

THE Signal

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The Association for Broadcast and Multimedia Professionals

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Jay Adrick To Keynote SBE National Awards Dinner in Columbus

SBE President Jerry Massey has announced that nationally known broadcast consultant Jay Adrick will be the keynote speaker at the 2016 SBE National Awards Dinner. The dinner is the closing event of the SBE National Meeting, held in conjunction with the Ohio Broadcast Engineering Conference in Columbus, Ohio on October 27.

Adrick is a 50-year veteran of the broadcast industry and is a leader in the design and integration of digital broadcasting sys-

tems. He retired as VP of broadcast technology from Harris Corporation's Broadcast Communications Division and is now a technology advisor to the Transmission Business Unit that was known as Harris Broadcast, but is now named GatesAir.

At Harris, Adrick led the development of the Advanced Television Systems Committee (ATSC) Mobile DTV system, provided strategic guidance for the development of new broadcast products and represented Harris in the world of broadcast

standards. He led the teams that designed and built many of the leading broadcast facilities, among them, The Golf Channel, The Weather Channel, The Discovery Channel, National Public Radio, The Voice of America, Georgia Public Broadcasting and the Iraqi Media Network.

Adrick served as



Adrick

see [ADRICK](#), p.3

SBE Announces 2016 National Awards Winners

The 2016 SBE National Awards, which recognize excellence and achievement by individual members, SBE chapters and Sustaining Member companies, have been announced. The two highest individual awards are the Robert W. Flanders SBE Engineer of the Year and the James C. Wulliman SBE Educator of the Year.

The Robert W. Flanders SBE Engineer of the Year award is presented to a member who has excelled in his or her career while furthering the mission of the SBE. Candidates are nominated by their peers. Winner of the award for 2016 is Michael Hendrickson, CPBE, CBNT of Lakeville, MN. Hendrickson is a former SBE Chapter 17 chair,



Hendrickson

and currently a member of the SBE National Board of Directors.

The recipient of the James C. Wulliman SBE Educator of the Year award is recognized for outstanding service and excellence in sharing knowledge through teaching other broadcast engineers. The winner of the 2016 James C. Wulliman SBE Edu-

cator of the Year award is Cheryl Lustenberger, CBNT, CTO, of Chapter 11 in Boston. Lustenberger is the assistant manager at the Tufte Television Facilities at Emerson College and has been instrumental in creating a fun and educational environment to students interested in broadcast engineering.

Mike Hendrickson has been in the broadcast engineering industry for more than 35 years. Recently retired, Mike, recently was elected to the Board of Directors. Prior to retirement, Mike was director of engineering for American Public Media and was responsible for the upgrade of Minnesota Public Radio stations in Minnesota and several stations in Florida. In addition to being a former chapter chairman of Chapter 17, Mike has held several offices. Mike wrote an early version of a database that contained entries of most of the 950MHz aural studio/transmitter link assignments in the area. He is remembered by some SBE members for the demonstration of this database at an SBE meeting in the

early 1980s, when a static discharge from bad carpet to the computer ended the database demo.

Cheryl Lustenberger has spent the last nine years educating future broadcast engineers at Tufte Television Studios at Emerson College. Having previously worked at several network affiliates in Massachusetts before coming back to her alma mater as staff, she was always happy to help students learn about the technology behind the productions they were developing and carrying out. In addition to formal workshops on safety, rigging and technology; Cheryl makes herself available to students

see [AWARDS](#), p.9



Lustenberger

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SBE National Office
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ADRICK from p.1

vice chairman of the ATSC and as chairman of the Open Mobile Video Coalition (OMVC) Forum. He currently chairs the ATSC Mobile Emergency Alerting System Implementation Team.

In addition to his role as a technology advisor to GatesAir, Adrick also is focused on the development of ATSC 3.0, Mobile DTV and spectrum/regulatory issues. He is also advising clients on the preparation for TV spectrum repacking that will follow the TV band spectrum auctions.

SBE National Meeting events begin on Wednesday, Oct. 26 with meetings of the national SBE Certification Committee and the SBE Board of Directors. On Thursday, Oct. 27, activities include the annual SBE Fellows Breakfast (invitation-only), sponsored by Kathrein USA, Frequency Coordinators meeting, the SBE Annual Membership Meeting (webcast live), sponsored by AC Video Solutions, Blackmagic Design and DVEO, as of this writing.

The SBE Annual Awards Reception, sponsored by Comrex, is followed by the SBE National Awards Dinner, sponsored by Telos Systems. Presentation of the society's major awards will be made.

SBE National Meeting events will be held at the downtown Columbus Crowne Plaza Hotel, with the exception of the Annual Membership Meeting, which will be held across the street at the Greater Columbus Convention Center.

Our hosts are the Ohio Association of Broadcasters (OAB) and the SBE chapters of Ohio. The Ohio Broadcast Engineering

Conference, held at the convention center, includes an industry tradeshow and technical sessions of interest to all media engineers, technicians and IT personnel. Register for the Ohio Engineering Conference and SBE National Meeting through the OAB website at www.oab.org. Reservations to attend the SBE National Awards Reception



The Crown Plaza Hotel in Columbus is the site of the 2016 SBE National Meeting

and Dinner (\$15) are available through the SBE National Office website and by telephone, Monday - Friday from 8:30 a.m. to 4:30 p.m. ET at 317-846-9000.

Reserve your room at the Crowne Plaza by Sept. 24 by calling

800-338-4462 or go to www.crownplaza.com/cmhcrownplaza. A special room rate of \$134 per night plus tax has been reserved. Rooms include complimentary internet connection and reduced valet parking of \$18 per day.



Certification Question

Answer on page 6

The impedance of a non-resonant transmission line is determined by:

- A. the lines length, size of conductors and current in the line.
- B. the terminating impedance, the lines length and the dielectric.
- C. the dielectric, the spacing of conductors and the lines length.
- D. the spacing of conductors, size of conductors and the dielectric.



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LETTER FROM THE PRESIDENT

By Jerry Massey, CPBE, 8-VSB, AMD, DRB, CBNT
SBE President
jmassey@sbe.org

Summer Vacation? Not for the SBE

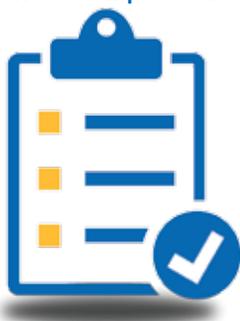
Here it is summer already and many of you, our members, are taking vacations while trying to keep transmitter facilities cool, transmitters online and working on new projects. This seems to be the busiest time of the year for SBE members, and your national SBE leaders are also working on projects for you, the member. I want to touch on some of those SBE projects.

As we know, broadcasting is constantly evolving and adding new technologies and methods to better reach our listeners and viewers. At the SBE, we too are evolving in areas with the intention to better serve you, the member. Recently, the SBE Board of Directors approved a modification to our EAS efforts to improve our efforts with EAS, both with regulatory issues and providing educational opportunities for you. The EAS Education Committee was dissolved, and the work of that group has been reassigned to the SBE Education Committee and the SBE Government Relations Committee.

Each committee will handle the responsibilities appropriate to its function. The first action from the Education Committee is to form an advisory group that will develop

new educational, informative training programs, from EAS 101 to implementation of new procedures and regulations. Look for more information and advisories from the Education Committee on this in the future.

Compensation Survey



Recently, the SBE conducted a comprehensive compensation survey, and I hope you contributed to that project. Many members did. You will find a sample of the survey results on page 14 of this issue of *The Signal*, as well as information on how SBE members can access the survey results. If you

participated in the survey, I thank you.

One item of note involves SBE Certification. While this is the first compensation survey the SBE has conducted, previous salary surveys have shown that holding SBE Certification makes a difference in an individual's compensation. Our survey shows that this trend continues.

There's lots of great information in the full survey report. I encourage you to read it and use the information.

Local Chapter Efforts

Chapter meetings are the lifeblood of the SBE, and for the program chairman of your local chapter it can be a challenge to constantly provide an informative meeting topic and guest. The SBE is updating its list of speakers and topics from our sustaining members who are available to speak and work with your local chapter. This list will be posted on the SBE website under chapter administration. Check it for ideas for your chapter's upcoming meetings.

While on the subject of chapter meetings, we always want to welcome to our chapter meetings anyone who has an interest in broadcasting and the SBE even though he or she may not be members of the SBE. At the same time, we challenge SBE chapters to encourage these attending non-members to join the SBE. The SBE depends on membership dues for about half of its total revenue. Without sufficient dues revenue we would not be able to produce our education programs, produce technical books for our members and maintain the other member services we offer.



SBE Chapter 55 St. Louis tours the St. Louis County Emergency Operations Center.

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Though many of our services generate revenue, most of them, including those mentioned above, are not self-supporting. Support for the organization is best demonstrated by not just attending meetings but by being a member as well. The SBE represents our members on technical issues with the FCC and other federal agencies. The larger and more representative of the media technical community we are, the more effective we are in those endeavors.

Everyone attending an SBE meeting is asked to sign in. It's easy to see who is and who is not a member. Keep some membership materials on hand at meetings and give them to the non-members. Explain the benefits of SBE membership. Some employers may even cover the cost of dues.

Thank you all for your continued support of the SBE. Let us know how we may best represent you.



EDUCATION UPDATE

By Wayne M. Pecena, CPBE, 8-VSB, AMD, DRB, CBNE
Chairman, SBE Education Committee
wpecena@sbe.org

There Is Always More To Learn

During the April 2016 SBE Board of Directors meeting in Las Vegas a recommendation from the chair of the Emergency Alert System (EAS) Education Committee was adopted by the Board to dissolve that committee and reassign its functions to the Education Committee for educational aspects and the Government Relations Committee for policy and regulatory matters. The EAS Education Committee was somewhat unique as it grew out of the original EAS Committee. With new responsibilities in hand, the Education Committee needs your help as we seek volunteers to serve on a EAS subcommittee to identify aspects of EAS importance and further the charter of the Education Committee with regards to EAS education for the broadcast engineer. It is envisioned that this subcommittee will be comprised of EAS equipment manufacturer representatives as well as practicing broadcast engineers with an interest in EAS. Our goal is to provide practical educational information related to EAS compliance to assist broadcast engineers in their chief operator duties. Please express your interest in serving on this important subcommittee by contacting Education Committee Chair Wayne Pecena or SBE Education Director Kristin Owens at the National Office.

Speaking of recent EAS activity, I trust you are aware of the Federal Communications Commission EAS Test Reporting System (ETRS) portal recently established. In case you have not kept up with this EAS action, the ETRS system outlines a reporting process for all EAS participants to provide feedback to the FCC with regards to National EAS test results. A first step is to register with the FCC to gain reporting system access and complete an information form referred to as Form One. This document must be filed on or before Aug. 26, 2016. It seeks information such as your broadcast facility number, transmitter location coordinates, monitoring assignments, and even station EAS encoder/decoder information.

The CIA Model

If you recall from the June Education Update in *The Signal*, the best practice network security implementation follows a model of Confidentiality, Integrity, and Availability (CIA). This model should not be associated with the Central Intelligence Agency.

"The CIA model defines confidentiality as preventing access to sensitive information or data flowing across the network by those unauthorized to access the data. Integrity is defined as the prevention of data within the network to be altered or changed so that the data can be trusted by known endpoints. Availability is defined as insuring that needed network resources are available for use by those authorized to use the network resources."

Network exploits exist to impact the cornerstones of the CIA model. Confidentiality is often the most challenged or attacked aspect of network security and is associated with privacy of information. Exploits are often based on unauthorized users attempting to

and gaining access to the network, IT resources, and information through social engineering. A failure to change host devices default login information is often a common occurrence. The use of strong login passwords, data encryption, and need-to-know information segmentation are common mitigation approaches.

Integrity is exploited by intercept of original sending host data and replacing the data before it reaches the intended recipient host. Exploit attempts include tactics such as a SQL database injection attacks. Mitigation steps include data transmission path encryption, checksums, and minimization of transmitted data.

Availability is often challenged by Denial of Service (DoS) attacks. These attacks disrupt host performance to the point of becoming unusable by the intended users or application.

TCP/IP synchronization or SYN attacks are a common tactic employed. DoS attacks are commonly executed in a distribution manner creating a more effective disruption impact by involving multiple host devices in an attack. These distributed DoS attacks become more difficult to mitigate, due to the multiple sources executing the attack.

Security is an ongoing IT process and should never be considered a one-time setup and forget process. Simple to implement best practices towards creating a secure network environment include:

ment best practices towards creating a secure network environment include:

- Change host default logins
- Disable unnecessary host services
- Close unused host TCP/UDP ports
- Keep system software updated and patched
- Terminate use of unsecure protocol(s) (example: Telnet)
- Utilize encrypted communications path(s) (example: VPN)

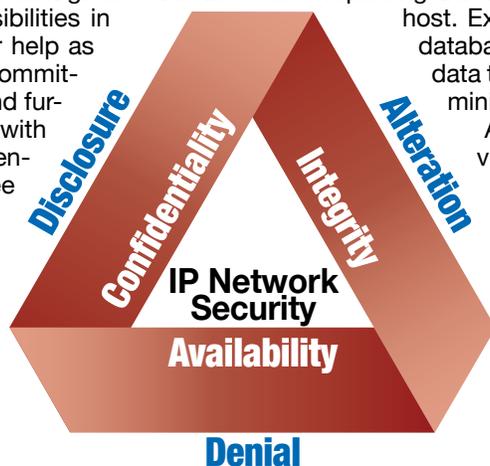
As broadcast station IP networks have grown and become an integral part of the broadcast technical facility, so have the security threats grown such that network security is an ongoing essential task for the broadcast engineer with IT responsibilities. Do you need to learn more about network security? Don't miss future SBE webinar(s) that dive into the practical aspects of IP network security. Part 1 will be offered on Aug. 23, 2016, and Part 2 follows on Oct. 18, 2016. Additional detail and registration information can be found at sbe.org.

Learning is a continuous process for the broadcast engineer. Take advantage of SBE professional development events to learn a new technology, enhance your current skills, or adding a SBE Certification to your personal professional portfolio. Continuous learning is a key trait of the successful technology professional and the SBE Education team is dedicated to bringing you quality professional development programs covering relevant broadcast industry topics delivered in different mediums to meet your needs. Your comments, ideas for future programs, and feedback are always welcome!

LINK

ETRS Registration

<http://www.fcc.gov/general/eas-test-reporting-system>



IP network security CIA model and exploits.



CERTIFICATION UPDATE

By Douglas W. Garlinger, CPBE, 8-VSB, CBNT
Member, SBE Certification Committee
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A New Certification Preparation Reference

It is a daunting task to construct and maintain broadcast studios, transmitter facilities, ENG/DSNG vehicles and remote sites. To be a broadcast engineer is to be a modern day “jack-of-all-trades”, but in our case, we must also be a master of many skills. Perhaps you are an IT person new to the broadcast industry, or a studio engineer unfamiliar with the transmitter. The SBE is committed to the advancement of all types of broadcast engineering. The SBE is the only organization that certifies your skills as a broadcast engineer.

The *SBE Broadcast Engineering Handbook* was introduced at the 2016 NAB Show. This book offers valuable knowledge for you to broaden your skills. If you have taken or plan to take a Certification test then you know that most tests are open-book, except for essay questions. The SBE provides a list of texts and reference material that may help you during the test. We now have this new *SBE Broadcast Engineering Handbook* to add to the list. And to aid the Certification Committee in covering the most up-to-date information in certification exams, the Ennes Education Foundation Trust has provided a grant to supply each member of the SBE Certification Committee with a copy of the book.

This book is a hands-on guide to station design and maintenance published by McGraw-Hill. The editor-in-chief is Jerry C. Whitaker, a well known author and editor in the broadcast industry. I was blessed to be part of the Editorial Advisory Board that selected authors and topics for inclusion into the handbook. I focused on the RF section.

In-depth Coverage

The *SBE Broadcast Engineering Handbook* features in-depth tutorials that stress important broadcast engineering topics. It

provides comprehensive coverage of radio and television technologies. It is written by broadcast engineers for broadcast engineers. More than 50 authors contributed their expertise to this book. This 912-page handbook is divided into seven sections plus three reference annexes.

Regulatory Issues. This section provides information to keep your station legal as well as providing a quick reference resource. It covers EAS, ABIP and broadcast accessibility requirements. A broadcast station must have a Designated Chief Operator; we have a chapter devoted to the responsibilities of a chief operator.

RF Transmission. The very essence of broadcast engineering requires the transmission of radio frequency emissions through the ether. This section covers AM and FM transmitters, AM directional arrays, FM combiners, FM and TV antennas, coaxial transmission line, 8-VSB transmission theory, DTV transmitters, DTV measurement and evaluation of TV coverage and interference. Perhaps your background in RF began as a ham radio operator. We have a chapter on one of my favorite subjects, international shortwave broadcasting.

DTV Transport. This section explains DTV transport and metadata in depth. It includes MPEG-2 transport, PSIP, IP transport for Mobile TV, Mobile EAS and ATSC Mobile DTV.

Information Technology Systems. IT is a field as diverse as broadcast engineering itself. It is an integral part of today's broadcasting. This section covers IT and the broadcast plant, a network systems overview, time and frequency transfer over Ethernet using NTP and PTP. It also covers the history; development and current standards for video transport over internet protocol networks.

Production Systems. Local content is one of the essential elements of serving the community. The scope of this section covers production facility design, audio system interconnections, audio monitoring, and remote audio broadcasting and intercom systems. Also covered are video switchers, master control and centralized facilities, automation systems, media asset management and even broadcast studio lighting.

Facility Issues. This section looks at the key elements of broadcast facility planning, installation and maintenance. This includes

facility design, wire management, rack enclosures and environmental cooling of the broadcast systems. AC power system, grounding and transmission system maintenance are also covered.

Broadcast Management. This section focuses on leadership and management. As a manager, you move from personal accomplishments to leading the combined efforts of an entire department. Covered are budget planning and compliance, strategic planning, personnel staffing and scheduling, staff training and interdepartmental relations. You must keep a close eye on industry trends and regulatory mandates.

This book is a great addition to your personal library or your station's library. As a member of the SBE Certification Committee, I can tell you that we are always looking for good technical resources as we develop questions to use on certification tests. The tests are always intended to be practical in their scope and reflect a real-world test of the applicant's abilities. The SBE Certification Committee will be using this handbook in the future to develop and add questions to the existing database of test questions.

This SBE Broadcast Engineering Handbook can be ordered online at the SBE Bookstore at www.sbe.org/bookstore. The price is \$159 for SBE members and \$199 for non-members.



Answer from page 3

The answer is D

The impedance of the RF coax cable is chiefly governed by the diameters of the inner and outer conductors. On top of this the dielectric constant of the material between the conductors of the RF coax cable has a bearing. The relationship needed to calculate the impedance is given simply by the formula:

$$Z_0 = \log(D_1/D_2) / \sqrt{\epsilon}$$

where

D_1 = inner diameter of the outer conductor

D_2 = diameter of the inner conductor

ϵ = velocity

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Kenneth Sell, Phoenix, AZ - Chapter 9

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Great Lakes Broadcasting Conference Advanced IP Networking with Wayne Pecena
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Adam Bohn, Garland, TX
Hannah Hill, Garland, TX
Ydairy Lovo, Garland, TX
Zachary Medlock, Garland, TX
Lidia Rivera, Garland, TX
Friendswood High School
Abi Ardoin, Friendswood, TX
Kyle Jones, Friendswood, TX
Dylan McKim, Friendswood, TX
Tyson Penrose, Friendswood, TX

cont.
on pg.
8

Chapter Engineers of the Year Chosen

In conjunction with the SBE National Awards program, SBE members who are honored by chapters as a chapter engineer of the year are automatically entered into consideration for the Robert W. Flanders SBE Engineer of the Year award. Six people were selected by seven chapters for the local honor.

- Mike Hendrickson, CPBE, CBNT; Ch. 17 Minneapolis

- Mike Cole, CTO; Ch. 32 Tucson
- Owen Smith; Ch. 38 El Paso
- Ted Hand, CPBE, 8-VSB, AMD, DRB; Ch. 45 Charlotte
- Ted Hand, CPBE, 8-VSB, AMD, DRB; Ch. 54 Hampton Roads
- Ron Bartlebaugh, CBNT; Ch. 70 Northeast Ohio
- Gary Mach, CPBE, CBNT; Ch. 80 Fox Valley

Fifty New SBE Members In Member Drive

Fifty new members were sponsored through the 2016 SBE Membership Drive, which carried the theme "SBE Membership: The Road to Success." Each member who recruited a new member was entered into a drawing to win prizes donated by several SBE Sustaining Members and the SBE.

The Grand Prize winner, who will receive an expense-paid trip to the SBE National Meeting in Columbus, OH, this October, is Art Lebermann, CPBE, of Alameda, CA. All the prize winners are noted at the right.



Become a Mentor

The SBE Mentor Program helps broadcast engineers who are new to the field. The program partners a new engineer with a more-experienced professional. This allows the more-experienced person to share his or her gained knowledge, both empirical and practical, with someone new to the field. The SBE Mentor Program provides this conduit for the participants.

The partnership lasts for one year beginning on Oct. 1, 2016. Applications are due by Aug. 31, 2016. We have lots of mentees, but we need more mentors. More info at sbe.org/mentor.



Rusty Armitage	Knoxville, TN	Cable Assembly Three-Pack from Belden
Rusty Armitage	Knoxville, TN	Pebble Time Smart Watch from Davicom
Evan Baker	Albuquerque, NM	Tieline Shirt from Tieline
Joshua Baker	Boulder, CO	SBE tumbler from the Society of Broadcast Engineers
Madison Batt	Mountlake Terrace, WA	logoed t-shirt from Heartland Video
Ken Benner	Tucson, AZ	logoed mug and earbuds from Heartland Video
Jeffrey Browne	Shingle Springs, CA	305 Broadcast t-shirt from 305 Broadcast
Craig Bulter	Orange Park, FL	Cable Assembly Three-Pack from Belden
Dennis Chaney	Cincinnati, OH	logoed stadium blanket from Heartland Video
William Croghan	Las Vegas, NV	logoed baseball cap from Heartland Video
Steven Crum	Newport, MI	FM-55 audio processor from Wheatstone
Jorge Dieguez	Miami, FL	Cable Assembly Three-Pack from Belden
James Ellett	Savannah, GA	copy of the <i>SBE Broadcast Engineering Handbook</i> from the SBE
William Enloe	Lubbock, TX	logoed t-shirt from Heartland Video
Howard Fine	Sherman Oaks, CA	logoed baseball cap from Heartland Video
John Fox	Camp Hill, PA	logoed set of pen, screwdriver and calculator from Heartland Video
Kent Hatfield	Rochester, NY	logoed backpack from Middle Atlantic
Everett Helm	Mulino, OR	SKN425 UPS from Superior Electric
Doug Houston	Erlanger, KY	Spark-E HDMI-IP encoder/streamer from DVEO
Brian James	Birmingham, AL	logoed t-shirt from ProAudio.com
Charles Kelly	Noblesville, IN	Deva Bandscanner Pro from 305 Broadcast
Charles Kelly	Noblesville, IN	Tieline barbecue set from Tieline
Paul Kempter	Palm Harbor, FL	logoed tshirt from DVEO
Taylor Klotz	Columbus, GA	copy of <i>Networking Beginner's Guide Book</i> from McGraw-Hill
Arthur Lebermann	Alameda, CA	logoed backpack from Middle Atlantic
Arthur Lebermann	Alameda, CA	trip to the SBE National Meeting from the SBE
James Leedham	Omaha, NE	logoed stocking cap from Heartland Video
Jerry Massey	Greenville, SC	logoed stocking cap from Heartland Video
Frank Maynard	Novi, MI	copy of <i>Television Operations</i> from the SBE
Michael McNamara	Tuscaloosa, AL	logoed tshirt from DVEO
Mike Mooney	Plano, TX	logoed stadium blanket from Heartland Video
Horace Murray	Glen Burnie, MD	logoed stadium blanket from Heartland Video
William Mutter	Laurel, MD	logoed baseball cap from Heartland Video
Gary Pearcey	Stone Mountain, GA	logoed mug and earbuds from Heartland Video
Norman Portillo	Fort Bragg, NC	copy of <i>Directional Antennas Made Simple</i> from Layton Technical Services
James Powell	Birmingham, AL	logoed baseball cap from Heartland Video
David Priester	Ithaca, NY	logoed set of pen, screwdriver and calculator from Heartland Video
Randy Ray	Canyon, TX	logoed keyring and USB drive from Heartland Video
Larry Rixman	Louisville, KY	logoed tshirt from DVEO
Matthew Schiller	Valley Center, CA	logoed stocking cap from Heartland Video
Matthew Schiller	Valley Center, CA	logoed keyring and USB drive from Heartland Video
Gary Stigall	San Diego, CA	Cable Assembly Three-Pack from Belden
Daniel Thienman	Antioch, TN	Logoed t-shirt from ProAudio.com
Adam Truax	West Lafayette, IN	Shure MVi USB audio interface from BSW
Jeffrey Tucker	Danville, IN	Cable Assembly Three-Pack from Belden
Bruce Zieminski	Riverside, CA	logoed stocking cap from Heartland Video

SBE Certification Achievements

RECERTIFICATION

Applicants completed the recertification process either by re-examination, point verification through the local chapters and national Certification Committee approval and/or met the service requirement

Certified Professional Broadcast Engineer® (CPBE®)

Rick Hartford, Edmond, OK - Chapter 85
Mark Heller, Two Rivers, WI - Chapter 80
Julius Suyat, Vienna, VA - Chapter 37
Robert Yankowitz, New Bedford, MA - Chapter 11

Certified Professional Broadcast Engineer® (CPBE®) AM Directional Specialist™ (AMD™) Digital Radio Broadcast Specialist™ (DRB™)

Cris Alexandr, Aurora, CO - Chapter 48
Certified Senior Radio Engineer™ (CSRE®)
Phillip Vaughan, Cathedral City, CA - Chapter 131

Certified Senior Television Engineer™ (CSTE®)

William Bobich, Columbus, OH - Chapter 52

Certified Broadcast Networking Engineer™ (CBNE™)

Wiley Boswell, Montgomery, AL - Chapter 118
Christopher Tarr, Mukwonago, WI - Chapter 28

Certified Broadcast Radio Engineer™ (CBRE®)

Frank Baptista, Westport, MA - Chapter 11
Wiley Boswell, Montgomery, AL - Chapter 118
William Epperson, Winfield, IL - Chapter 88
Daniel Ferreira, Jr., Easthampton, MA - Chapter 14
Richard Hardy, Tulsa, OK - Chapter 56
John Masters, Maryville, IL - Chapter 55

Certified Broadcast Television Engineer™ (CBTE®)

John Arthur, Jr., Brandon, MS - Chapter 125
Richard Bach, Metairie, LA - Chapter 72
Jose Boveda, Miami, FL - Chapter 53
John Kazibut, Chicago, IL - Chapter 26
James Mertins, Claremore, OK - Chapter 56
Omar Pineda, El Paso, TX - Chapter 38

Certified Broadcast Radio Engineer™ (CBRE®) AM Directional Specialist™ (AMD™) Digital Radio Broadcast Specialist™ (DRB™)

John Mulhern, Liberal, KS

Certified Broadcast Television Engineer™ (CBTE®) 8-VSB Specialist™

Michael Streby, Wausau, WI - Chapter 80

Certified Broadcast Networking Technologist® (CBNT®)

John Arthur, Jr., Brandon, MS - Chapter 125
William Bobich, Columbus, OH - Chapter 52
Jose Boveda, Miami, FL - Chapter 53
Roswell Clark, Clearwater, FL - Chapter 39
Paul Easter, Rosenberg, TX - Chapter 105
William Epperson, Winfield, IL - Chapter 88
John Garmendi, Old Bridge, NJ - Chapter 15
Rick Hartford, Edmond, OK - Chapter 85
Donald Jones, Trotwood, OH - Chapter 33
John Masters, Maryville, IL - Chapter 55

Certified Audio Engineer® (CEA®)

Joshua Smith, East Longmeadow, MA - Ch. 11

Certified Video Engineer® (CEV®)

Seth Morth, Marietta, PA - Chapter 41

Certified Broadcast Technologist® (CBT®)

B. John Boren, San Diego, CA - Chapter 36
William Carpenter, San Francisco, CA - Ch. 40
Dana Davis, Portland, OR - Chapter 76
David Deese, Nashville, TN - Chapter 103
John Johnsen, Moreno Valley, CA - Chapter 131
Thomas Kettwig, Boise, ID - Chapter 115
John Monroe, Tacoma, WA - Chapter 16
Steven Peterson, Federal Way, WA - Chapter 16
Richard Reyes, Honolulu, HI - Chapter 63
Duane Sedge, Arlington, TX - Chapter 67
Marshall Thompson, Huntington Beach, CA - Chapter 36

Certified Television Operator® (CTO®)

James Fogarty, Allentown, PA
Michael Mascorro, San Antonio, TX
Mike Portz, Blue Springs, MO
Roland Robinson, Tacoma, WA - Chapter 16

Certified Radio Operator® (CRO®)

Clifford Moquin, Tucson, AZ
Curtis Rodgers, Tucson, AZ

continued from page 7



Massey Leifer Anderson Cummis



Bernier Harnack Oliger Ornellas



Pecena Sanchez Simpson Tucker

SBE National Election Ends Aug. 25

The annual election of SBE officers and directors is currently underway. Ballots are due by 4:30 p.m. EDT on Aug. 25. Voting is via the election website, except for those members who have opted out of electronic voting this year or who have not provided the SBE national office with an email address. They will receive their ballots through the mail. Up for election are all four officers for one-year terms and half the 12 directors for two-year terms. The slate of candidates assembled by the Nominations Committee includes:

- Officers:**
 President - Jerry Massey, CPBE, 8-VSB, AMD, DRB, CBNT; Chapter 86, Greenville, SC
 Vice President - James Leifer, CPBE; Chapter 53, South Florida
 Secretary - Tim Anderson, CPBE, DRB, CBNE; Chapter 33, Southwestern Ohio
 Treasurer - Andrea Cummis, CBT, CTO; Chapter 15, New York, NY
- Directors:**
 (top six vote getters will be elected):
 Jim Bernier, CPBE, CBNE; Chapter 5, Atlanta, GA
 Kirk Harnack, CBRE, CBNE; Chapter 103, Nashville, TN
 Brian Oliger, CBT, CBNT; Chapter 37, District of Columbia
 Jason Ornellas, CBRE, CRO; Chapter 43, Sacramento, CA
 Wayne Pecena, CPBE, 8-VSB, AMD, DRB, CBNE; Chapter 99, Bryan, TX
 Marcelo Sanchez, CPBE; Chapter 53, South Florida
 Mark Simpson, CPBE, AMD, DRB, CBNE; Chapter 32, Tucson
 Justin "JT" Tucker, CSRE, AMD, CBNE; Chapter 107, Charleston, SC
- If you have not yet cast your vote, do so today.

AWARDS from p.1

via personal workshops on most any subject. One Emerson College student commented, "Her devotion to lifelong learning and teaching sets an example for students who will have to keep up with a rapidly changing industry."

Blackmagic Design is awarded the 2016 SBE Technology Award for its URSA Studio Viewfinder, which turns the URSA mini, a compact lightweight Super 35 digital film camera, into a true professional studio camera.



Blackmagic Design URSA Studio Viewfinder

Norman Portillo, CBT, CTO has won the newly added Freedom Award. Portillo previously won the Educator of the Year nomination in 2014 and has continued that education and training throughout the military community with his move from the Defense Information School in Maryland to Fort Bragg, NC. Norman recently established an SBE Chapter at Fort Bragg, NC, Chapter 147. He currently serves as the chairman of that chapter. His supervisor, Jeremiah Green commented, "I have seen him personally reach out to the military community about the SBE's programs and benefits. The command has also recognized his success and relies on him to connect the bridge between civilian and military training. Where the most Army military broadcast engineers are stationed, they now have a home where they can have training and certification opportunities."

Chapter and Individual Awards

Chapters are the lifeblood of the SBE, and 2016 marks the third year that the Chapter Engineer of the Year Award has been a way to highlight the achievements of members within their chapters. This year, seven chapters selected their own award recipients. (See page seven.) Each winner will be presented with a special certifi-

see [AWARDS](#), p.11

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LEGAL PERSPECTIVE

By Chris Imlay, CBT
SBE General Counsel
cimlay@sbe.org

The Squeaky Wheel of Ambient RF Noise: Is Some Grease on the Way?

The SBE has aggressively and repeatedly stated its members concerns about increases in ambient noise, especially in the AM broadcast band. But RF noise from man-made sources is not only an AM problem; it is also a limiting factor for FM and television reception. And it is getting worse, according to the FCC's recent order and further notice in the AM Improvement docket. But the bottom line is that the FCC doesn't really know what the levels of ambient noise are in the broadcast and other allocations. Without this knowledge, it is impossible to know whether the Part 15 radiated and conducted emissions limits for intentional, unintentional and incidental radiators are adequate. Because the FCC has neither the resources nor the inclination to address individual cases of interference attributable to, for example, RF consumer devices, power lines, switching power supplies, RF lighting systems and the vast array of other noise contributors in the field, it is critical that ambient RF be regulated properly prior to the point of retail sale.

Finally there are signs that the FCC is taking this problem seriously. A June, 2016 FCC Public Notice announcing that the FCC Technological Advisory Council (TAC) will

investigate changes and trends to the radio spectrum noise floor to determine if there is an increasing problem with unwanted radio frequency (RF) energy from man-made sources. The TAC will investigate its scope and the quantitative evidence available over the past 20 years. Initially, the FCC on behalf of the TAC is asking the public to comment as to how a noise study should be performed. The study will not be frequency-limited. In the SBE's experience, ambient, man-made noise exists in the MF, HF and VHF bands. The TAC expects to find that the noise floor in the radio spectrum is rising because of increasing numbers of unlicensed, intentional and unintentional RF radiators (Part 15 devices) and industrial, scientific and medical (Part 18 devices) in use. However, the FCC says there is not much hard evidence of increased noise floors and there is a lack of quantitative data.

It is right and proper for SBE members and chapters to plan to participate in gathering evidence for the TAC to help this study. The wide geographic distribution of SBE members and chapters in all RF environments makes the SBE an asset to the TAC in the conduct of this study.

One of the biggest sources of RF noise in the broadcast bands is RF lighting devices. The FCC Office of Engineering and Technology (OET) on June 17 issued a paper in its knowledge database discussing RF lighting devices and noting the radiated and conducted emission rules that apply to them. The rules are intended to avoid harmful interference to licensed radio services. General illumination includes applications such as traffic signaling, roadway lighting, manufacturing processes, agriculture, etc. RF LED lighting devices intentionally generate RF energy via electronic power conversion or digital circuitry, but are not intended to radiate RF energy, so they are classified as unintentional radiators according to the FCC rules. As such, they are subject to the Part 15 rules for unintentional radiators, and are subject to the verification equipment authorization procedure and are required to meet the line-conducted and radiated emissions limits in Rule Sections 15.107 and 15.109, respectively. In any case, however, the FCC noted that operation of Part 15 unintentional radiators is subject to the condition that no harmful interference is caused, and that manufacturers and users should be aware that lighting devices are required to cease operation if harmful interference occurs. Radiated emission measurements must be performed at least from 30MHz to 1000MHz to adequately demonstrate compliance with Part 15 (§15.109). Routine radiated emissions measurements are needed under Part 15, based on the highest frequency generated or used in the device. The FCC said that it had found that emissions from RF LED lighting devices are non-periodic, broadband in nature, and are produced as a byproduct of the internal driver circuitry within the RF LED lighting device. These types of emissions have adequate energy and potential to generate radiated emissions well above 30MHz.

The limits are higher for Part 15 LED bulbs than for Part 18 fluorescent and CFL bulbs, and local governments are purchasing LED bulbs in great numbers. Be aware that noise generated by street and traffic lighting can be widespread throughout your market. It may be helpful to commence a dialog with your local government that may deploy RF lighting devices. Make them aware of the Part 15 non-interference requirement. They won't know of it otherwise. Be a squeaky wheel. 

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FOCUS ON SBE

By John L. Poray, CAE
SBE Executive Director
jporay@sbe.org

Strong Local Leadership Is Key To A Healthy SBE

The importance of local chapters of the SBE can't be overstated. It's the best place for members to come together and interact, learn from each other and absorb information from presenters that many times is tailored to a technical broadcast audience. Chapters are the lifeblood of the SBE because that's where many of our members make their strongest connection with the organization and get the most benefit.

Trends within the broadcast industry over the past ten years have made it more

of a challenge to operate an effective and successful chapter. There are fewer engineers doing more work, making time more scarce that can be set aside for individual professional development.

Some of our chapters go through periods of inactivity because of this, but many chapters continue to present quality programs and events on a monthly basis and are having solid attendance. It's easy to trace the source of the success of these chapters – its leadership. From those who

serve as the chapter chair to the member who arranges the programs; from the chapter's certification chair to the secretary and treasurer and the rest, they all play key roles in the success of the chapter.

Limited space prohibits listing the entire leadership team for each SBE chapter, but I would like to recognize the chapters that earned quality chapter status in 2015 and qualified for the annual cash rebate of dues. Please thank yours for their service the next time you see him or her.

Chapter 1	Binghamton, NY	Eric Adler	Chapter 52	Central Ohio	John Owen
Chapter 2	Northeastern PA	Joseph Glynn, CPBE	Chapter 53	South Florida	Marcelo Sanchez, CPBE
Chapter 3	Kansas	Vern Wirka, CPBE	Chapter 54	Hampton Roads, VA	John Heimerl, CPBE
Chapter 7	Jacksonville, FL	Craig Butler, CSRTE	Chapter 55	St. Louis, MO	Terrence Dupuis, CBRE, CBNT
Chapter 9	Phoenix, AZ	Robert Reymont, CPBE	Chapter 56	Tulsa, OK	Donald Dobbs, CBTE
Chapter 11	Boston, MA	Robert Yankowitz, CPBE	Chapter 59	Kansas City, KS	Michael Rogers
Chapter 14	Connecticut Valley	Frederick Krampits, CPBE, CBNT	Chapter 66	Fresno, CA	Ken Holden, CPBE
Chapter 16	Seattle, WA	Martin Hadfield, CPBE	Chapter 67	North Texas	William Ryan
Chapter 17	Minneapolis, MN	Nathan Hart	Chapter 68	Birmingham, AL	Darrell McCalla, CBRE, CEA, CEV, CBT, CBNT
Chapter 18	Philadelphia, PA	William Gellhaus, P.E., CPBE, CBNT	Chapter 69	Alamo Area, TX	Richard Barton, CBT
Chapter 21	Spokane, WA	Tye Barnett	Chapter 70	Northeast Ohio	John Hovanec, CSRE, AMD, DRB, CBNT
Chapter 24	Madison, WI	Kevin Ruppert, CPBE, CBNT	Chapter 72	New Orleans, LA	Ernest Kain
Chapter 26	Chicago, IL	Gordon Carter, CPBE, DRB, CBNT	Chapter 74	Midland, NE	James Skinner, CPBE, CBNT
Chapter 30	South Bend, IN	Timothy Chapman, CBTE, CBNT	Chapter 76	Eugene, OR	Dennis Hunt
Chapter 32	Tucson, AZ	Robert Nemitz, CBNE	Chapter 78	Blue Ridge, VA	Robert Jenkins
Chapter 33	Southwestern Ohio	James Stitt, CPBE	Chapter 79	Austin, TX	Edward Rupp, CBTE, CBNT
Chapter 34	Albuquerque, NM	William Harris, CPBE, AMD, CBNT	Chapter 80	Fox Valley, WI	Mark Hoenecke, CBNT
Chapter 35	Kentucky	Jerry May, CPBE	Chapter 88	West Palm Beach, FL	Steve Billing
Chapter 36	San Diego, CA	Gary Stigall, CPBE	Chapter 91	Central Michigan	Gary Blievernicht
Chapter 37	District of Columbia	Kent Kramer, CBRE	Chapter 96	Rockford, IL	Ben Pflederer
Chapter 38	El Paso, TX	Jose Castro	Chapter 102	Grand Rapids, MI	Glenn Gunnufsen, CSTE, CBNT
Chapter 39	Tampa Bay Area	Dylan Sjollem, CBRE	Chapter 103	Nashville, TN	James Campbell III, CPBE
Chapter 40	San Francisco, CA	Arthur Lebermann, CPBE	Chapter 105	Houston, TX	Thomas Gray, CPBE, CBNE
Chapter 41	Central Pennsylvania	Randall Miller, Jr., CBT, CBNT	Chapter 109	Des Moines, IA	Jon Strom, CBTE
Chapter 42	Central Florida	Michael Flynn, CBTE	Chapter 111	Huntsville, AL	Kevin Kidd, CSRE, AMD
Chapter 43	Sacramento, CA	Robert Hess, CPBE	Chapter 112	Western Wisconsin	Todd Zschernitz, CBTE
Chapter 44	Shreveport, LA	Troy Jones	Chapter 113	Knoxville, TN	Rusty Armitage, CSTE
Chapter 45	Charlotte, NC	Benjamin Brinitzer, CPBE, AMD	Chapter 115	Southern Idaho	Thomas Kettwig, CBT
Chapter 46	Baltimore, MD	James Richardson	Chapter 118	Montgomery, AL	Wiely Boswell, CBRE, CBNE
Chapter 47	Los Angeles, CA	Michael Tosch, CSRE, CSTE, AMD, CBNE	Chapter 122	Youngstown, OH	Richard Foley
Chapter 48	Denver, CO	Shane Toven, CBRE, CBNT	Chapter 124	North Oregon	Everett Helm, CPBE
Chapter 51	Tri-Cities, WA	Jack Blum	Chapter 131	Inland Empire, CA	Wayne Murphy, CPBE, CBNE
			Chapter 145	Magic Valley, ID	Thomas Lowther, CSRTE, CBNT

AWARDS from p.9

cate and be recognized nationally on the SBE website and in a future issue of *The Signal*. The seven chapter winners also were automatically nominated for the national Robert W. Flanders SBE Engineer of the Year Award. The 2016 national winner, Mike Hendrickson, represented Chapter 17 as its Chapter Engineer of the Year Award winner.

Chapter 24 of Madison, WI, has won the award for Best Chapter Communication.

The 2015 Broadcasters Clinic presented by the Wisconsin Broadcasters Association and Wisconsin SBE Chapters has won for Best Chapter Regional Educational Event.

Statistical Awards

These awards are broken into two classes, Class A and Class B, so competing chapters are similar in membership size. Class A is made up of chapters with membership less than the median; Class B contains chapters with membership greater than the median.

Greatest Growth in New Chapters

A. Chapter 96, Rockford, IL, Chapter Chairman Ben Pflederer

B. Chapter 7, Jacksonville, FL, Chapter Chairman Craig Butler, CSRTE

Most Certified Chapters

A. Chapter 118, Montgomery, AL, Chap-

ter Chairman Wiely Boswell, CBRE, CBNE Certification Chairman Charlie Grider, CBRE, CBNT

B. Chapter 131, Inland Empire, CA, Chapter Chairman Wayne Murphy, CPBE, CBNE Certification Chairman Paul Claxton, CPBE, CBNE

Highest Member Attendance

A. Chapter 145, Magic Valley, ID, Chapter Chairman Thomas Lowther, CSRTE, CBNT

B. Chapter 34, Albuquerque, NM, Chapter Chairman William Harris, CPBE, AMD, CBNT

Nominations for the 2017 awards will open in February.



Engineering Perspective

By Tom Smith, CPBE
Maintenance Technician and Videotape Editor, WHA-TV, retired
tcsmith100@frontier.com

The Challenges of the TV Repack

As the FCC proceeds in its task to transfer spectrum currently assigned to TV broadcast use to be used for wireless broadband in the Incentive Auction, one of the unanswered questions is where will the remaining TV stations relocate to in the new smaller TV spectrum. The FCC set a target of 126MHz of TV spectrum to be transferred to wireless broadband use. This will reduce the TV band down to 28 TV channels starting from channel 2 and ending at channel 29. There are 1,782 full-power stations that will have to fit in the 28 channels instead of the previously allotted 49 channels. The reverse auction will reduce the number of stations that need to fit in the new band, and the remaining number of stations still needing to fit in the new TV bands will not be known until the auction is completed.

One way to get an idea of how much spectrum will be available for stations that will have to move from the new wireless band to the reduced TV band is to look at the DTV transition. The FCC had to find a second channel for the 1,640 stations that were on the air at the end of 1996. That doubled the number of transmitters allowed to operate in the TV band to 3,280. Before the FCC issued its final allotments for the second digital channel for each existing TV station, the FCC made a last call for applications for new analog TV stations. That added about 135 stations, of which only a few were given a second digital channel. This gave a total of 3,338 transmitters in the TV band at the end of the DTV transition. To fit all of these transmitters in the existing 67 channels of the TV band, up to nearly 80 analog or DTV transmitters were assigned per channel.

After the DTV transition, the TV spectrum was reduced to 49 channels. There are currently 1,782 stations on the air as of March 30, 2016, of which 725 stations are located on channels 30 through 51. These stations either have to be reassigned by the FCC into the remaining UHF band or elect to either leave the air or move to the VHF band by participating in the reverse auction.

Next Steps

The question is now how many stations can fit in the remaining TV bands. One of the first issues that will reduce the spectrum available for stations to move to is that the FCC has stated that it will avoid assigning stations wishing to move to low-band VHF to channel 6 to avoid interference to the lower FM frequencies. They are also avoiding using channel 14 to avoid interference to the 450-470 MHz land mobile band. That leaves channels 15 through 29

in the band. With only channels 2 to 5 available, about 250 stations could fit into the lower VHF band. There is the question on how many stations are willing to move to low-band due to the reception issues in that band. The following chart compares the number of stations per channel during the DTV transition to the stations currently on the air.

It can be seen from Figure 1 that there is room for stations to move to new channels, but because of market variation, there

DTV Transition and Post

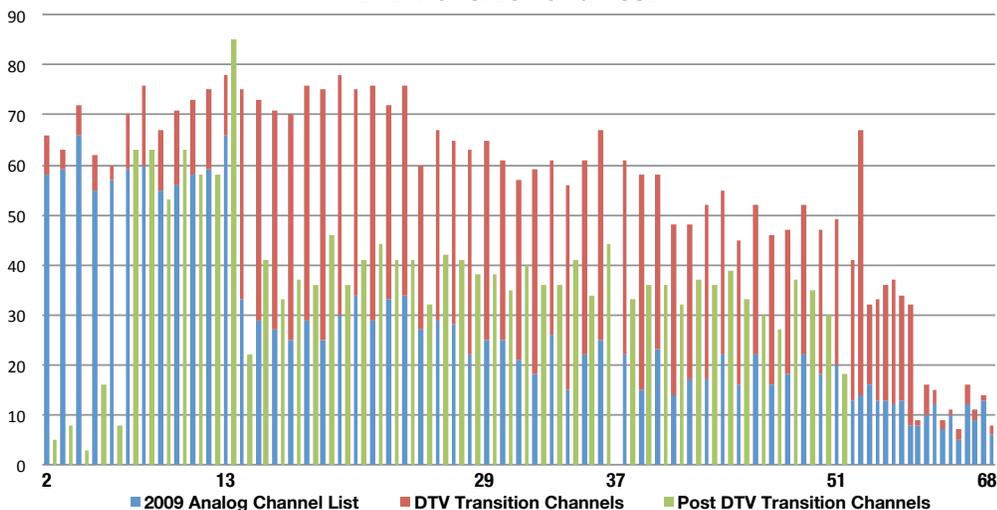


Figure 1. TV channel allocation comparison before, during and after the DTV transition. Data from FCC databases and 1996 Broadcasting and Cable Yearbook.

for use in the UHF band. While up to 80 transmitters were placed on a channel during the transition, the average number of stations per channel would likely be nearer to 70. That would allow around 1,050 of the 1,311 UHF stations to occupy the UHF band plus a few existing stations on channel 14.

In reality, fewer than 1,050 stations could be placed in the UHF band due to market variations. In markets like New York, Los Angeles, San Francisco and Chicago and the crowded Eastern seacoast, the number of stations and the amount of overlap require more channels needed than will be available. Only by reducing the number of stations or having stations elect to move to VHF through the auction may solve the crowding in those areas. Moving to high-band VHF is nearly impossible as it is nearly full with possibly only 40 to 50 openings in the band. Low-band VHF has more openings as there is only 40 sta-

tions in the band. Depending on the number of stations that were attracted to participate in the Reverse Auction and accepted an offer from the FCC, some stations will no doubt be forced to occupy guard bands or in some cases share spectrum with wireless broadband providers. And many stations that already occupy channels 14 through 29 may have to move to a new channel because of the ripple effect as stations are reassigned to new frequencies.

As we await the outcome of the Incentive Auction, we can see from the past experience of the DTV transition and looking at the availability of possible spectrum for stations to move to, it can be seen how difficult it is for the FCC to create a plan to reassign stations in the reduced TV band and it may give some indication of the possible difficulties and chaos that the repacking of the TV band that the remaining TV stations will have to endure.

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Broadcast Equipment Supplier
- AC Video Solutions • 2014**
Andrea Cummis 201-303-1303
Consulting, Systems Design/Integration
- AEQ Broadcast International • 2015**
Peter Howarth 954-581-7999
Broadcast Audio, Video and Communications
- American Tower Corporation • 2000**
Peter A. Starke 781-461-6780
Development/Construction/Management
- Audemat-Worldcast Systems Inc. • 2000**
Christophe Poulain 305-249-3110
Control Manufacturer
- AVCOM of Virginia, Inc. • 2010**
Tom Pagonis 804-794-2500
Spectrum Analyzers
- AVDB Group • 2014**
Maria Cody 720-940-7131
Audio/Video/Lighting & Control
- Avid Technology • 2011**
Benjamin Desbois 978-640-5011
Broadcast Products and Services
- A-Ware Software/MusicMaster • 2014**
Shane Finch 352-351-3625
Advanced Music Scheduling Solutions
- B&H Photo, Video & Pro Audio • 2016**
Israel Low 212-239-7500 x2962
Broadcast Equipment and Workflow Solutions
- Belden Electronic Division • 1991**
sales 800-235-3361
Cable and Connectivity
- Black Box • 2014**
Brian Kutchna 724-873-6719
HD-KVM Switching & Extension
- Blackmagic Design • 2012**
Terry Frechette 408-954-0500
Production Switchers, Digital Cameras,
Routers, Video Editing and Monitoring, Color
Correction, Video Converters
- Bracke Manufacturing LLC • 2012**
Patra Largent 949-756-1600
RF & Microwave Components
- Broadcast Devices, Inc. • 2015**
Robert Tarsio 914-737-5032
Audio/RF Support Products
- Broadcast Electronics Inc. • 1978**
Tom Beck 217-224-9600
Radio Equipment Manufacturer
- Broadcast Microwave Services Inc. • 1997**
Jim Kubit 805-581-4566
Manufacturer, Transmitters, Receivers,
Antenna Systems
- Broadcast Software International • 2016**
Marie Summers 888-274-8721
Radio Automation, Audio Logging
- Broadcast Supply Worldwide • 1986**
Shannon Nichols 800-426-8434
Audio Broadcast Equipment Supplier
- Broadcasters General Store • 2004**
Buck Waters 352-622-7700
Broadcast Audio Video Distributor
- Canon USA Inc. • 1985**
Larry Thorpe 201-807-3300,
800-321-4388
Broadcast Lenses & Transmission Equipment
- Cavell, Mertz & Associates Inc. • 2011**
Gary Cavell 703-392-9090
Consulting Services
- Comrex Corporation • 1997**
Chris Crump 978-784-1776
Audio & Video Codecs & Telephone Interfaces
- Comsearch • 2004**
Tim Hardy 703-726-5651
Frequency Coordination Services
- Continental Electronics Corporation • 1976**
Michael Troje 800-733-5011
AM & FM IBOC Transmitters
- CueScript • 2014**
Michael Accardi 203-763-4030
Teleprompting Software & Hardware
- Dakota Lighting Supply • 2015**
Randy Doremus 303-748-6241
FAA/Obstruction Lighting Products
- Davicom, Division of Comlab, Inc. • 2014**
Guy Fournier 418-682-3380
Remote Site Monitoring and Control Systems
- DEVA Broadcast • 2015**
Toddr Ivanov 305-767-1207
Monitors, IP Audio Codecs, RDS/RBDS
Encoders, Audio Processors, Broadcast Tools
- Dialight Corporation • 2006**
US Headquarters 732-919-3119
FAA Obstruct. Lighting, LED Based
- Dielectric • 1995**
Cory Edwards 207-655-8131
TV & FM Transmission & Cellular Products
- Digital Alert Systems, LLC • 2005**
Bill Robertson 585-765-1155
Emergency Alert Systems
- DoubleRadius, Inc. • 2012**
Jeffrey Holdenrid 704-927-6085
IP Microwave STL
- Drake Lighting • 2015**
Dave Sheppard 270-804-7383
FAA Obstruction Lighting - Medium and High
Intensity
- DTS Inc./HD Radio Technology • 2014**
Rick Greenhut 443-539-4335
HD Radio Technology
- du Treil, Lundin & Rackley, Inc. • 1985**
Jeff Reynolds 941-329-6000
Consulting Engineers
- The Durst Org. - 4 Times Square • 2004**
John M. Lyons, CPBE 212-997-5508
TV/FM/Microwave Tower Site
- DVEO - Division of Computer Modules Inc. • 2011**
Laszlo Zoltan 858-613-1818
Everything About Transport Streams
- e2v • 1997**
Mark Strohecker 914-593-6831
Electronic Components
- Econco • 1980**
Debbie Storz 800-532-6626,
530-662-7553
New & Rebuilt Transmitting Tubes
- Emerson Network Power/Avocet • 2014**
George Morgan 917-592-0956
Avocet High Performance KVM
- ENCO Systems Inc. • 2003**
Ken Frommert 800-362-6797
Playout and Automation Solutions
- ERI - Electronics Research • 1990**
David White 812-925-6000
Broadcast Antennas, Transmission Line,
Filters/Combiners, Towers and Services
- Floral Systems • 2008**
Shawn Maynard 877-774-1058
Television Broadcast Automation
- Frontline Communications • 2015**
Tracy Brink 727-280-8843
Broadcast Vehicle Manufacturer
- Fujifilm/Fujinon • 1986**
Gordon Tubbs 973-686-2769
Broadcast & Cine Lens Products
- GatesAir • 1977**
Dave Hopson (TV) 513-445-5243
Mark Goins (Radio) 513-899-9124
Broadcast Equipment Manufacturer
- Gepco/General Cable • 1995**
Mike Vivian 859-572-8000
Innovative Cabling & Custom Solutions
- Graham Brock, Inc. • 2012**
R. Stuart Graham 912-638-8028
Technical Consultation - Radio/TV
- Heartland Video Systems, Inc. • 2011**
Dennis Klas 920-893-4204
Systems Integrator
- Hilights, Inc. • 2016**
Richard Hickey 352-564-8830
Obstruction Lighting Maintenance
- Hitachi Kokusai Electric Comark • 2013**
Jack McNulty 860-763-1100
Manufacturer Broadcasting Transmission
Equipment
- IWC • 2014**
Matt Granard 425-286-1900
Global Connectivity Solution Provider
- Image Video • 1997**
Zach Wilkie 416-750-8872 x228
Under Monitor Tally Display Systems,
Monitor Design and Manufacture Broadcast
Equipment
- Inovonics Inc. • 2012**
Gary Lührman 831-458-0552
Radio Broadcast Equipment
- Integrated Microwave Technologies • 2009**
John Payne 908-852-3700
Wireless Video Systems
- JAMPRO Antennas Inc. • 2011**
Alex Perchevitch 916-383-1177
DTV, FM-HD Radio, DVB-T/T2, ISDB-T, DAB
- JVC Professional Video • 2014**
Lon Mass 973-317-5117
Professional Video Products, Camcorders,
Display Monitors, Recording Decks
- Ka You Systems • 2011**
George Gimourginas 301-585-4302
Audio, Video, IP - Satellite
- Kathrein USA Inc. • 1985**
Michael W. Bach 541-779-6500
Antennas for Broadcasting & Communications
- Kintronc Labs, Inc. • 2015**
Joaquin Raventos 423-878-3141
Radio Broadcast Antenna Systems - ISO9001
Registered Company
- LBA Technology Inc. • 2002**
Javier Castillo 252-757-0279
AM/MW Antenna Equipment & Systems
- LYNX Technik • 2007**
Steve Russell 661-251-8600
Broadcast Terminal Equipment Manufacturer
- Markertek • 2002**
Wesley Brewer 800-522-2025
Specialized Broadcast & Pro-Audio Supplier
- Maxell Corporation of America • 1991**
Al Drijpach 973-653-2414
Data/Broadcast Video Media
- Micronet Communications Inc. • 2005**
Jeremy Lewis 972-422-7200
Coordination Services/Frequency Planning
- Microtech Gefell GmbH • 2016**
Michael Militzer +49 36649-82245
Microphones
- Microwave Video Systems • 2011**
Warren J. Parece 781-665-6600
Microwave Equipment Rental, Sales & Service
- Middle Atlantic Products • 2005**
David Amoscato 973-839-1011
Equipment, Mounting, Solutions
- Midwest Digital Corp. • 2015**
Brian Falatovich 708-790-4040
New and Used Broadcast Sales
- MoreCom Inc. • 2009**
Kyle Moorehead 763-533-5535
Networking & AV Construction
- Moseley Associates Inc. • 1977**
Bill Gould 805-968-9621 x785
Digital STLs for Radio and Television
- Nascar Productions • 2014**
Abbey Kielcheski 704-348-7131
Live/Post Production Services
- National Association of Broadcasters • 1981**
Industry Trade Association 202-429-5340
- National Football League • 1999**
Ralph Beaver 813-282-8612
Game Day Coordination Operations
- Nautel Inc. • 2002**
Jeff Welton 877-662-8835
Radio Broadcast Transmitter Manufacturer
- Nemal Electronics Int'l Inc. • 2011**
Benjamin L. Nemser 305-899-0900
Cables, Connectors, Assemblies and Fiber
Optic
- Neutrik USA, Inc. • 2012**
Kathy Hall 704-972-3050
Ruggedized Optical Fiber Systems
- Orban • 2011**
David Rusch 480-403-8300
Audio Processing AMFMTV
- Pasternack Enterprises • 2001**
Christine Hammond 949-261-1920
Coax & Fiber Products
- Pebble Broadcast Systems • 2016**
Kurt Schini 621-345-0461
Television Broadcast Playout Automation
- Potomac Instruments • 2012**
Guy Berry 301-696-5550
RF Measurement Equipment Manufacturer
- ProAudio.com- A Crouse-Kimzey Co. • 2008**
Mark Bradford 800-433-2105 x560
Proaudio Broadcast Equipment Distributor
- Propagation Systems Inc. - PSI • 2010**
Doug Ross 814-472-5540
Quality Broadcast Antenna Systems
- Quintech Electronics and Communications Inc. • 2002**
James Herbstritt 724-349-1412
State-of-the-art RF Hardware Solutions
- QVC • 2011**
Kevin Wainwright 484-701-3431
Multimedia Retailer
- Radio Frequency Systems • 2015**
Scott Martin 812-589-4755
Broadcast & Telecom Antennas & Systems
- RCS • 2003**
Diana Stokey 308-284-3007
Audio and Video Content Management
- RDL • 2004**
David Zovod 928-778-9678 x104
Audio, Video, Control & Test Equipment
Manufacturer
- RF Specialties Group • 2008**
www.rfspecialties.com
Everything from the Microphone to the
Antenna
- Rohde & Schwarz • 2003**
Walt Gumbert 724-693-8171
Transmitters, Test & Measurement, Video
Servers & Storage
- Ross Video Ltd. • 2000**
Jared Schatz 613-228-0688
Manufacturer, Television Broadcast Equipment
- Sage Alerting Systems Inc. • 2010**
Gerald LeBow 914-872-4069
Emergency Alert Systems Products
- SCMS Inc. • 2000**
Bob Cauthen 800-438-6040
Audio and RF Broadcast Equipment Supplier
- Seacom Erectors, Inc. • 1997**
John Breckenridge 360-793-6564
Tower/Antenna Erections
- SEG • 2014**
Chris Childs 913-324-6004
Supply Chain Products and Services
- Shively Labs • 1996**
Dale Ladner 888-SHIVELY
FM Antennas & Combiners
- Shure Incorporated • 2012**
Bill Ostry 847-600-6282
Microphones, Wireless Systems, Headsets
- Sierra Automated Systems and Eng. Inc. • 2011**
Al Salci 818-840-6749
Routers, Mixers, Consoles, Intercoms
- Signiant • 2012**
Steve Gillen 781-221-4000
Signiant Content Delivery Software
- Silvus Technologies • 2015**
Mark Tommney 617-816-6588
Wireless Video Mesh Network
- Snell Advanced Media • 1995**
John Shike 818-556-2616
Video Equipment Manufacturer
- Solid State Logic • 2014**
Steve Zaretsky 212-315-1111
Digital Audio Mixing Consoles, Networked
Audio Routing, Embedded Audio Solutions
- Staco Energy Products Co. • 2010**
Paul Heiligenberg 937-253-1191 x128
Manufacturer of Voltage Regulators, UPS
- Superior Electric • 1995**
Michael J. Miga 860-507-2052
Power Protection Equipment
- Sutro Tower Inc. • 1989**
Eric Dausman 415-681-8850
Broadcast Tower Leasing
- The Switch • 2011**
Peter Hartz 323-645-8011
Fiber Transmission Provider
- Tektronix Inc. • 1977**
Jim Lang 503-627-2980
Video Test & Measurement, Equipment
Manufacturer
- Teletest • 2013**
Mark Wronski 530-470-1337
Transcoding, Captioning, Workflow
Automation
- Telos Systems/Omnia/Axia • 2003**
Denny Sanders 216-241-7225
Telos Systems Talk-Show Systems
- Teradek • 2011**
Jon Landman 949-743-5783
Camera-top ENG Solutions
- Terrestrial Inc. • 2003**
Billie Layman 888-373-4832
FCC Broadcast Auxiliary Licensing Services
- Thomson Video Networks • 2014**
Matt Tietze 301-537-6288
Video Compression and Processing
- Tieline The Codec Company • 2003**
John Lackness or Jacob Daniluk
317-845-8000
POTS, ISDN, Codecs & A/V Products
- Unimar Inc. • 2001**
Thad Fink 315-699-4400, 813-943-4322
Tower Obstruction Lighting Designer,
Manufacturer, Distributor
- Vislink Inc. • 1991**
Mike Payne 978-671-5700
Video Microwave Systems and Services
- Volicon • 2015**
Russell Wise 781-221-7400
Media Intelligence and Logging Solutions
- Wheatstone • 2010**
Jay Tyler 252-638-7000
IP Consoles, Routers & Processors
- WideOrbit • 2012**
Brad Young 214-923-6337
Broadcast Management Software, Automation
and Master Control
- Wireless Infrastructure Services • 2006**
Travis Donahue 951-371-4900
Repacking Services - West Coast Turnkey
Services
- WnewTech Corporation • 2014**
Luiz Santiago 310-220-5664
Systems Integration

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Member Spotlight: Tom Bole

Member Stats

SBE Member Since: 2014

Certifications: CBNT, CTO

Chapter: 128 Las Vegas

Employer: KLVX, Las Vegas PBS

Position: Broadcast Engineer

Location: Las Vegas

I'm Best Known For: Being the retired military guy! I served 20 years on active duty in the Air Force. I was an RF transmission guy the whole time. The experience gave me a lot of confidence and made me a jack of all trades and a master of none, lol!

Q. What do you value most about your SBE involvement?

A. The relationships with other broadcast engineers in the area. The meetings are a good time to talk to other engineers and hear about the issues they are dealing with and collaborate on solutions.

Q. What got you started in broadcast engineering?

A. I kind of stumbled into broadcast engineering. As I retired from the military, I was contacted by our former chief (also prior military) about a temporary position to help out the station during a tough transition period. I fell in love with the people and the job, and luckily for me it turned into a permanent position.



Tom climbing with friends in Puerto Vallarta, Mexico.

Q. What do you like most about your job?

A. I love the fact that my job is different every day. Sitting behind a desk doing the same thing over and over is not for me. I like to get out and work on the transmitter and translators, and I also love working on our in-house equipment. I really don't mind doing a little paperwork either, so this is the perfect job for me..

Q. When I'm not working I...

A. ...enjoy spending time with my wife and my teenage sons. We go to the gym together and we also like to do projects around the house together. I love being able to give my sons skills that will benefit them later in life.

Q. What is your favorite gadget?

A. Automation. Anything WIFI, Bluetooth, etc. that makes my life easier at home.

Compensation Survey Sampler

The SBE conducted its first (and ongoing) compensation survey in April and May. The results of the survey have been compiled, and SBE members can download the report. The goal is to provide practical information to SBE members about individual compensation (salary and benefits) based on the type of broadcast or multimedia involvement (beyond just radio and TV), market size and years of experience.

The survey asked for demographic information, such as working in radio, TV or both, market size, and job title category. We also asked if respondents received a raise in the last year (and if so, how much, and to report current salary and benefits received. We also asked about contract engineering rates and practices.

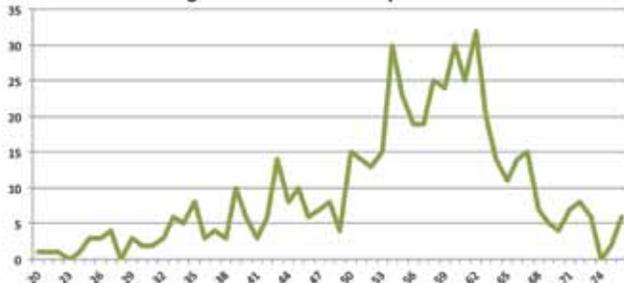
Respondents were asked if they held any broadcast- and media-relevant professional certifications. We compared salaries of those respondents with and without SBE Certification and reported the results. Read the report to learn what difference SBE Certification makes. (Hint: It is worth being SBE Certified.)

At the end of the survey we asked two open-ended questions: If you could change one thing about your job,

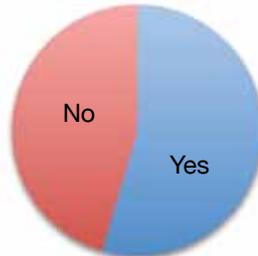
what would it be? Whose concern is it to encourage new talent to choose broadcast engineering as a career? The answers to both questions brought out some interesting ideas.

We provided a few graphs from the survey report here. The survey report is available on the SBE website. You will need your SBE website login to access the page. Also, the PDF report is password protected. The password is noted on the download page.

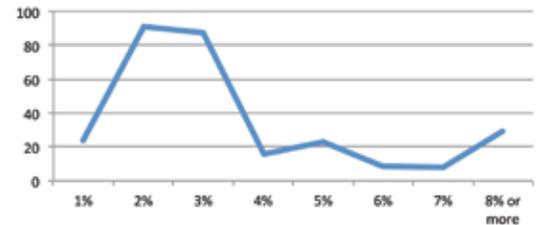
Age Distribution of Respondents



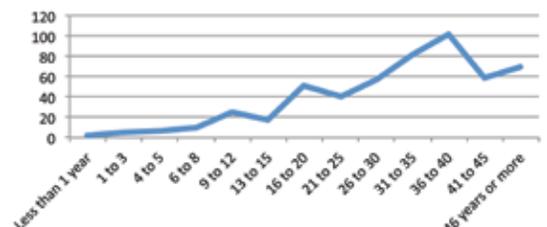
Did You Receive a Salary Increase in the Past 12 Months?



Mean Salary Increase Among Respondents Who Received One



Years of Broadcast Engineering Experience



Chapter Check

Chapter 51 Tri-Cities, WA

SBE Chapter 51 and Broadcast Towers established a scholarship fund of

\$400 in honor of Mark Kennedy, an engineer in the Spokane area. Kennedy worked in broadcasting for more than 35 years. He spent 16 years at KNDO/KNDU-TV in Yakima and the Tri-Cities where he was director of engineering.

The scholarship is awarded to a Tri-Tech Radio Broadcasting student who plans to continue his or her education in broadcasting.

The recipient for 2016 is Amber Carlyle of Kennewick, WA. She plans to attend Columbia Basin College to study audio engineering and art. In the photo, Carlyle receives her scholarship check from Chapter 51 Tri-Cities Chairman Art Blum.



ENNES EDUCATIONAL FOUNDATION TRUST

The trust offers scholarship and educational programming and grants that benefit broadcast engineering and the broadcast engineer. Submit tax-deductible donations, payable to the Ennes Educational Foundation Trust, to the Society of Broadcast Engineers, 9102 N. Meridian St., Suite. 150, Indianapolis, IN 46260.

THANKS TO THE FOLLOWING SUPPORTERS FOR THEIR CONTRIBUTIONS

Ennes Scholarship

James Glanz, Brooklyn, NY
H. Douglas Lung, Honomu, HI
John Lyons, New York, NY
Mark Richer, Arlington, VA
Michael Rogers, Briarwood, NY
SBE Chapter 11, Boston, MA
Barry Thomas, Denver, CO

Greenberg Scholarship

H. Douglas Lung, Honomu, HI
John Lyons, New York, NY
Michael Rogers, Briarwood, NY

Battison Scholarship

Mark Dubosky, Wake Forest, NC
H. Douglas Lung, Honomu, HI
John Lyons, New York, NY
Michael Rogers, Briarwood, NY

Youth Scholarship

H. Douglas Lung, Honomu, HI
John Lyons, New York, NY
Michael Rogers, Briarwood, NY

sbe.org/ennes

WELCOME TO THE SBE

NEW MEMBERS

Mohammed Alzubaidi - Chicago, IL
Gary R. Alexander - Dunwoody, GA
John H. Angulo - Pembroke Pines, FL
Michael Archie - Cedar Hill, TX
Ryan Baker - Durango, CO
Dante J. Barber - Silver Spring, MD
Brian B. Beckwith - St. Louis Park, MN
Kent Beichley - Hayward, CA
Quindie J. Bennett - Fayetteville, NC
Alisia L. Boogades - Ft. Meade, MD
Mesa K. Brown - Gaithersburg, MD
Carl Budrecki - Wilkes Barre, PA
Rick Carroll - Ft. Myers, FL
Craig Carter - Bonaire, GA
Brandon N. Cassiano - Mooresville, NC
Juan M. Cervantes - Ramona, CA
Steve M. Cilirzo - Carlsbad, CA
Jon-Michael Clark - Mt. Washington, NY
Christopher Cline - Locust Grove, GA
Tracy Cowden - Kettering, OH
Alex Crotty - Atlanta, GA
Tom F. Crowley - Sea Cliff, NY
Nelson A. Cruz - San Sebastian, PR
Richard J. Dalton - Seattle, WA
Jim Davies - Iowa City, IA
William A. Dickey - West Newton, PA
Neil A. Dobbs - San Antonio, TX
Anwar J. Eaton - Indianapolis, IN
Michael P. Elliott - La Grande, OR
James Freeman - Wheat Ridge, CO
Joseph C. Ferrara - Erie, PA
John Friscia - Baton Rouge, LA
Robert E. Gagne - Maplewood, MN
Demis I. Gonzalez - Fort Collins, CO

Nathan M. Grambau - Ames, IA
Stephen L. Guye - Loomis, CA
Eric J. Hammond - Savannah, GA
Jeremy J. Hewitt - Stratford, CT
Tim L. Hinson - Houston, TX
Robert Hogue - Apollo Beach, FL
Erik E. Hood - Aurora, CO
Jeff T. Hughes - Inman, SC
Stanley M. Kelly, II - Accokeek, MD
John F. Knoblock - Akron, OH
Joshua D. Lessley - Vallejo, CA
Daniel E. Linnear - Munster, IN
Vimar S. Miranda - Fort Bragg, NC
Timothy I. Meinig - Seattle, WA
John R. Melvin - Burbank, CA
Mustafa Muhammed - Dayton, OH
Eric Ow - Singapore, Singapore
Alonzo Pendleton - Millington, TN
Paul D. Robertson - Zumbrota, MN
Tom T. Schmidt - Copeville, TX
Steve Schoon - Cedar Falls, IA
Keaton A. Scovel - Waterloo, IA
Paul Spadafora - Albany, NY
Ross Springer - Germantown, MD
Vadim Stolyarov - Dawson Creek, BC
Junta Tokunaga - Waipahu, HI
Gregory A. Tomasello - Northport, AL
Tonicar A. Valdez - Pasay City, PH
Alejandro M. Vazquez - Knoxville, TN
Thad White - North Judson, IN
Jeff Wiggins - Peru, IL
Amy E. Willis - Baltimore, MD
Mark Wilhelm - Jacksonville, FL

NEW STUDENT MEMBERS

Mitchell W. Anderson - Calgary, AB
Loni Fiscus - Roseland, NJ
Joseph R. Graves - Edmonton, AB
Thomas Gray - Calgary, AB
Nathan C. Hadden - Los Angeles, CA
Brandon C. Harmen - Airdrie, AB
Tana R. Hawco - Calgary, AB
Chad L. Hayes - Calgary, AB
Benjamin M. Hight - Lubbock, TX
Mathew W. Knight - Airdrie, AB
Feng Li - Hattiesburg, MS
Alexander G. Loewen - Altona, MB
Yasir A. Mansuri - Drumheller, AB
Korey-Allen Oleksow - Calgary, AB
Krista E. Renz - Calgary, AB
Dale R. Scholten, Jr. - Grand Rapids, MI
Jeffrey J. Tocher - Calgary, AB
Mitchell Pericak - Lockport, IL

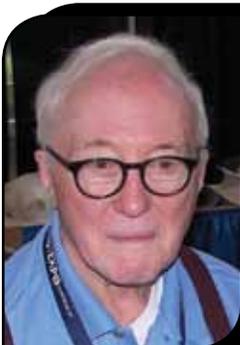
RETURNING MEMBERS

Jon A. Book - Davenport, IA
William E. Cordell - Richmond, TX
Timothy E. Bellamy - Birmingham, AL
Cody K. King - Medford, OR
John J. Kowalchik - Morgan Hill, CA
Arthur C. Morris - Aurora, MO
Shawn P. O'Shea - York, SC
Zaldy B. Quitaleg - Pasay City, PH
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Perry V. Priestley - Ellicott City, MD
Daniel Black - Cottondale, AL
Mark C. Schaefer - Glen Allen, VA
Devin T. Smith - Odenville, AL
Timothy N. Stokes - Katy, TX
Charles F. Tiffit - Modesto, CA
Cristy Trembly - Malibu, CA



In Memoriam
John Batson, CPBE, CBNT
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In Memoriam
John Soergel, CPBE
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MEMBERS ON THE MOVE



◀ **Gary Stigall**, CBT, has rejoined the KFMB stations in San Diego as director of engineering.

Bill Hamilton, CBT, is now broadcast systems engineer at Meredith Corporation in Madison, WI.

Dan Ryson, CBT, became associate director, spectrum management, for CBS in April. For the previous 16 years he was a senior engineer with Cavell, Mertz & Associates, Inc.

Juan Dent, CTO, is a master control operator with Watchmen Broadcasting WBPI-TV 49 in Augusta, GA.

▶ **Bill Moede** is now the director of engineering for the Cumulus Media stations in Appleton/Green Bay, WI.

Raul Velez is the market manager at Universal Media Access in San Francisco.

Michael Wenglar, CPBE, of KULP-AM El Campo, TX, was awarded the George Marti Award for Engineering Excellence from the Texas Association of Broadcasters.

William "Clay" Jones has left KDAF Dallas to become director of engineering at KRQE Media Group in Albuquerque, NM.



MARK YOUR CALENDAR

SBE Certification Exams

Local Chapters
Aug. 5 - 15, 2016 sbe.org/certification
Application deadline is closed.

NBA Convention/SBE Ennes Workshop

Lincoln, NE
Aug. 17, 2016 ne-ba.org

SBE Webinar: IP Network Security Part 1

online
Aug. 23, 2016 sbe.org/webinars

WBA Broadcasters Clinic

Madison, WI
Oct. 11 - 13, 2016 wi-broadcasters.org

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