and one special topic for utilization of 3-D virtual space for TV programming production by Ando (NTV).

The BTS Japan Chapter is planning to have two joint meetings below with the Institute of Image Information and Television Engineers (ITE).

January 22-23, 2009 at Fukuoka University, Fukuoka, Japan.

February, 2009 at NHK Hiroshima Station, Hiroshima, Japan.

IEEE BTS Montreal Chapter Report

By Dr. Manijeh Khataie, Chair and Conference Coordinator

ATSC Digital Television

8-VSB Transmission System

Fundamentals & Measurement Seminar

Hosted by: IEEE Broadcast Technology Society Montreal Chapter

24-25 November 2008

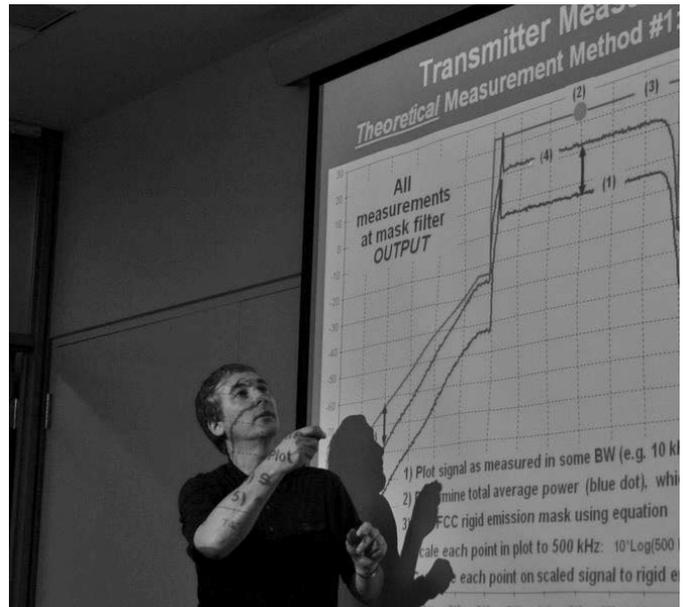
On Monday 24th and Tuesday 25th of November 2008, IEEE Broadcast Technol-

ogy Society – Montreal Chapter, hosted a training seminar on 8-VSB. This 1-day seminar conducted by Gary Sgrignoli (of MSW) focused on the ATSC's digital television (DTV) vestigial sideband (VSB) transmission system fundamental concepts & measurement methodologies. The seminar is a combination of the fundamentals and practical aspects of broadcast engi-

neering and aimed broadcasters, broadcast consultants, equipment manufacturers (broadcast, consumer, & test). The seminar was held at Concordia University, Norman D. Hébert Meeting Room, hosted by IEEE Broadcast Technology Society – Montreal Chapter and was sponsored by 11 companies and organizations. Following is a list of sponsors:



Dr. Manijeh Khataie (right), chair of IEEE BTS, Montreal Chapter and Dr. Seeyar, chair of IEEE Montreal Section are presenting an appreciation award to Mr. Gary Sgrignoli (left)



Gary Sgrignoli presents at the Montreal Chapter Training Seminar on 8-VSB

- IEEE Montreal
- IEEE Broadcast Technology Society
- Agilent Technology
- Tektronix
- Thomson Gras Valley
- Applied Electronics
- Larcen
- Axcera
- INCOSPEC Communication Inc.
- NOVANET Communications Limited
- Microwave Radio Communications

The sponsors also introduced their products at their respective promotional stands. They also brought test equipments

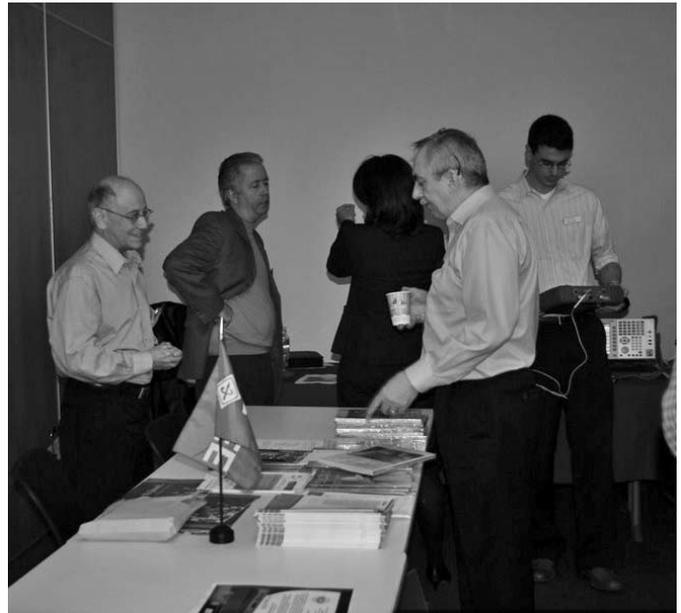
to do live measurements. This aspect of the conference inferred a learning experience to the break periods which also served as an opportunity for all of the attendees to interact. The latter aspect also occurred during question periods. Sixty broadcast engineers from different companies such as CBC, Industry Canada, Miranda, Videotron, Cogeco and TVA registered for this training seminar. Organizing this seminar was a great success for IEEE BTS Montreal, particularly regarding our effort in bringing industry and academia closer together.

We would like to thank Dr. Benjamin Seeyar, Chair IEEE Montreal section, Mr. Guy Bouchard from CBC and IEEE BTS, Dr. Reza Soleymani and Dr. Yousef Shayan from the Department of Electrical and Computer Engineering at Concordia University, and all my colleagues in PSQ Technologies Inc. for their help and support in this event.

Dr. Manijeh Khataie,
Chair of IEEE BTS – Montreal
Chapter,
Conference Coordinator



Gary Springnoli Speaks to a full audience



IEEE BTS Booth in the Exhibition room



Our sponsors in the exhibition room

BTS Chapter IEEE Princeton-Central New Jersey Section

By Joe Stack, Chair

The IEEE Princeton-Central New Jersey section Broadcast Technology chapter was re-instated this Fall. The BT chapter was revived by petition from 12 PCJS/BT members. Dr. Richard Chernock, CTO of Triveni Digital, presented “DTV & PSIP: What, Why and How” at the first meeting on October 23 at 6 pm at Panera Bread in Princeton. The 20 members and guests that came for the meeting spent a few minutes beforehand socializing over sandwiches, potato chips, sodas and cookies. During the hour-long presentation, Dr. Chernock covered the basics of Digital Television and delved into the inner workings of PSIP, the Program and System Information Protocol, which is the data that describes the data present in the ATSC digital TV transport stream. “It was great to have Triveni Digital and Dr. Chernock as a presenter at the kickoff BT meeting – especially during this time when DTV is carving out its niche with both



Dr. Richard Chernock (right), CTO of Triveni Digital, speaks with an IEEE PCJS / BT chapter meeting attendee after the DTV & PSIP presentation.

consumers and engineers”, said Joe Stack, BT chapter chairman. PCJS/BT is also pleased to have Rob Pettiford serve as the BT chapter vice-chairman. Look for BT meeting notices in your email box in the months that follow. Broadcast Technology is an arena that is continuously expanding – a

helpful and informative way to stay up-to-date is to discuss current trends with peers and come see what industry is creating. And, if you have an idea or suggestion for a meeting topic or presenter, please contact Joe Stack at: jstack@ieee.org or Rob Pettiford at: Robert.pettiford@frontiercorp.com



IEEE members and guests begin to gather and talk over refreshments prior to the first meeting of the IEEE PCJS / BT chapter at Panera Bread in Princeton.



Relaxing with sandwiches and sodas, IEEE PCJS / BT meeting attendees arrive and get set for the BT chapter meeting at Panera Bread in Princeton on October 23.

DTV Challenges – Your View?

by Ralph Justus, BTS AdCom Member

At this year's IEEE Broadcast Symposium, Richard Wiley's keynote presentation (The Digital Television Revolution: HD and Beyond) had an exquisite sentence with an economy of words that was stunning:

Along the way, we had to encounter and overcome numerous challenges and obstacles, any one of which could have derailed our entire program – e.g., daunting issues involving transmission quality, scanning formats, modulation schemes, aspect ratios, copyright claims, and so on.

Perhaps I was stunned that these "challenges" were summarized so briefly. At the time all the players in the U.S. and elsewhere were embroiled in what I term the issues du jour. Whether these were ripples along the journey, passing storms, sunamis, or whirlpools (to stretch the analogy), they seemed to consume extraordinary effort, time and resources as each one was resolved. It hardly seems fair to now leave them

without further reflection on their passing.

Readers are invited to apply their own 20/20 hindsight and offer their views on these or others. Perhaps this newsletter is the perfect venue to do this.

Your views? Send your comments to: rjustus@iee.org

Challenges

Transmission Quality

Scanning Formats

Modulation Schemes

Aspect Ratios

Copyright Claims

Issues

S/N, receiver noise figure, service replication

Interlaced vs. progressive 8VSB, COFDM

Table 3 Formats, CICATS

[what were they and where are they now?]

FCC Lacks Focus on Transition

by James E. O'Neal, Technology Editor, TV Technology and BTS AdCom Member



ALEXANDRIA, VA. Bill Meintel, speaking at the IEEE's 58th annual Broadcast Technology Society symposium here, contends that there are still numerous issues to be resolved before next February's DTV full scale rollout and says that the FCC and others involved don't seem to be fully focused on them.

Meintel, a partner in the consulting firm of Meintel, Sgrignoli & Wallace, was one of the presenters at last month's event

which featured presentations by several industry leaders on broadcasting-related technologies and issues.

"We don't know what's going to happen," said Meintel in referring to the post-Feb. 17 television world. "We're hoping for the best, but need to prepare for the worst."

WARNING SIGNS

In his presentation, "The U.S. DTV Transition-Will February 18, 2009 be a Catastrophe? What are the Problems and How to Fix Them," Meintel flagged several "warning signs" that could signal at least some view inconvenience, if not a major train wreck. These include:

- Lack of education at all levels
- Some 700 stations are changing channels in February;
- There is no requirement for DTV service to replicate analog

coverage;

- Too much confidence in DTV converter boxes;
- Too much confidence in cable/satellite service providers;
- The country's worsening economic situation.

Meintel said that the effect of ignoring these transition elements could cause a range of problems, including some that might be termed "catastrophic."

"It all depends on how you define catastrophe," said Meintel. "Is it going to be nationwide, local, affecting your station and your viewers? I think the metric could be defined as the percentage of viewers that will lose service [in] February."

EDUCATION NEEDS



In speaking about the problematic and mostly neglected transition factors, Meintel said the "education" factor especially troublesome.

"There's a real lack of education, he said." "From what I've seen, it ranges from 'the transition is coming; get ready, the end is near' to 'how to connect your converter box.' It needs to go well beyond this. The government hasn't been educated very well either, I think it fails to understand

the complexity of making this transition and has lost sight of the goal of continuity of service."

Meintel noted that some broadcasters have been only addressing their own "private" problems and not cooperating with their peers in creating partnerships to prepare for the transition. He also has issues with some of the set-top boxes being sold to allow analog receivers to tap DTV transmissions.

"The boxes are not all created equal—this is from my own experience," he said. "Some lack the necessary features; these were not really included in the NTIA coupon program. I'm also a little skeptical about whether the boxes in the stores actually meet the standards of the boxes they gave to the NTIA."

His DTV transition concerns also extend to viewers served by CATV or satellite distributors.

"How about non off-the-air service providers?" he asked. "Will the satellite and cable people get this right in February when the stations change channels and so forth? My personal experience with a major provider—who shall remain nameless—is that they've failed badly in handling small problems."

HARD TIMES

A brand new transition factor is the recent stock market meltdown.

"The economy has to be factored into this too," Meintel said. "The number of over-the-air viewers may increase when people decide they can't afford cable and satellite anymore. There also could be some broadcasters who may not be around come February—this will be a real loss of service."

Meintel said transmission facility changes are also a factor.

"We've got situations where broadcasters have to change channels in February," he said. "Is all this going to get done? I suspect that most will, but I think that it's doubtful that they'll all make it. And I think that some of them will make it, but they but may not have the facilities that are desired then."

He added that the large number of channel changes is going to affect viewers too.

"There'll be band changes affecting antennas and receivers that the consumer has to know about," Meintel said. "It's also going to require rescanning all of these set top boxes and receivers. If viewers don't, then they're not going to get all of the channels. The cable and satellite people are going to have to deal with this too."

Even if set owners and satellite/ wired service providers do get it right, service loss is still possible due to weak or missing signals.

"There are a number of stations who have filed applications with the FCC to maximize their facilities and this may help with coverage issues," Meintel said. "But a good many of these are not going to get built by February and a significant number haven't even been approved yet, and that's a real concern. Another thing is that there's never been any

requirement that DTV service replicate analog. You've got post-transition facilities that are based on this non-replication of analog service."

DTV RECEPTION

Meintel also identified problems associated with lessened signal strengths and inadequate receiving antennas.

"Since DTV doesn't fail like analog, this is likely to be the biggest problem around the country," Meintel said. "You're going to have locations where you had marginal analog service before the transition and digital service will fail. These locations are likely to be more prevalent closer in to the station where people are using indoor antennas now for analog. It may not be much of a problem out near the fringe."

Meintel noted that both analog and digital TV services are predicated on outside receiving antennas located 30 feet above ground, but as analog reception is quite forgiving, this requirement has largely been ignored.

He revealed that a sample DTV service study of a nine-station market performed by his company predicted that under ideal conditions, 1.1 percent of off-air viewers, using only indoor antennas, and living 20 miles away from transmitters, would lose service. In a typical environment, this figure will likely rise to 14 percent. The study shows that in a worst-case scenario, 40.5 percent of viewers could lose off-air television.

"At 20 miles and less, people will typically be using indoor antennas," Meintel said. "I believe that this is where most of our problems are going to be coming from."

SOLUTIONS OFFERED

Meintel issued a number of suggestions to make the transition smoother, saying that more had to be done than just showing viewers how to connect STBs. He called for a national call center clearinghouse to answer viewers' questions and assist them in resolving reception problems.

"This can't just be a Web site with a list of FAQs," Meintel said. "It will need navigation tools to help people find a solution for their particular problem."

He said side issues such as white space interference need to be tabled for the present, and full attention focused on the cutover.

"All these problems could lead to a real disaster. The government and others have to act quickly."

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James O'Neal graduated from the University of Arkansas. He retired from the Voice of America in 2006 and has more than 38 years of experience in broadcast engineering. He is now Technology Editor for the TV Technology Magazine and also serves on the BTS AdCom as a member of the BTS History Committee.

A BTS Profile:

Dr. Yiyan Wu

IEEE Fellow and BTS AdCom Member

The BTS is proud to profile Dr. Yiyan Wu in this issue of the Newsletter. Yiyan is an IEEE Fellow and a highly valued BTS volunteer who has made significant contributions to the advancement of the BTS and the IEEE. Yiyan has provided significant dedication, hard work, time and support to the BTS in the areas of publications, chapter development, tutorials and representing the BTS at ATSC, BroadcastAsia, IBC and NAB conventions. Yiyan serves as Editor-in-Chief of the BTS IEEE Transactions on Broadcasting. He is also Chair of the BTS Transnational Committee and the BTS Fellow Committee. Yiyan has more than 200 publications and received many technical awards for his contribution to the research and development of digital broadcasting and broadband multimedia communications

First Introduction to Technology.

Yiyan first became interested in electronics at age 7 when he built his first crystal radio. By age 8, he built a one transistor radio. With discrete parts, he continued increasing his receiver complexity by successively adding individual transistors to the hardware configuration until he finally built an eight transistor combination medium wave and short wave receiver. By the time Yiyan was 15, he had constructed a black and white television and an oscilloscope. In 1977, when applying for admission to university, Yiyan expressed his area of study to be TV Technology.

Dr. Wu received a Bachelor's of Engineering degree from the Beijing University of Posts and Telecommunications in 1982. While in Graduate School in Canada, Yiyan joined the IEEE as a student member after his Professor told the students about IEEE educational services and benefits. He earned his Masters in Eng. and Ph.D. degrees in electrical engineering from Carleton University, Ottawa, Canada, in 1986 and 1990, respectively. Yiyan's MS and Ph.D. theses addressed research works in image and video coding.



Dr. Yiyan Wu

After graduation, Yiyan worked at Telesat Canada as a senior satellite communication systems Engineer. In 1992, He joined Communications Research Centre Canada (CRC) and is now a Principle Research Scientist. Dr. Wu's research interests include broadband multimedia communications, digital broadcasting, and communication systems engineering. In addition to being an IEEE Fellow, he is also an adjunct professor of Carleton University in Ottawa, Canada; an adjunct professor at Shanghai Jiaotong University, Shanghai, China; and an advisory professor at Beijing University of Posts and Telecommunications, Beijing, China. Yiyan also acts as an advisor to many studies groups and research institutions around the world. Dr. Wu is a member of the IEEE Broadcast Technology Society Administrative Committee. He is the Editor-in-Chief of the IEEE Transactions on Broadcasting, and has been the guest editor of other IEEE publications. Dr. Wu has more than 200 publications and received many patents and technical awards for his contributions to the research and development of digital broadcasting and broadband multimedia communications. Yiyan has also been a member of the Canadian delegation to ITU-R Study Group 11 (television) and Study Group 6 (broadcasting) since 1994.

The list of such accolades bestowed upon Dr. Wu is long and impressive. He has been honored by the IEEE with elevation to Fellow Grade in 2001 for contributions to digital television research and standards development. In addition in the IEEE honored Dr. Wu with the 1990 Consumer electronics Society, the 2005 Scott Helt Memorial Award, and the Matti S. Sukola Memorial Award in both 2003 and 2004. He is also the recipient of the 2002 Canadian Government Federal Partners in Technology Transfer (FPTT) Innovation Award "in recognition of the exceptional innovation capabilities and scientific contribution.

Yiyan represents the IEEE on the ATSC Board of Directors. His participation is an important part of the ATSC community, more specifically, the Technical Standards world. He is an active participant in TSG subcommittees TSG/S9, TSG4, TSG/S3, and others.

Benefits of IEEE membership: Yiyan noted that the IEEE gives members many occasions to meet and network with a broad spectrum of professional people at IEEE and affiliated conferences and meetings. It provides opportunities to present tutorials and technical papers, publish in professional journals, assist each other with technical support, provide consulting and share professional ideas. The IEEE provides numerous technical opportunities for its members to participate in conferences worldwide with broadcast professionals in industry and academia.

Most challenging IEEE projects: Yiyan has supported the BTS over the years with many initiatives as a major participant in advancing its educations and Chapter goals. He has two major challenging IEEE projects which are currently in progress. He has had a key leadership role in organizing the IEEE BTS International Symposium on Broadband Multimedia Systems and Broadcasting since it began three years ago. In 2009 the fourth annual symposium will be held overseas for the first time in Bilbo, Spain. Over 200

papers have been received from 35 countries for this event. The other major challenging position Yiyan has with the BTS is serving as Editor-in-Chief of the IEEE BTS Transactions on Broadcasting. Under Yiyan's direction, guidance and coordination with more than twenty Associate Editors, and the BTS Publications Office. The BTS Transactions on Broadcasting is consistently demonstrating a continuing, significant increase in the quality, timeliness and quantity of technical papers published. Yiyan also served as Guest Editor of a spe-

cial issue of the IEEE Proceedings on Digital Television.

Advice to engineering students considering a career in broadcasting:

Broadcasting is a very interesting and dynamic area of engineering. New ideas and technologies are always being implemented to deliver content which keeps increasing its reach into computers, the Internet, mobile hand-held devices, and offering future enhancements such as 3D television. Broadcast engineers are always learning and applying cutting edge technologies in a rapidly expanding digital radio and television world.

Spare time: Despite his very busy schedule, Yiyan finds time for a plethora of outside-the-office interests. He says he enjoys traveling, swimming, skating, and skiing.

The above article is an update and expansion of Dr. Wu's profile article which appeared in the ATSC Publication "The Standard" March 2007 Volume Eight, Issue One. The BTS thanks the ATSC for granting permission to include its profile article of Dr. Wu in the BTS Newsletter. For more information about ATSC and its publications, please visit its web site www.atsc.org.

ATSC Projects Update

By Jerry Whitaker, VP of Standards Development, ATSC

A number of major projects are currently underway within the ATSC. The driving force behind this work has been the ATSC Strategic Plan. In July 2008 the ATSC Board of Directors reviewed and updated the Strategic Plan, a comprehensive roadmap for future work of the organization that reflects the evolution of technology over the next two to five years. The Board developed the Plan taking into account both the likely progression of technology and the importance of backwards compatibility with existing DTV consumer receivers. Ongoing efforts are focused on comprehensive solutions that enable compelling services and products. Major projects already underway include the following:

- **ATSC-M/H** – development of a standard to provide services to mobile and hand-held receiving devices.
- **NRT** – development of a standard for non-real-time (NRT) delivery of services that leverage the low cost of storage and provide consumers with content they want, when and where they want it.
- **ATSC 2.0** – new services for the conventional fixed DTV receiving environment. The initial phase of this project involved the distribution to ATSC members of a comprehensive poll on what features should be encompassed by ATSC 2.0. The results of this poll will guide the project as it

moves forward. The work of defining the features and capabilities of possible enhancements to the ATSC DTV system is being undertaken by the Planning Committee.

Although not directly related to new technologies, the current state of DTV audio implementation was identified in the Strategic Plan as an important issue needing further study in coordination with other industry organization. While the AC-3 Digital Audio Standard (document A/52) has been on the books for many years, implementation issues have been observed in the field with regard to lip-sync and sound levels.

ATSC-M/H

The major elements of the ATSC-M/H system have been selected and documented. If all goes as planned, in early December an ATSC-M/H Candidate Standard will be published. ATSC-M/H is being developed to support a variety of services including free (advertiser-supported) television and interactive services delivered in real-time, subscription-based TV, and file-based content download for playback at a later time. The standard may also be used for transmission of new data broadcasting services such as real-time navigation data for in-vehicle use.

A Candidate Standard (CS) is a specification that has received significant re-

view within an ATSC specialist group. Advancement of a document to Candidate Standard is an explicit call to those outside of the related specialist group for implementation and technical feedback. This is the phase at which the specialist group is responsible for formally acquiring that experience or at least defining the expectations of implementation. The parent Technology and Standards Group (TSG) must approve advancement of a document to Candidate Standard status; this done by a ballot of voting members of the group. The TSG ballot was in process as this issue went to press.

Because the Candidate Standard phase is intended to gain real-world implementation experience, ATSC member companies are already thinking about possible steps they can take to make sure the ATSC-M/H system functions as intended, and to identify any elements that might require additional work.

In a tip of the hat to the core ATSC DTV Standard—document A/53—the final ATSC-M/H standard will be known as A/153. Like A/53, A/153 will be modular in concept, with the specifications for each of the modules contained 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 – “Presentation Framework”
- Part 6 – “Service Protection”
- Part 7 – “Video System Characteristics”
- Part 8 – “Audio System Characteristics”

Part 1 of A/153 includes an overall system description and serves to tie the other Parts of the document together. An additional Part focusing on content protection is planned for later release.

The current work plan for ATSC-M/H meets the often-stated broadcaster need to announce the availability of future mobile/portable/handheld services in the first quarter of 2009. If all goes as planned, TSG will be asked to approve a ballot on an ATSC-M/H Proposed Standard by May 2009, with the ATSC process ending with final membership approval in Q3 of 2009.

NRT

Work continues in the Specialist Group on Data Broadcast to develop a comprehensive standard for non-real time services. As envisioned in the ATSC Strategic Plan, the increasing desire for “everything-on-demand” has changed customer expectations in the media industry. NRT capabilities are envisioned to cover a wide spectrum—some are similar to traditional television, such as clip services (news, sports, weather) and long-form content (push video-on-demand movies and personalized TV channels)—while others are relatively new to the broadcast space (music distribution, games, interactive applications, and reference material). Some NRT-enabled services may be totally invisible to the viewer (such as in-receiver targeted ad insertion).

The Planning Committee developed a comprehensive set of usage scenarios

and requirements, which formed the basis for the work now underway. The experts working on NRT believe the new services that will be enabled by this technology will be an important benefit for broadcasters. As persistent storage is becoming commonplace in receivers, content can be pushed ahead of use to allow viewer consumption whenever desired.

Audio Issues

Two areas of DTV audio implementation continue to be problematic—loudness variations and audio synchronization with video. These issues can only be addressed by a cross-industry effort. Accordingly, the ATSC established two groups within the Specialist Group on Video and Audio Coding to focus on audio, specifically:

- **Audio Loudness Group (S6-3).** It is important for the digital television system to provide uniform subjective loudness for all audio content. Consumers find it annoying when audio levels vary when changing channels, and when watching a single channel. Dialog, the spoken word, has been identified as the element that audiences adjust their volume to. Achieving an approximate level match for average dialogue level from all content is a desirable goal. While the AC-3 audio specifications in ATSC Standard A/52 provide syntax that makes this goal achievable, system implementation in the real world has proven more difficult than expected. Addressing the loudness issue encompasses a number of elements, which include mixing, monitoring, and proper encoding of local and network programs, commercials, promos, and all other content. The S6-3 study group continues to explore all facets of DTV loudness. The group’s goal is to identify prob-

lem areas and recommend practical solutions. S6-3 is currently developing a Working Draft Recommended Practice on Audio Loudness.

- **Audio Synchronization Group (S6-4).**

It is critically important that digital television deliver audio and video in proper synchronization to the viewer. However, the end-to-end DTV audio-video production, distribution, and broadcast system consist of a complex array of digital processing, compression, decompression, and storage devices. Each component in the system can impose delay on the audio and/or video signals flowing through it. Operationally, unequal delays can be imposed on the audio and video signals, respectively, and these delays compromise audio-video synchronization. While a given synchronization error may cause either a positive or negative differential shift in audio-video timing, the video signal is typically subjected to greater delay than the audio signal, and the tendency is therefore toward video lagging behind audio. Sound arriving in advance of the image is an unnatural physical phenomenon and is particularly noticeable and annoying to viewers. Lip-sync errors can occur at any step in the processing chain from the program source to the receiver. The Consumer Electronics Association (CEA) has undertaken the writing of an Engineering Bulletin (CEB) on receiver processing of time stamps. This work was identified in S6-4 and transferred to CEA as the logical place to author a document relating to receivers.

Get Involved

Work within ATSC is open to all organizations with a direct and material interest. If you would like to be involved in this ongoing work, please contact the author at jwhitaker@atsc.org.

Longley-Rice's Terrain Irregularity Parameter, Delta-H

By Sid Shumate, Givens & Bell

In the last article, I promised to discuss the Terrain Irregularity Parameter, Delta-H, and how it is used in the Irregular Terrain Model (ITM).

Background on Delta H, (Δh), the Terrain Irregularity Parameter

The process for a point-to-point calculation of the Delta-H starts in the **qlrpf1** (quick Longley Rice profile) subroutine, which calculates some of the preliminary coefficients for later use, and then calls on subroutine **dlthx** (delta h, experimental) to compute delta-H. The **dlthx** subroutine also makes calls to specialty subroutines, such as **qtile** and **z1sq1**, to do its job.

Tech Note 101 describes it as " Δh , the interdecile range of elevations between the two points x_1 and x_2 ". The interdecile range is a specific **interquartile range**; it is computed as the difference between the 10th and 90th percentiles.

Well, that's as clear as mud. Is the ITM documentation any easier to understand? With regard to describing the methodology and procedure for determining Delta-h, George Hufford stated in "The Algorithm", Section 1.3:

"These quantities, together with Δb (delta b), are all geometric and should be determined from the terrain profile that lies between the two terminals. We shall not go into detail here."

Oh. Great. So we are in obfuscated and/or undocumented territory without a map.

A similar terrain irregularity parameter is found in the FCC rules. The Longley-Rice delta-H terrain roughness factor is based on a similar concept to the FCC's terrain roughness factor, and the FCC's Figure 4, seen below, is useful in explaining the concept of where the delta-H comes from.

In more easily understood terms, to determine the Delta-H, we look at the path between the transmitter and the receiver. We cut off the first 10% percent of the path and the last 10% of the path, leaving the middle 80% of the path.

The FCC considers the area 6 miles (10 km) to 31 miles (50 km) from the transmitter as shown in FCC 73.333 Figure 4.

The process then cuts 10% of the top, and 10% off the bottom. The elevation heights considered in both the Tech Note 101 Longley Rice methodology and the FCC method are the same: the middle 80% of the elevations are considered, ignoring the bottom 10% and the top 10%. What is left are the height values of the terrain database points within the box represented by the vertical 6 and 31-mile lines, and the horizontal 90% to 10% height lines.

The ITM does this by reordering the elevations of the database points in a special array, in order from highest to lowest, so that the 90% and 10% points can be identified, and the elevations outside this range can be ignored. This occurs in two calls to subroutine **qtile** (quantile), once to determine the 90% quantile value, the bottom side of the box in Figure 4, and once to determine the 10% quantile value, the top side of the box.

An average straight line representing the average height of the elevations along the middle 80% of the path is then determined using a "least squares" methodology in calls to subroutine **z1sq1** (Z-one-S-Q-one, "Zee Least Squares subroutine, version One"). The amount of deviation of the elevations above and below this line is then calculated, and becomes Delta-h, the average terrain irregularity. This ITM procedure is a simplification of the Tech Note 101 methodology, which calls for calculating the deviation with respect to a line to which curved-earth correction has been applied.

Delta-h, the terrain irregularity factor, represents the variance of the terrain from the average terrain height line. The output of the **dlthx** subroutine is the value of delta-h. It is then used to determine sigma-h, the terrain roughness factor.

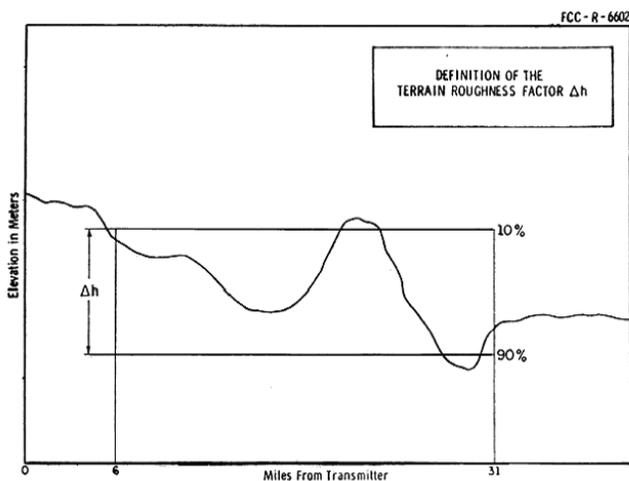
In Tech Note 101, on page 5-13, it states: "the terrain roughness factor (in Tech Note 101 here designated by a lowercase sigma sub h), is the root-mean-square deviation of modified terrain elevations relative to the curve $y(x)$ within the limits of the first Fresnel zone in the horizontal reflecting plane."

Deviation refers to the amount of difference between the value being considered and the arithmetic mean value. One of the most important uses of the root-mean-square is to determine the *standard deviation* from the arithmetic mean. The standard deviation from the mean is the root-mean-square of the deviations from the mean.

In classical statistics, the formula for calculating the variance of an unknown population variance is:

$$\sigma^2 = \frac{\sum(x - \mu)^2}{N}$$

Here the population parameter is abbreviated with the Greek letter sigma in lower case, the mean is a population parameter (μ), and the number of samples is represented with a capital N. The term $[x - \mu]$ represents the difference between the sample value (x) and the mean value μ ; this term



FCC § 73.333 FIGURE 4
(new)

is the deviation of the sample.

The standard deviation, represented by a lower case sigma, is simply the square root of the variance, or:

$$\sigma = ((\sum(x - \mu)^2)/N)^{1/2}$$

In the ITM, μ , or mu, is the value of the average terrain height line at the sample location, and x is the value of the elevation at the sample location. The upper case sigma (Σ) means that we compute, and then sum up, the value of x – mu at each sample point. We then divide this total by the number of sample points, N, to get the variance, a.k.a. delta-h, the terrain irregularity parameter, and take the square root of the variance to get the standard deviation, sigma-sub-h, a.k.a. the terrain roughness factor.

Please note that the *qlrpf1* subroutine, and the *dlthx*, *bzns* and *zlsq1* subroutines that are called during *qlrpf1*, were intended to be experimental early versions of L-R software. They are still in use today, with few modifications or corrections. George Hufford, in the ITM Manual, states:

“It should be noted that the original ITM is silent on many of the details for defining some of the path parameters. This is particularly true of the effective heights, and, to some lesser degree, of the terrain irregularity parameter Delta-h. The subroutine QLRPFL, in trying to automate the definition of all parameters, has been forced to define explicitly all missing details. It has done this in a way that seems reasonable and in full accord with the intent of the model. One should not, however, conclude that these efforts are completed. Hopefully, better results are obtainable.”

Now that we have explained what the delta-h and sigma-h are, and where they come from, how are they used in the ITM?

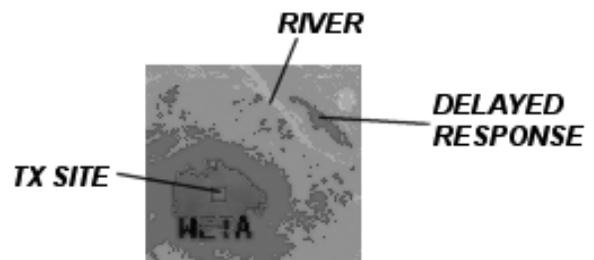
Sigma-h, the square root of delta-h, is used in the calculation of the two-ray loss, a.k.a. main ground reflection multipath loss, in the line-of-sight. The ITM methodology later adds an additional correction factor that causes the sigma-h to fade away with distance, an adjustment not found in Tech Note 101. This appears to be an empirical adjustment, i.e. an adjustment made to make the ITM output match the field measurement results. In the two-ray calculation, sigma-h is used to reduce the value of the two-ray loss as the terrain roughness increases. This happens rather rapidly, so that the two-ray losses are minimal by the time the delta-h increases past the range of 15 to 20 meters. Since the average delta-h for the continental U.S. is specified as 90 meters, it is obvious that the two-ray losses are significant only for relatively smooth-earth path conditions.

In the averaging system, delta-h is also used to determine the weighting factor between two-ray losses and “surface diffraction” losses from the transmitter out to distance dlsa. The distance dlsa is defined as the sum of the estimated smooth earth transmitter and receiver horizon distances. This causes variations in the output based on terrain irregularity.

The delta-h is also used in the diffraction range to determine the weighting of the two diffraction method results, be-

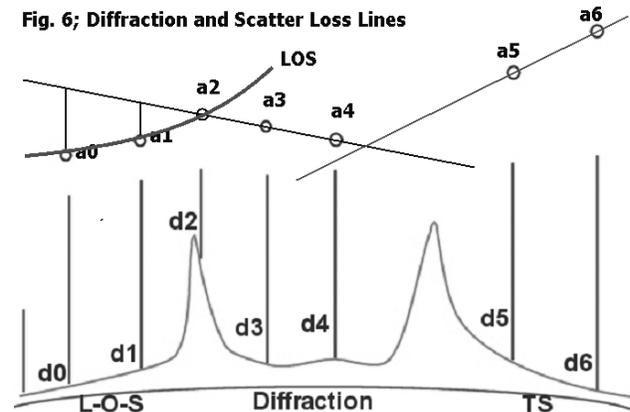
tween a knife-edge computation and a rounded-earth computation. This requires an assumption that the amount of terrain irregularity represented by the delta-h, as determined in the line-of-sight range and limited to a maximum range of 50 km, is also representative of the roundness and terrain roughness found on mountaintops in the diffraction range.

How does delta-h contribute to the famous “delayed response” of the ITM to terrain obstructions? Due to the fact that the delta-h is determined for terrain between 10 percent and 90 percent of the signal path, when large variations in the terrain enter the delta-h “window” at 90% of the distance from the transmitter to the receiver, a delayed “terrain” response” can be seen in the results. Note that in the below ITM-based Longley-Rice signal level map image of WETA, one can make out the Potomac river as a lighter line in the upper right, and the delayed “terrain response”.



The delta-h factor is only one of three major contributors to this delayed response. We have to look back at the last article, on the averaging system in the Fall 2008 issue, to find the other two. Below is Fig. 6 from that article. Note that the two of the three locations at which line-of-sight calculations are made to determine the curved L-O-S response line, are at d0 and d1.

Fig. 6; Diffraction and Scatter Loss Lines



When a series of Longley-Rice calculations are being made along a path to a receiver, the location of d0 and d1 will move along with the length of the path. Once the path length exceeds a minimum startup value, the value of d0 is set as being one-half of the distance from the transmitter to the transmitter horizon, and d1 is set to be five-eighths of the distance from the transmitter to the transmitter horizon. Over smooth earth, the transmitter horizon is first the receive site and extends as the receive site

moves away from the transmitter; then it stops and holds steady at the first obstruction. However, if the line of sight resumes as the receiver moves further away, as it can by looking over a relatively low first obstruction, then the length of the transmitter horizon jumps to a new value and starts to follow the receiver location again, and will continue this series of events until the highest obstruction visible from the transmitter, or the last horizon, is reached. The resulting Line-of-Sight (L-O-S) curve will be determined using the L-O-S results obtained at d0 and d1, as they follow behind on the path, so a second and third, later delayed response can be found if one looks at the loss results a0 and a1 separately. Because of the averaging system, all three responses are combined into the computation of the L-O-S line, from which the L-O-S result is taken at the receive site location.

So, while the responses are there, and tend to produce an overall statistical summary result that approaches a correct value for the entire area as a whole, the results of an ITM-

based Longley-Rice map have no positional accuracy; the delayed responses are a confused mix of delayed results derived from the delta-h factor and results computed at d0 and d1.

There is another problem; the computation of delta-h relies on calls to the **zlsq1** subroutine to determine straight lines representing the average height and slope of terrain along a selected path range. And subroutine **zlsq1** has problems; one of which causes its calculations to go wrong if anything but one single value of terrain samples is used. A hint; it is related to the number of samples used in the manual, non-computer calculation example in Tech Note 101. This explains why when a better, more detailed terrain database is used, with larger and larger numbers of terrain samples, the results get worse, not better. I will discuss subroutine **zlsq1**, this error, and a set of fixes for subroutine **zlsq1**, in the next article.

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Summaries of the Four BTS AdCom Meetings held during 2007

Summary AdCom Meeting 9 February 2007

Washington, DC, USA.

16 attendees, 7 participants by audio conference.

President Bill Hayes reported he is very happy to have been elected President and hopes that the Society will continue to grow under his leadership. April Monroe has formerly resigned her position as Society Senior Administrator. Kathy Colabaugh will continue as Temporary Society Administrator until a replacement is formalized. We need to develop a better working relationship with SBE. Both parties are interested. Open to suggestions on what can be done to begin more collaboration. Members-at-Large election results: Welcome to Gregory Best, Guy Bouchard, Charles Einolf Jr, Ralph Justus, and Thomas Silliman who will serve from 2007-2009. Announcement of AdCom Committee standing Chairs: Awards & Nominations – Sid Shumate; Publicity – Kerry Cozad; Broadcast Symposium – Guy Bouchard; Broadband Multimedia Symposium – Tom Gurley, Brett Jenkins; Education – Ralph Hogan; Historian – Noel Luddy; Membership and Chapter Development – Vacant; BroadcastAsia – Yiyuan Wu; Newsletter Editor – Bill Meintel; Parliamentarian – Ralph Justus; VP Publications – Charles Einolf; Strategic Planning – Eric Wandel, Brett Jenkins, Jon Edwards; Technical Activities – Ed Williams, James Fang; Transactions Editor-in-Chief – Yiyuan Wu; Transnational Committee – Yiyuan Wu; CSTB Exhibition – Dmitry Tkachenko; Standards: Audio/visual – Warner Johnston, RF Technologies – Greg Best; ATSC – Yiyuan Wu; CCIP & IEEE USA – Vacant; Committee on Man & Radiation (COMAR) – Jules Cohen; PACE – Ted Kuligowski; TAB New Technologies Directions Committee – Tom Gurley; USTTI – Gerald Berman;

Sensors Council – Charles Einolf; IBC Representative – Mike Bennett; Journal of Display Technology – Charles Einolf;

ITU-T – Wei Li, and Hong Liu are official liaisons to IEEE Standards Association; Bill Hayes would like committee reports posted constantly to the FTP. Committee Chairs are responsible for providing names, needs and direction of the committee. Membership Committee Report - Mike Bennett submitted his resignation as Chair of the Membership Committee since he did not have the time necessary to dedicate to this position. He has offered to help the standing committee members: James Fang, Eric Wandel, Ed Williams, Pablo Angueira and Brett Jenkins. The membership brochure that was created for IBC 2006 can be retooled to contain information about 2007 activities and distributed at NAB. Tom Gurley noted that typically 30% of our membership is dropped during February of each year due to folks not renewing. This is the largest contributor to lack of growth. IBC Report - Mike Bennett reported the IBC show will remain in Amsterdam for the foreseeable future. It is the second largest Broadcasting trades show in the world, after NAB. IBC has 44,000+ attendees, and it is already 90% sold out of space for 2007. BTS is one of six partners and holds an 11% share. The other partners are IET, IEEE, IABM, RTS, SCTE, and SMPTE. The Tutorial at IBC 2007 will be on IPTV. Web Site issues - Tom Gurley wants to see a spiffier website. We have a web development initiative to support the following: Maintain current site, develop new site, maintain new site. Ad hoc committee needs to be established to tackle the web page updates. Charlie Einolf and Pablo will discuss the Strategic plan for the future BTS website. Charlie thinks that all subcommittees should have a say. 2006 Broadcast Symposium – Guy Bouchard reported the Symposium was held on 27-29 September at the Hotel Washington, Washington, DC. 2008 NAB Tutorial - Dave Bancroft is finalizing plans for the BTS tutorial at NAB. 2007 Multimedia Symposium – Tom Gurley reported the 2007 IEEE Broadband Multimedia Symposium to be held in Orlando, FL

on 28-29 March. It will be held in conjunction with the CTIA trade show. Yiyang and his colleagues from CRC have agreed to do a tutorial for Portable 2007. Over 80 abstracts were submitted, with 56 selected. Paper activity and quality is up over last year. Not as many traditional broadcasters as in the past. Financial Report – Lanny Nass reports that BTS is financially sound. Education Report – Ralph Hogan reports Turner Broadcasting would like to team with BTS to try to establish Student Chapters, etc. Pete Sobel, IEEE Corporate & Foundation Partnerships, contacted BTS to find out whether the Society could assist with training young broadcasters (Turner, Cisco etc). The program needs to be fashioned after what Gary Sgrignoli does. “Traveling Education.” A syllabus needs to be created and trainers identified. We have money to support this effort in our budget. Do we go further with Turner on this initiative? Ralph Hogan, Tom Gurley, Turner Broadcasting and IEEE Educational Activities will develop a plan through conference calls. RF Standards Report – Greg Best reported that RF Standards have not progressed very quickly. They are still waiting for FCC action. Standard will soon be entered into the balloting process. Greg suggests that Standards Training could be added to the Annual Broadcast Symposium. IEEE.tv – Tom reports that we have 24 video tapes taken at the 2006 Fall Symposium. IEEE.tv suggests that we find out what the content is, how useful the footage is, and then determine what the Society is interested in promoting. Other Committee and Reports Received but not discussed - Awards & Nominations – Sid Shumate; Argentina Chapter – Tino Trainotti; Transactions on Broadcasting – Yiyang Wu; Newsletter – Bill Meintel; Transnational Committee – Yiyang Wu; Fellows Committee – Yiyang Wu. Future Meetings - The next AdCom meeting will be held at NAB, Tuesday evening, 17 April. The October AdCom meeting will be held in conjunction with the Fall Symposium. It will be held on Tuesday 30 October. Meeting Adjourned.

**Summary BTS AdCom meeting 17 April 2007
Las Vegas, NV USA**

18 attendees, 5 participants by audio conference

Welcome and Introductions by President Bill Hayes. Education Report – Ralph Hogan, Tom Gurley and Pete Sobel have been discussing ideas for collaboration with Turner Broadcasting. Ralph will attend an event Turner is hosting at NAB. Turner Broadcasting is very excited about the possibilities for an educational collaboration with BTS. BTS Yearbook – Kerry Cozad suggests posting an electronic Membership Directory to the BTS website. This directory should be available on the web to members only with a password required. Kerry will continue to coordinate the historical pieces, photos, history of the Society etc. IBC Report - Mike Bennett. Reported IBC 2007 space has been completely sold out. Conference program has been completed. IBC Tutorial 2007 – Yiyang Wu reported the 2007 IBC tutorial will be on IPTV. It will be 1.5 hours and presented in a room that can seat 700 plus. Membership Report – Tom Gurley - Membership statistics have been distributed for March. 29%

of all Society members go into arrears. This is consistent with the number of members that are dropped each year. BTS had a 6.3% increase in membership each year. IEEE Member Services will be doing a phone campaign to contact those BTS members who have dropped. IEEE.tv – Tom Gurley reported that we have video taped the 2006 Fall Symposium. There are 24 tapes of footage. IEEE.tv wants short programs of what Societies do. Highlights of the Symposium would be a nice production. IEEE.tv production can be a Symposium advertisement for us. 2007 Multimedia Symposium – Tom Gurley reported that the Multimedia Symposium was very successful. There were 110 attendees. Two day Symposium with two sessions happening at the same time. We also had a very successful Poster Session. The majority of the attendees were a much younger crowd. 2008 Multimedia Symposium will again be located with CTIA, this time back in Las Vegas. 57th Annual Broadcast Symposium – Guy Bouchard reported that a Call for Papers has been distributed. The abstract deadline is 21 May. Decisions on the abstracts are expected in early July. Transactions Report – Yiyang Wu reported the transactions continues to grow with more submissions, more pages published and a better quality of papers published. Yiyang Wu would like to increase the page count for 2008. There will again be another Special Issue. Regular issue page count is 532. Special issue should add another 150 pages. Motion Unanimously Approved: Increase the page budget for the IEEE Transactions on Broadcasting to 700 pages for 2008. Financial Report – Lanny Hass reports that BTS continues to be financially healthy. Chapter Reports: St. Petersburg – Dmitry Tkachenko reports on his very active St. Petersburg Chapter. Their next conference International is (NEW2AN) in September 2007. The event draws an international audience, not just from Russia. 30% are from outside Russia. Argentina – Valentin Trainotti reports his Chapter also has an active program. Many technical meetings are held, with more than 30 in attendance at each one. Dublin, Ireland – Yiyang Wu is in the process of creating a new Chapter in Dublin. Paper work and member signatures are needed to be completed. The Ireland potential Chapter participants have requested that a BTS member come to their first meeting to present a technical program. RF Standards Report – Greg Best reported that the Recommended Practice revision has been approved. It has gotten past the editorial coordination, is now out for final vote, and will then be balloted. Significant progress has been made. Audio/Video Standards have been referred to Warner Johnston. These standards may be brought forward for action. If so, there is significant work that needs to be done. New Business - Bill Meintel has been researching old documents and FCC reports dating back to the early 1950s. Bill would like to propose that the paper materials be scanned and created into a digital, searchable electronic document. A Committee will be needed to investigate the how this project might be completed, how much it would cost, and how it could be marketed, sold, or available to members only. Yiyang Wu would like to hold a face to face meeting of all of the IEEE Transactions on Broadcasting Editorial Board. Yiyang suggests that this meeting be held during the 2008 Multimedia Symposium. NAB Tutorial 2007 – Dave Bancroft reported that the NAB tutorial was a huge success and created quite a

bit of traffic at the BTS booth. There were approximately 200 in attendance, as all of the CDs and programs were distributed. Future Meetings: The next AdCom meeting will be held at IBC, Thursday evening, 6 September. The October AdCom meeting will be held in conjunction with the Fall Symposium. It will be held on Tuesday 30 October. Meeting Adjourned.

Summary BTS AdCom meeting 6 September 2007 Amsterdam, The Netherlands

12 attendees, 5 participants by audio conference.

President Bill Hayes reported Warner Johnston has agreed to take over from Alan Godbar as AV Standards Chair. Ralph Hogan has accepted the position of Membership Chair. James Fang offered to help him with committee members Pablo Angueira, Mike Bennett, Eric Wandel, Ed Williams, and Brett Jenkins. Treasurer's report – Lanny Nass reports the BTS continues to be very well off financially. Chapter Reports - Tom Gurley reports that the joint UKRI Chapter in London is finally complete. Turner Broadcasting is requesting a Chapter in the Atlanta area. Tom Gurley will be contacting Jim Farmer of CES for the possibility of a joint BTS/CES Atlanta Chapter. Dmitry Tkachenko reports that the Russia Chapter remains very active. IBC Report - Mike Bennett reports the IBC 2007 was sold to full capacity. The IBC convention will remain in Amsterdam for the foreseeable future. The BTS tutorial on IPTV, at IBC, was a resounding success! There were nearly 300 in attendance. Nominations – Sid Shumate is gathering names for the Members-at-Large election. 2008 Multimedia Symposium – Tom Gurley reports the 2008 Multimedia Symposium will again be located with CTIA, this time back in Las Vegas from 31 March-2 April. Education Report – Ralph Hogan, Tom Gurley, and Pete Sobel (IEEE) visited Turner Broadcasting in Atlanta. After touring their facility, discussions were regarding the type of collaboration Turner is interested in. They would like a training program for new broadcasters, to integrate them with IT/engineering transitions. Turner has expressed an interest in the BTS Newsletter. 2008 NAB Tutorial – Bill Hayes advised that Tom Gurley is our NAB contact and will submit the proposal for the BTS Tutorial at NAB. The following committee reports were provided separately but not discussed: BroadcastAsia – Yiyang Wu; Transactions Report – Yiyang Wu; Newsletter Report – Bill Meintel. New Business - Kathy will send an invitation to the Broadcast Symposium Session Chairs to attend our AdCom meeting on 30 October 2007. Meeting adjourned.

Summary BTS AdCom meeting 30 October 2007 Wash- ington, DC USA

24 attendees 1 participant by teleconference

Presidents Report – Welcome and Introductions by Bill Hayes. Topics for the 2008 BTS Tutorials: NAB Tutorial – Tom Gurley has sent proposal to NAB for “New Anytime Anywhere Service Opportunities for Television Broadcasters.” Proposed a 3 hour tutorial. Waiting for response.

IBC Tutorial – Bill Hayes asks for someone to spearhead the proposal. Pablo Angueira, Yiyang Wu and Brett Jenkins agree to

draft three proposals. All will be offered to IBC to choose the best fit for this audience. Nominations for Members at Large Election– Sid Shumate reported that Dmitry Tkachenko and Richard Friedel cannot be nominated for this election. They are just finishing their second consecutive term. Brett Jenkins, Dave Bancroft and Tino Trainotti are eligible to run for a second term. Christine Di Lapi and Jin Zhang will run again, after non-election in 2007. 2007 IBC report –Mike Bennett thanks the AdCom for attending IBC. 43,000 meters of space were sold for 2007. Nearly 47,000 attended the 2007 show. The Partnership Village will be redesigned for 2008. Partners wanted a more open accessible way for the public to gather information and literature. 2007 Broadcast Symposium – Guy Bouchard reported three days of technical papers. No tutorial. More sponsors than in previous years. A lot of International participation. Guy would like suggestions for a one day tutorial. Discussion held as to how to get CEUs awarded for the Symposium. Motion passed to: Investigate how BTS can have CEUs awarded to symposium attendees. Discussion held on venue and dates for 2008 and 2009 Symposiums. Both to be held at the Westin Hotel, Alexandria, VA, in mid October. Awards – Sid Shumate reported that the Scott Helt Award and the Matti Siukula Award were both won by Oded Bendov. Suggestion made to create an Award to mirror the Matti Siukula Award. This one would be for the Best Paper presented at the Broadband Multimedia Symposium (Spring). Motion passed to: Create a new award for the Best Paper presented at the Broadband Multimedia Symposium. 2008 Broadband Multimedia Symposium – Yiyang Wu reported that the Broadband Multimedia Symposium will be held in the Hilton, Las Vegas, NV from 31 March to 2 April 2008. Nearly 140 abstracts have been submitted. Publications Report – Charlie Einolf reported that the Journal of Display Technology is still seeing a financial loss. 450 pages published per year. BTS has the highest percentage of subscribers (86). BTS Newsletter – Bill Meintel reported the Newsletter keeps improving. We are still lacking enough articles for the practicing engineer. Transactions – Yiyang Wu reported that the Transactions is on schedule and on budget. Special Issue on IPTV Quality Issues scheduled for Sept 2008. 50 papers submitted. Ralph Justus commented on the metrics of the Transactions. Congratulations are due for the huge improvement over the last few years. Sensors Council Report – Charlie Einolf reported the Sensors Journal is slightly positive financially. Financial Report – Motion passed to approve Lanny Nass's Treasurer's report approved as submitted. Education Committee – Ralph Hogan, Phyllis Caputo and Pete Sobel will be crafting a proposal from BTS to Turner Broadcasting. They are still looking for individuals willing to lead tutorials on Education for Broadcast Engineers, being assimilated into the IT world and vice versa. Goal – Give Broadcasters IT skills, give IT broadcasting skills. Proposal will contain both classroom training and learning modules. Plus tutorials, seminars and internet modules.

Chapter Report – Valentino Trainotti reported that the Argentina Chapter Seminars held this summer were very well attended and received. Tom Silliman traveled to Argentina to speak at the meeting with 30 plus in attendance. There was

also a seminar in June, and one is planned for December. Potential Dallas Chapter - Valentino met with Bob Denny who will try to sign up 12 local BTS members for a new Dallas Chapter. Standards Report – Greg Best reported that the 1631 Standard is on the docket for approval at the Standards Board meeting in December. Video jitter Standard has been recommended to be withdrawn. Warner Johnston has been in contact with IEEE Standards. He will be working on updating the activities on Video Standards. Dave Maxon, IBOC expert, says that the same issues exist for radio mask emissions as with DTV. New Business - Bill Hayes suggests that AdCom try to come up with small, one day tutorial suggestions, modeled after what Ben Dawson etc, is doing with the NAB Antenna Computer Modeling Seminar. Would like some specific target ideas that could be made into small seminars (one day – hands on). Greg Best – Emission Mask measurement tutorial? Eric Wandel suggests that BTS be a sponsor

of the GWEC Summit at Rose Holman University. This is a program for Undergraduate Engineering students. Motion passed: Proposal for BTS to donate \$500.00 to Rose Holman University, GWEC Summit, to help with their program for Undergraduate students. Future Meetings - No decision has been made on the location or date for the January/February meeting. New AdCom Members at Large need to be identified first. The Spring AdCom meeting will be held at NAB. Summer meeting – TBD, Fall meeting - 14 October 2008 – Westin Hotel, Alexandria, VA; The September 2009 meeting to be held at IBC. Meeting Adjourned.

Note

The above are summaries of the AdCom meetings held during 2007. If you want to see the complete AdCom meeting minutes, please contact Kathy Colabaugh, BTS Senior Administrator at kcolabaugh@ieee.org.

In Memoriam

Robert John Plonka, 69, of Quincy, IL died Friday, October 17, 2008, after a long illness.

As a graduate of Michigan State University with a Bachelor's Degree in Math and Physics, he was a lifelong Spartan fan. His passion was broadcasting and he worked at CBS in New York City be-

fore coming to Quincy in October 1976. He was a Principal Systems Engineer at Harris Corporation for 26 years and held 19 patents. In October 2000, he was awarded the IEEE Matti S. Siukola Memorial Award for presenter of the year and in January 2008 Harris Corporation was awarded a Technology &

Engineering Emmy Award from the National Academy of Television Arts and Sciences based on ATSC filter technology pioneered by him.

Bob was a good friend of the IEEE Broadcast Technology Society and gave several presentations at the annual BTS Broadcast Symposiums.

2009 IEEE International Symposium on Broadband Multimedia Systems and Broadcasting



13 - 15 May 2009
Euskalduna Conference Centre
Bilbao, Spain

SAVE THE DATE!

The *IEEE International Symposium on Broadband Multimedia Systems and Broadcasting (BMSB)* is an industry-oriented premier forum for the presentation and exchange of technical advances in the rapidly converging areas of multimedia broadcasting, telecommunications, consumer electronics, and networking technologies.

This industry-oriented Symposium will bring together content originators and distributors, wireless service providers, technology developers and suppliers of equipment, systems and consumer platforms, focusing on research and development, applications, and implementation of mobile and portable multimedia systems.

Topics are focused on the following five areas:

- Multimedia systems and services
- Transmission and networking
- Multimedia processing
- Multimedia Quality; Performance Evaluation
- Multimedia devices

Papers on Mobile TV, IPTV, Datacasting, and portable, mobile and handheld devices, from a systems and service-deployment perspective, as well as the enabling transmission and multimedia signal processing technologies will be presented.

For details visit the Broadcast Symposium website:
www.ieee-bmsb2009.org



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14 – 16 October 2009

Alexandria, VA USA

Call for Papers

Final Deadline for Abstracts: 15 May 2009



Please mark your calendar to attend the 59th Annual IEEE Broadcast Symposium to be held at the Westin Hotel in Alexandria, Virginia on 14-16 October 2009.

The Symposium Committee seeks technical papers on the following topics:

- Technical issues associated with the termination of analog television broadcasting
- Repurposing of analog television broadcast transmitters
- Digital radio and television systems: terrestrial, cable, satellite, Internet, wireless
- Streaming, IPTV, VoIP, VoD, Mobile TV, Wireless Multimedia
- Wireless Broadband Networks; e.g., IEEE 802.22 Wireless Regional Area Networks (“WRANs”)
- Transmission, propagation, reception, re-distribution of broadcast signals
 - AM, FM, and TV transmitter and antenna systems
 - Tests and measurements
 - Cable and satellite technologies:
 - *Interconnections with over-the-air broadcasters* • *Transport stream issues*
 - *Re-purposing of navigational information*
 - Advanced technologies and systems for emerging broadcasting applications
 - Reception:
 - *Software-based receivers* • *DTV and IBOC reception issues* • *Smart antennas for indoor use* • *Noise-figure management in a home environment* • *Compression and modulation for mobile and hand-held sets* • *Diversity reception under dynamic multipath* • *Frequency- and time-domain equalization* • *Wireless home distribution*
 - Transmission:
 - *Dynamic sharing of bandwidth* • *Spectrum re-packing optimization* • *New extensions for the ATSC VSB standard*

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 the broadcasting industry.

Prospective presenters are invited to submit extended abstracts of 500-1000 words by e-mail to bts@ieee.org. **Please indicate that the abstract is submitted to the 2009 Annual IEEE Broadcast Symposium**, and include the corresponding author’s full name and contact information including: Affiliation, address, e-mail, and phone number. Abstracts may be submitted at any time for consideration to be included in the 2009 Symposium technical program. Final deadline for abstracts is 15 May 2009.

For more information about the IEEE Broadcast Technology Society, visit our web site: www.ieee.org/bts

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IEEE Transactions on Broadcasting

Editor-in-Chief

Yiyan Wu

Angueira, Pablo

Bilbao Engineering College
Alda. Urkijo S/N. 48013
Bilbao, Spain
jpanbup@bi.ehu.es

Bancroft, David

Old Boundary House
The Warren
Caversham, UK
Reading, RG4 7th
dave.bancroft@thomson.net

Berman, Gerald A.

3005 S. Leisure World Blvd.,
Apt. 315
Silver Spring, MD, 20906
g.a.berman@ieee.org

Best, Greg

Greg Best Consulting, Inc.
9223 N. Manning Ave.
Kansas City, MO 64157
gbconsulting@kc.rr.com

Bennett, Michael

mikebennett@supanet.com

Bouchard, Guy

CBC Radio
1400 Boul. Rene-Levesque E.
Montreal, Canada H2L 2M2
guy_bouchard@radio-canada.ca

Cavell, Garrison

Cavell, Mertz & Assoc. Inc
7839 Ashton Ave.
Manassas, VA 20109
gcavell@cmdconsulting.com

Cohen, Jules

Consulting Engineer
3330 N. Leisure World Blvd #828
Silver Spring, MD 20906-5653
jules.cohen@ieee.org

Cozad, Kerry

P.O. Box 949
22 Tower Rd.
Raymond, ME 04071
kerry.cozad@dielectric.spx.com

Di Lapi, Christine

Motorola
1455 Pennsylvania Ave NW
Washington, DC 20004
p25543@motorola.com

Edwards, Jonathan

Dutrel, Lundin & Rackley
201 Fletcher Ave
Sarasota, FL 34237-6019
Jon@dlr.com

Einolf, Charles

3007 Argentina Place
Mitchellville, MD 20716
c.einolf@ieee.org

Fang, James

12 Spaulding St. #3
Wakefield, MA 01880
james.fang@ieee.org

Friedel, Richard

FOX Broadcasting
10201 W. Pico Blvd
Los Angeles, CA 90064
richardfr@fox.com

Gurley, Thomas M.

229 Old Colony Way
Rocky Mount, NC 27804
tgurley@ieee.org

Hayes, William T.

PO Box 244
Johnston, IA 50131-0244
Hayes@iptv.org

Hogan, Ralph R.

1004 S. Blaine St
Moscow, ID 83843-3806
r.hogan@ieee.org

Jenkins, Brett

ION Media Networks
New York, NY
brettjenkins@ionmedia.tv

Johnston, Warner W.

wwjohnston@iecc.org

Justus, Ralph

5405 Cromwell Drive
Bethesda, MD 20816
rjustus@ieee.org

Kuligowski, Theodore J.

t.kuligowski@ieee.org

Luddy, E. Noel

11121 Hurdle Hill Dr.
Potomac, MD 20854
luddyen@aol.com

Meintel, William

Meintel, Sgrignoli & Wallace
Warrentown, VA 20188
wmeintel@computer.org

Nass, E. Lanny

CBS Corp.
Suite 350, 2175 K St. NW
Washington, DC 20037
elnass@cbs.com

O'Neal, James E.

4104 Javins Dr
Alexandria, VA 22310
crm114j@verison.net
joneal@imaspub.com

Shumate, Sidney

BIA Financial Network
15120 Enterprise Ct.
Ste 100
Chantilly, VA 20151
sshumate@bia.com

Silliman, Thomas

Electronics Research, Inc.
7777 Gardner Rd.
Chandler, IN 47610
tom@eriinc.com

Simon, Michael

Rohde & Schwarz, Inc.
8661-A Robert Fulton Dr.
Columbia, MD 21046
mike.simon@rsa.rohde-schwarz.com

Wandel, Eric R., P.E.

Wavepoint Research, Inc.
7444 Timber View Drive
Newburgh, IN 47630
eric@wavepointresearch.com

Williams, Edmund A.

1510 Loris Loop
The Villages, FL 32162
ed.williams@ieee.org

Wu, Yiyan

Communications Research Ctr.
3701 Carling Ave.,
P.O. Box 11490
Station II, Ottawa, Ontario
Canada K2H 8S2
yiyan.wu@crc.ca

Zhang, Jinyun

Mitsubishi Electric res. Labs
201 Broadway
Cambridge, MA 02139
jzhang@merl.com

Society Sr. Administrator

Kathy Colabaugh
IEEE Technical Activities
445 Hoes Lane
Piscataway, NJ USA 08854
tel: 732 563 3906
bts@iecc.org

Publications Administrator

Jennifer Barbato
IEEE Technical Activities
445 Hoes Lane.
Piscataway, NJ USA 08854
tel: 732 562 3905
bt-pubs@iecc.org

On the Lookout for a Few Good Fellows

By Rosann Marosy

It's not too early to nominate an IEEE senior member for the Fellow class of 2010. The deadline is 1 March 2009.

This prestigious group now numbers 6000 out of IEEE's total of 375 000 members. While many view Fellows as visionaries, pioneers, technology leaders, or influential business executives, you probably know them as your friends or colleagues. So take the time to nominate someone you know in one of four Fellow categories: application engineer, educator, research engineer, or technical leader.

To submit a nomination or learn more about these categories and the Fellow Program, visit the Fellow Web site at <http://www.ieee.org/fellows>.

Institute of Electrical and Electronics Engineers, Inc.
445 Hoes Lane
P.O. Box 1331
Piscataway, NJ 08855-1331