

THE Signal

Bimonthly Publication of the Society of Broadcast Engineers



The Association for Broadcast and Multimedia Professionals

www.sbe.org

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Massey Elected SBE President

Each year the SBE membership elects members to serve on the national Board of Directors, the governing body of the society. This includes all four officers for one-year terms and half of the 12 directors for two-year terms. In July, ballots were sent to most SBE members electronically, but some members received paper ballots by mail.



Massey

The polls closed on Aug. 20. The paper ballots were reviewed and tallied by members of SBE Chapter 25, who were appointed by the SBE Board of Directors to serve as election tellers. The members who served this year were Bill Cherry; Dave Fort, CPBE; Dale Smiley, CPBE; and Tom Weber, CPBE, CBNT.

The election results follow.

Officers:

President - Jerry Massey, CPBE, 8-VSB, AMD, DRB, CBNT; Chapter 86, Greenville, SC
Vice President - James Leifer, CPBE; Chapter 53, South Florida
Secretary - Ted Hand, CPBE, 8-VSB, AMD, DRB; Chapter 45, Charlotte, NC
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Jeff Keith, CPBE; Chapter 93, Raleigh, NC
Kevin Plumb, CPBE; Chapter 14, Connecticut
RJ Russell, CPBE; Chapter 32, Tucson, AZ

The officers and directors will be

sworn in on Oct. 14 during the SBE Membership Meeting. They will join the other six directors who have another year remaining in their terms (Tim Anderson, CPBE, DRB, CBNE; Ben Brintzer, CPBE, AMD; Gary Kline, CBT, CBNT; Wayne Pecena, CPBE, 8-VSB, AMD, DRB, CBNE; Kim Sacks, CBT; and Eric Schecter, CBRE) as well as Joe Snelson, CPBE, 8-VSB, who will be the immediate past president.



The 2015 Board of Tellers from Chapter 25: Dave Fort, CPBE; Dale Smiley, CPBE; Bill Cherry and Tom Weber, CPBE, CBNT.

Membership Meeting Webcast Live From Madison

The Broadcasters Clinic in Madison, WI, will be the host event of the 2015 Society of Broadcast Engineers National Meeting. The national meeting takes place Oct. 13-14 at the Marriott Madison West Hotel. The Clinic is presented by the Wisconsin Broadcasters Association (WBA) and the SBE chapters of Wisconsin and spans three days: Oct. 13-15.

The highlight of the SBE National Meeting will be the SBE National Awards Reception and Dinner, which will include presentation of the Robert W. Flanders SBE Engineer of the Year Award to Roswell D. Clark, CPBE, CBNT, of Clearwater, FL, and the James C. Wulliman SBE Educator of the Year Award to SBE Chapter 39 of Tampa Bay. This year's SBE Technology Award will be presented to Blackmagic Design. Two members will receive the SBE's highest award, elevation to the member grade

of Fellow. They are Cris Alexander, CPBE, AMD, DRB, of Aurora, CO, and Ralph Hogan, CPBE, DRB, CBNE, of Tempe, AZ.

The SBE will recognize a number of chapters and individuals for their accomplishments this past year related to member growth, certification and member communications. See the list of winners on page 3. The SBE thanks the sponsor of this year's awards dinner, SBE Sustaining Member The Telos Alliance, and the sponsor of the awards reception, SBE Sustaining Member Ross Video.

We are pleased to welcome William Davenport, deputy bureau chief of the FCC Enforcement Bureau in Washington, DC, who will deliver the keynote speech during the awards dinner. Davenport will provide an update on the implementation of the restructuring of FCC field offices and about the FCC's efforts to combat

pirate radio stations.

Another important event during the SBE National Meeting is the Annual SBE Membership Meeting, held from 5 to 6 p.m. ET on Wednesday, Oct. 14. The meeting will be streamed live thanks to production help

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SBE National Office
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MEETING from p.1

of volunteers from Chapter 24, employees of WPT-TV in Madison, and former SBE President Vinny Lopez.

During the Annual Membership Meeting, Joe Snelson, CPBE, 8-VSB, who is completing two terms as national president, will deliver his final remarks before handing the gavel to incoming president, Jerry Massey, CPBE, 8-VSB, AMD, DRB, CBNT. Induction of the other newly elected national officers and directors will also take place. The annual membership meeting will include reports on issues of interest to members. A link to the webcast will be posted on the SBE website prior to the event. The membership meeting webcast is sponsored by 305 Broadcast, AC Video Solutions, Black Magic Design, Comrex, DVEO, and Micronet Communications.

The Broadcasters Clinic is the longest-running regional broadcast tradeshow in the United States and features three days of technical sessions presented by subject matter experts and more than 50 exhibitors displaying products and services from the broadcast and media industry. Visit the WBA website (www.wi-broadcasters.org) to register. The SBE National Meeting events are included in the registration of the Clinic, except for the National Awards Reception and Dinner. Tickets (\$15) for the dinner can be reserved at the SBE national website (www.sbe.org).

Other events during the SBE National Meeting include a meeting of the national SBE Certification Committee, the fall meeting of the national SBE Board of Directors, and the annual SBE Fellows Breakfast, honoring all SBE Fellow members. The breakfast is sponsored by Kathrein.

SBE NATIONAL AWARDS

The Robert W. Flanders SBE Engineer of the Year
Roswell D. Clark, CPBE, CBNT
James C. Wulliman SBE Educator of the Year
Chapter 39 Tampa Bay, FL
2015 SBE Technology Award
BlackmagicDesign 12G-SDI
Best Technical Article, Book or Program
Tom C. Smith; *Look at TV Repack Scenario*; Chapter 24
Best Chapter Website and Best Social Media Site
Chapter 80, Fox Valley, WI
Best Chapter Newsletter (tie)
Chapter 24, Madison, WI;
and Chapter 70, Cleveland, OH
Best Regional Convention or Conference
Chapter 24, Madison, WI,
2014 Broadcasters Clinic
Greatest Growth in New Members
Class A: Chapter 111, Huntsville, AL
Class B: Chapter 45, Charlotte, NC
Most Certified Chapter
Class A: Chapter 118, Montgomery, AL
Class B: (tie) Chapter 24, Madison, WI;
and Chapter 131, Inland Empire CA
Highest Average Member Attendance
Class A: Chapter 85, Central Western OK
Class B: Chapter 34, Albuquerque, NM
A: *chapter membership < national median*
B: *chapter membership > national median*



Certification Question

Answer on page 6

To multicast an AM IBOC signal, extended hybrid mode must be used to achieve the additional required bandwidth. This will produce a data stream at what capacity?

- A. Another 36kb/s over the MPS
- B. 12kb/s
- C. 50kb/s if the analog frequency response is reduced to 5kHz
- D. There is no such mode in AM



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LETTER FROM THE PRESIDENT

By Joe Snelson, CPBE, 8-VSB
SBE President
jsnelson@sbe.org

Fondly Looking Back – And Forward

Here we are in October and quickly moving toward the end of 2015. It's always a pleasure for me to provide an update on what has occurred and what is upcoming since my last letter.

In August, I had the opportunity to attend a town hall meeting in Medford, OR, where U.S. Rep. Greg Walden was the guest. This meeting was attended by a group of about 60 broadcasters concerned about what could happen to LPTV and TV translator stations after the UHF TV spectrum repack. If you have been following the UHF TV-band spectrum auction and repacking initiative you know that secondary services such as LPTV, translators and wireless microphones run the risk of having nowhere to go, or at minimum have reduced spectrum in which to operate after the repack. Representative Walden listened to the concerns of broadcasters as they expressed the impact the loss of LPTV and translators could have on those that rely on them for free, over-the-air local television service. Walden then voiced his concern about the posture the FCC seems to be taking in preferring unlicensed services over licensed in terms of spectrum.

After the town hall meeting concluded I had a chance to meet Representative Walden personally, and I thanked him on behalf of the SBE for his efforts in mitigating to some extent the FCC proposal for closing a large number of field offices.

On the regulatory front, the SBE filed comments in early August regarding the preservation of one vacant channel in the UHF band for use by white space devices and wireless microphones. The subject of wireless mics affects all of us. You can read it on the SBE website under the Legislative/Advocacy tab.

At the end of August we filed comments regarding the sharing of 6425 - 6525MHz with aeronautical mobile telemetry (AMT) stations. This would affect our TV members that use this band for TV remote pickup operations. You will also find that filing on our website under the Legislative/Advocacy tab I mentioned earlier.

To the Future

As to upcoming activities, October marks a special time for the SBE because we hold our National Meeting. This year we meet in Madison, WI, with SBE activities occurring on Oct. 14 and 15. Our meetings are being held in conjunction with the Wisconsin Broadcasters Association Broadcasters Clinic. As you know, this year

completes my second term as your president, and I will hand the gavel over to Jerry Massey at our annual membership meeting. It has been an honor and pleasure to serve the Society as president over the past two years, and I would like to take a moment and reflect on some of the highlights that were special to me.

Last year was the SBE's 50th anniversary. It is interesting to see how much our society has grown and developed over its lifetime. And, speaking of anniversaries, this year marks the 40th anniversary of the SBE certification program.

Along with the 50th anniversary we introduced our new tag line, "The Association for Broadcast and Multimedia Technology Professionals," and an enhanced logo with gold accent around the edge that gives an attractive appearance to our visual identification. Our tag line and logo well states our brand to those who are in this industry and to those outside it.

Our educational offerings expanded with several highly successful Ennes workshops, webinars and publications. Within just the last few months we introduced the book *TV Master Control: A Handbook of Technical Operations*. Work is progressing on the *SBE Engineering Handbook*, which is scheduled to be released in early 2016. I am excited about these educational initiatives and publications that have been launched, and I look forward to seeing more in the future.

We've stepped up our participation in the standards-making organizations of the ATSC and the NRSC and are voting members in both organizations. And we continue to be active on the regulatory front in filing with the FCC on issues that affect our members such as wireless microphones and the FCC office closures.

These accomplishments are not a one-person effort, but rather the work of a talented team of professionals working together. With that, I will sign-off my term as president with my own version of a credit roll in appreciation of those who have played important roles during the course of my two terms in making it happen.

I wish to thank all the national office staff for their great work and commitment to the SBE. Throughout my two terms I've talked to SBE Executive Director John Poray at least weekly. I know all the staff stay busy in supporting our society in the areas of certification, education and membership. If you are not familiar with the members of our national staff check out the SBE website and learn about them and the important roles they play in keeping our society moving along smoothly like a well-oiled machine.

While not a member of the national staff, but an important part of the team, I also want to thank SBE General Counsel Chris Im-lay for the fine job he does for us on the legal representation and regulatory affairs front for the society.

I wish to thank all the SBE officers and directors for the support, time and efforts that you have volunteered in providing direction in leading the SBE. I look forward to working with President Jerry Massey and the rest of the team in the years to come.

I thank all our members and chapters for supporting the efforts of our society in continuing to further the education of all broadcast and multimedia technology professionals.

If you received this letter prior to the national meeting I hope to see you there if you can possibly attend. Otherwise, I hope you will tune in to our live webcast.

Thank you for your support of the SBE and keep 'em on the air!

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EDUCATION UPDATE

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

Why Is The OSI Model Important?

If you have studied IP networking either by formal instruction or casual easy-chair reading, you likely began your study with an introduction to the Open Systems Interconnection Model. The OSI Model was developed in the late 1970s when the industry was filled with proprietary manufacturer networking protocols and media schemes. The abstract model defined a seven-layer approach of how an application residing on a host device communicates with the network. Each layer addresses a specific function, but the model does not define the specific standard, protocol, or network medium to be utilized. Layers are considered swappable, so that different network protocols and mediums could be utilized with a given host application.

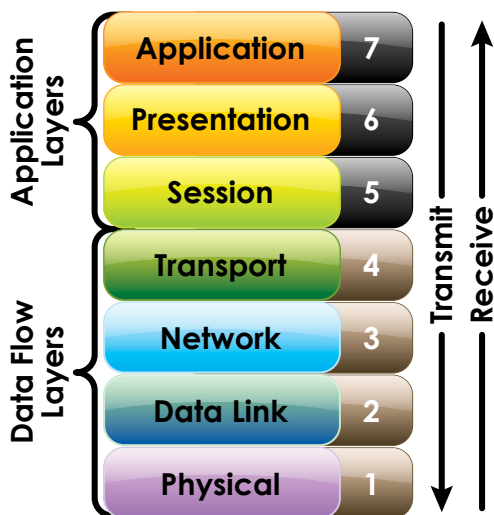
The first four layers of the seven-layer model are considered the data flow areas, which are focused upon functions specific to the network. Information or data generated at the Application Layer is encapsulated as the data flows through the model from layer 7 to layer 1 at the send host endpoint. De-encapsulation occurs in the reverse order at the receive host. Layer 1 is the Physical Layer and the bit is the Protocol Data Unit (PDU) where bits are placed on the network or removed from the network. A common term that is used describes the process as “placing on the wire” even when a wireless medium is utilized. Layer 2, the Data Link Layer, defines the frame as the PDU, Layer 3, the Network Layer, defines the packet as the PDU, and Layer 4 defines the segment as the PDU.

Layer 2 provides physical hardware addressing by means of a Media Access Control (MAC) address, whereas Layer 3 provides a virtual address in the form of an IPv4 or an IPv6 address. The hardware address is fixed by embedding the MAC address within the network adapter firmware. The IP address will vary depending upon the network address that the host device is attached to and must be unique if global routing on the public Internet is intended.

Today’s network world is dominated by an IP-based Ethernet infrastructure. Newer models have evolved such as the TCP/IP model that reflects this technology change, but the OSI Model remains the basis for the terminology widely used today. Ethernet

switching occurs at Layer 2 as the MAC address is the key to switching an Ethernet frame to the appropriate switch port to minimize a collision domain. IP routing occurs at Layer 3 where the network portion of an IP address is used to route the IP packet to the appropriate destination network. Thus the network transports bits placed on the wire represent encapsulated Ethernet frames, encapsulated IP packets, and encapsulated TCP or UDP segments.

And as you prepare for a future SBE broadcast networking certification exam (CBNT or CBNE), don’t overlook using a mnemonic helper saying to help you recall the seven layers of the OSI Model: “Please, Do Not Throw Sausage Pizza Away.” I am sure you remember the resistor color code in a similar manner.



Remember, learning is a continuous process for the technology professional and certainly the broadcast engineer. Continuous learning is a key trait of the successful technology professional and the SBE Education Committee is at work to bring

you quality professional development programs covering timely industry topics and delivered in several mediums.

Can Cats and Dogs Live Together?

The June 2015 Education Update might have been better titled “Can Cats & Dogs Live Together?” than the published title of “Can the Broadcast Engineer and the IT Engineer Live Together?” The column focused upon the differences in the mindset and environment between the broadcast engineer and the position I coined as the “IT engineer.” In summary, the broadcast engineer is often characterized by the slogan “the show must go on” with regards to urgency and their approach to technical abnormalities that arise. The IT engineer is often characterized as the strange character in the dark room that resolves problems by software update and a re-boot.

The June column received the most reader feedback of any column in my three years of writing the Education Update for *The Signal*. A common comment focused upon the broadcast engineer having actively embraced information technology in the broadcast facility, but the IT engineer often has no interest in the broadcast engineering technology areas. Even the term IT engineer stuck a nerve with some broadcast engineers, so maybe the term IT professional is more appropriate. I wish I had the answers to blending the broadcast engineer and the IT technology professional in the workplace. It is certain that IT infrastructure is an integral and growing component of our broadcast plant today and traditional broadcast engineering technology and staff may face challenges when blending the IT aspects, whether technology or staffing.

Your comments and feedback are always welcome.

Professional Liability Coverage for Consultants, Contractors

The SBE has joined with the Hays Companies of Washington, DC, to create a professional liability insurance policy specifically for broadcast engineers and technicians who provide consulting and/or contract services. Premiums are based on the size and scope of the individual member’s business.

The Hays Companies is part of a nationwide company that includes among its services a specialization in risk management and commercial insurance. The underwriter for the SBE policy is a unit of Lloyds of London. For information, contact Henry Cifuentes at the Hays Companies 202-263-4018 or hcifuentes@hayscompanies.com.

For more information on any SBE education program, contact Education Director Kristin Owens: kowens@sbe.org or 317-846-9000.



CERTIFICATION UPDATE

By Terrance Baun, CPBE, AMD, CBNE
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Reducing Testophobia

2015 marks the 40th anniversary of the SBE Program of Certification

Believe it or not, fear of test-taking is a recognized impairment suffered by many people, and usually has its foundation in a previous negative test-taking experience. Sufferers from Testophobia exhibit extreme anxiety about exams and often avoid putting themselves in situations where testing their knowledge and subject understanding is required. Unfortunately, that also limits their ability to study and take advantage of educational opportunities and career advancement that can potentially improve their lives and careers.

The reality is that professional organizations such as the SBE utilize written examinations when granting technical certifications, because such examinations are the easiest and most universally accepted method of determining an applicant's understanding of complex technical subjects. So if you wish to progress in an industry certification program of any kind, at any level, you must be prepared to face those multiple choice and essay experiences!

Of course not everyone who is apprehensive about tests suffers from Testophobia. It is in fact perfectly normal for anyone to be a bit nervous when being examined about anything, whether technical matters or the state of our health. We are afraid about what we don't know, and we also fear being judged about what we think we know!

Test Preparation

What follows is a list of items to think about as you prepare to take a written test such as an SBE Certification exam, and it is my hope that these suggestions will help make your next examination experience a better one. Remember, the increase in self-esteem and the accomplishment of a Certification achievement goal is well worth it.

- Don't believe the rumors and comments you will hear from others about the test you will be taking. First of all, it is al-

most a certainty that the test you take will be significantly different from the one that others have taken. Secondly, each of those folks has his or her own strengths and weaknesses, which affect what material he or she judges to be easy, difficult, or impossible to answer. Judging the quality of a test previously taken is therefore extremely subjective. SBE Certification exams are also generated individually by computer selection in such a way that examinations at the same level will not contain the same questions or even the same essay questions. And remember, in an SBE exam containing an essay, you will always be given a choice of essays to answer.

- Remember that all of the Certification examination questions are written and reviewed internally by SBE members serving on the Certification Committee. Each and every question has been examined by that Committee and only when approved will become part of the certification test question pool. You may be confident that these questions represent real-world situations as you encounter them in your broadcast technology career.

- Don't base your test preparation exclusively on memorizing material from the study guide books. Those books are written to give you a general overview of what you will need to know, but the actual test you will be taking is likely to be a bit more specific in its questions. For a better view of the actual test environment, the SBE offers electronic study guides for most examinations, which represent the scope and type of questions on that particular test.

- For those examinations that include an essay question, you need to be prepared to write about a specific process or test procedure that might be used in the area of expertise that your examination covers. For those who don't like multiple-choice examinations, the essay question gives you the opportunity to use your own past

experiences to display your own particular understanding of an important technical topic. And yes, a well written essay can help overcome some shortcomings in your multiple-choice answers.

Preparing To Test

If you understand that there are specific rules used in creating multiple-choice tests, you can take advantage of that knowledge to help you. Here are some examples:

- Read the question and try to answer it without looking at any of the printed answers. For example if the question asks: "What part of the FCC rules contains the broadcast station regulations," you might already know that the correct answer is Title 47/Part 73, so you would simply scan the proposed answers until you see that information, disregarding all the rest. This is a real time saver when you are certain of the correct answer.

- The proposed answers in a multiple choice examination question almost always contain one answer that is intentionally and obviously incorrect. Find that one first, and eliminate it when determining your answer. This will improve your odds of success.

- The proposed answers may also contain two or more correct answers, so be certain you consider all the answers before selecting the most-correct answer. The use of "all of the above" is quite common in testing.

- When you encounter a question that seems too difficult or has no clear correct answer, circle that question number and come back to it after you have answered all the others. Never leave a test early until you feel sure you have answered every question correctly.

I hope these suggestions will help you reduce your test anxiety. Remember, SBE examinations are written by SBE engineers who have specific knowledge of the circumstances encountered in broadcasting. The tests are not designed to confuse or trick, but rather to determine the broadcast engineering knowledge of the test taker. Your study, experience, and understanding of how tests are constructed will help you reduce your test apprehension and make it easier and more comfortable for you to advance yourself in our industry through the certification exam process.

EQ Answer from page 3

D. There is no such mode in AM

There is no multicast function (two or more digital audio streams) currently supported in the AM hybrid system due to the limited bandwidth available for the digital carriers. Perhaps in the future if we operate in the all-digital mode such multicast operation could be possible, but not today.

SBE Certification Achievements

CONGRATULATIONS

LIFE CERTIFICATION

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 Dale Harry, Rocklin, CA - Chapter 43
 Donald Lockett, Sarasota, FL - Chapter 37
 John Marshall, Milford, OH - Chapter 33
 James Martin, Louisville, TN - Chapter 113
 Robert Meuser, New York, NY - Chapter 15
 Derk Jan van Rijsewijk, Galway, NY - Chapter 58

Certified Professional Broadcast Engineer® (CPBE®)
Digital Radio Broadcast Specialist™ (DRB™)
 Gordon Carter, La Grange, IL - Chapter 26

Certified Senior Radio Engineer™ (CSRE®)
 William Brown, Grass Lake, MI - Chapter 91

Certified Senior Television Engineer™ (CSTE®)
 Charles George, Spokane, WA - Chapter 21

Certified Broadcast Networking Technologist® (CBNT®)
 Gordon Carter, La Grange, IL - Chapter 26
 James Martin, Louisville, TN - Chapter 113
 Robert Meuser, New York, NY - Chapter 15

Certified Professional Broadcast Engineers® and certified senior broadcast engineers who have maintained SBE certification continuously for 20 years, are at least 59½ years old and are current members of the SBE may be granted Life Certification if so requested. All certified who have retired from regular full-time employment and are at least 59½ years old may be granted Life Certification if they so request. If the request is approved, the person will continue in his/her current level of certification for life.

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 Sean Downs, Waukesha, WI - Chapter 28
 Jonathan Hardee, Greensboro, NC - Chapter 93
 Kenneth Scott, Seattle, WA - Chapter 16

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JUNE EXAMS

Certified Senior Television Engineer™ (CSTE®)
 Michael Eohenique, Redlands, CA - Chapter 131
 Daniel Paixao, Meridian, ID - Chapter 115
 Kevin Tubbs, Kirkville, NY - Chapter 22

Certified Broadcast Television Engineer™ (CBTE®)
 Ernie Ensign, Bristow, VA - Chapter 37

Certified Audio Engineer® (CEA®)
 Vincent Paladino, Lodi, NJ - Chapter 15

Certified Broadcast Networking Engineer™ (CBNE™)
 Jeffrey Biernat, Murrieta, CA - Chapter 131
 Kurt Billings, Kodak, TN - Chapter 113
 Anthony Granata, Northridge, CA - Chapter 47
 Greg Gutierrez, Tucson, AZ - Chapter 32
 Craig Holderbaum, Ithaca, NY - Chapter 147
 Thomas Hoots, Greenville, NC - Chapter 93
 Joshua Wood, Moreno Valley, CA - Chapter 131

AM Directional Specialist™ (AMD™)
 Christopher Crumbliss, Kutzman, PA - Chapter 120

Certified Broadcast Networking Technologist® (CBNT®)
 Dino Bonacasa, Oceanside, NY - Chapter 15

AUGUST EXAMS

Certified Senior Television Engineer™ (CSTE®)
 Terry Douds, Lancaster, OH - Chapter 52

Certified Senior Radio Engineer™ (CSRE®)
 Van Craft, Anchorage, AK - Chapter 89

Certified Audio Engineer® (CEA®)
 Terry Douds, Lancaster, OH - Chapter 52
 Ralph Stitton, Virginia Beach, VA - Chapter 54

Certified Broadcast Networking Engineer™ (CBNE™)
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 Timothy Helmecki, Bristol, CT - Chapter 14
 Arthur Giles, Moreno Valley, CA - Chapter 131
 Russell Taylor, Arlington, VA - Chapter 37

Digital Radio Broadcast Specialist™ (DRB™)
 Jon Kasprick, Renton, WA - Chapter 16
 Jeremy Preece, Cornoa, CA - Chapter 131

Certified Broadcast Networking Technologist® (CBNT®)
 Andrew Cleveland, Omaha, NE - Chapter 74
 David Haughn, Indianapolis, IN - Chapter 25
 John Mings, Milton, DE - Chapter 37

Certified Broadcast Technologist® (CBT™)
 Edwin Hamilton, Kennesaw, GA - Chapter 5
 Ken Jaquess, Garden Grove, CA - Chapter 47
 Eric King, Ludlow, MA - Chapter 14
 Robert Smith, Springfield, MA - Chapter 14

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 Ted Kallman, Centennial, CO - Chapter 48
 David Leishman, Antelope, CA - Chapter 43
 Brandy McNellis, Centennial, CO - Chapter 48
 Richard Olson, Milwaukee, WI - Chapter 28

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 James Copeland, Wichita, KS - Chapter 3
 Robert Penner, Los Angeles, CA - Chapter 47
 Willis Quan, Monterey Park, CA - Chapter 47

SPECIAL-PROCTORED EXAMS

Certified Broadcast Networking Technologist® (CBNT®)
 James Daugherty, III, Mason, OH - Chapter 33
 Ernest Harvey, Jr., Harahan, LA - Chapter 72

Certified Broadcast Technologist® (CBT®)
 Sajjad Hussain, Regina, Saskatchewan Canada

Certified Radio Operator® (CRO®)
 Jason York, Spa, NY

Certified Broadcast Technologist® (CBT®)
Alabama Broadcasters Association
 Patrick Alog, Fairhope, AL
 Frankie Torchia, Powder Springs, GA - Chapter 5

SBE CERTIFIED SCHOOL COURSE COMPLETION

Certified Broadcast Technologist® (CBT®)
Loyalist College
 Syed Abbas, Saskatoon, SK, Canada
 Ryan Wagner, Ottawa, Ontario Canada

DINFOS
 Je'Quan Gold, Fort Bragg, NC
 Logan Swift, Santa Ana, CA - Chapter 47

CERTIFIED BY LICENSE

Certified Broadcast Technologist® (CBT®)
 Aaron Gauger, Knightdale, NC - Chapter 93
 Elaine Grubbs, New York, NY - Chapter 15

Joshua Kelly, Independence, IA - Chapter 109
 Charles Lelievre, Westport, CT - Chapter 14

CERTIFIED RADIO OPERATOR® (CRO®)

Robert Canfield, Auburn, CA
 Joseph Pestovich, Las Cruces, NM
 Gabriel Rosas, Inglewood, CA - Chapter 47

TIVA
 Paul Carr, Jacksonville, TX
 Randy Hudson, Harker Heights, TX
 Ricardo Vilardell, El Paso, TX

CERTIFIED TELEVISION OPERATOR® (CTO®)

Raven Boone, Whiteville, NC
 Sandra Carter, Whiteville, NC
 John Foster, Stafford, TX
 Paula Galloway, Sugar Land, TX
 Philip Shockey, Hempstead, TX
 Roger Trujillo, Fayetteville, NC
 Jason York, Ballston Spa, NY

DIRECTV
 Franklin Turner, Lakewood, CA

TIVA
 Donna Gillory, Spring, TX
 Randy Hudson, Harker Heights, TX
 Benjamin Munguia, El Paso, TX
 Luis Alberto Perez, El Paso, TX
 Galen Rosenberg, Quinlan, TX
 Andrew Valencia, El Paso, TX
 Meredith Wise, Friendswood, TX

RECERTIFICATION

The following 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®)
 John Chestnut, Grain Valley, MO - Chapter 59
 Barry Fisher, Emmaus, PA - Chapter 18
 Joseph Geerling, Florissant, MO - Chapter 55
 Paul Kemper, Palm Harbor, FL - Chapter 39
 David Pritchard, Gurnee, IL - Chapter 28

Certified Professional Broadcast Engineer® (CPBE®)
8-VSB Specialist™ (8-VSB™)
 Mansur Abdulhussain, Houston, TX - Chapter 105

Certified Senior Radio Engineer™ (CSRE®)
 Jeffery Caudell, San Antonio, TX - Chapter 69

Certified Senior Television Engineer™ (CSTE®)
 Walcott Denison, III, Glendale, AZ - Chapter 9
 Randy Garrett, Louisville, KY - Chapter 35
 James Harvath, Brentwood, TN - Chapter 103
 John Peterson, Fargo, ND
 David Riffle, Fohnert Park, CA - Chapter 40
 Jeffrey Tucker, Danville, IN - Chapter 25
 Timothy Williams, Kearney, NE - Chapter 87
 Walter Williams, Sr., Columbus, GA - Chapter 118

Certified Broadcast Radio Engineer™ (CBRE®)
 Martin Acuff, San Lorenzo, CA - Chapter 40
 David Antoine, Bronx, NY - Chapter 15
 Jesus Gomez, Rio Piedras, PR
 Shane Toven, Laramie, WY - Chapter 48

Certified Broadcast Television Engineer™ (CBTE®)
 Steven Herbert, Culver City, CA - Chapter 47
 Lawrence Enroth, Joshua Tree, CA - Chapter 131
 Pablo Garcia, Burbank, CA - Chapter 47
 William Hooper, Glendale, CA - Chapter 47

CBTE® - cont.
 John Langer, Topeka, KS - Chapter 3
 Mark Long, Nicoma Park, OK - Chapter 85
 Kurt Lundblad, Soda Springs, CA - Chapter 40
 Michael Mattson, Independence, OR - Chapter 124
 Michael Moore, Unicoi, TN - Chapter 113
 Rem Roberti, Seattle, WA - Chapter 16
 Matthew Saplin, Altamont, NY - Chapter 58
 Daniel Whealy, Sumner, IA - Chapter 96

Certified Broadcast Television Engineer™ (CBTE®) 8-VSB Specialist™
 Scott Arthur, Albuquerque, NM - Chapter 34

Certified Audio Engineer® (CEA®)
 Jonathan Abrams, Jersey City, NJ - Chapter 15
 Timothy Dailey, Ringwood, NJ - Chapter 15

Certified Broadcast Technologist® (CBT®)
 Donald Adams, Florence, KY - Chapter 33
 Ricardo Alfaro-Zayas, San Juan, PR - Chapter 142
 Joshua Bohn, Chelsea, AL - Chapter 68
 Mitchell Bunda, Calgary, Alberta Canada
 Robert Carlough, Boca Raton, FL - Chapter 53
 Cory Chibry, Yellowknife, NT Canada
 Bradley Eeason, Sioux Falls, SD
 Richard Fairbrother, Norman, OK - Chapter 85
 Dennis Graiani, New City, NY - Chapter 15
 David Jackson, Conroe, TX - Chapter 105
 Eric Khenitgan, Cromwell, CT - Chapter 14
 Marty Lee, Seneca, SC - Chapter 86
 Gary Lindstrom, Williamstown, NJ - Chapter 18
 Joseph Pietrzyk, Mesa, AZ - Chapter 9
 Jose Pollorera, Glendale, AZ - Chapter 9

CBTE® - cont.
 Jonathan Abrams, Jersey City, NJ - Chapter 15
 Jeffrey Schick, Forest Hills, NY - Chapter 15
 Eric Smith, Springfield, IL - Chapter 48
 Rufus Smith, Nolensville, TN - Chapter 103

Certified Broadcast Networking Technologist® (CBNT®)
 Jonathan Abrams, Jersey City, NJ - Chapter 15
 Martin Acuff, San Lorenzo, CA - Chapter 40
 David Antoine, Bronx, NY - Chapter 15
 Scott Arthur, Albuquerque, NM - Chapter 34
 David Bayliss, Eastwood, New South Wales, Australia
 Shane Downs, Waukesha, WI - Chapter 28
 Joseph Geerling, Florissant, MO - Chapter 55
 Steven Herbert, Culver City, CA - Chapter 47
 John Mulhern, Liberal, KS
 David Pritchard, Gurnee, IL - Chapter 28
 Richard Reyes, Honolulu, HI - Chapter 63
 Shane Toven, Laramie, WY - Chapter 48
 Timothy Williams, Kearney, NE - Chapter 87
 James Wilson, Sellersburg, IN - Chapter 35

Certified Television Operator® (CTO®)
 Terrell Freeman, Dallas, GA
 Rebecca Jacobs, Moreno Valley, CA
 Ernest Schimizzi, Wainscott, NY - Chapter 15
 Jason Welch, Cheyenne, WY
 Timothy Williams, Kearney, NE - Chapter 87

Certified Radio Operator® (CRO®)
 Gregory Coffee, Strongsville, OH
 Rodney Freed, Martin, TN - Chapter 103
 Lisa Sovulewski, Oakland, CA

Four Tapped for Ennes Educational Trust Scholarships

The Ennes Educational Foundation Trust has awarded four scholarships for 2015. Winners were chosen from applications received by July 1, 2015, from the previous 12 months.

The Harold E. Ennes Scholarship, Robert D. Greenberg Scholarship and John H. Battison Founder's Scholarship are awarded to individuals interested in continuing or beginning their education in broadcast engineering and technology. The Youth Scholarship is specifically for a graduating high school senior interested in broadcast engineering as a career. Each scholarship awarded this year is for \$1,500.



Pooley

This year the Harold E. Ennes Scholarship recipient is John Pooley from Boston. Pooley is a student at Emerson College in Boston studying studio television production with a focus on broadcast engineering. He would like to work as a news photographer/editor/engineer and has experience

in news, live event, and corporate video production. John is also an Eagle Scout, a Certified Archery Coach, and a shodan black belt.

Receiving the Robert Greenberg Scholarship is Clifford White from Tyler, TX. Dur-



Wright

ing the summer of 2015, White worked as a broadcast engineer at Radio Esperanza in the Rio Grande Valley of Texas. He now does freelance radio broadcast engineering work while studying electrical engineering at LeTourneau University in Longview, TX.

The John H. Battison Founder's Scholarship has been awarded to Patrick Wright of Madison, WI. Wright is currently enrolled at the Illinois Institute of Technology in Bronzeville, IL, and studying computer engineering. His broadcast en-

gineering experience includes work for Newsweb Radio Corporation and WLS. He currently works part-time at WCPT-AM/FM.

Elaine Phillips received the Youth Scholarship. She is a freshman at the Massachusetts Institute of Technology. She previously attended Harvard Extension School. Legally blind, she aspires to use technology to enrich lives, especially for disabled people. She is interested in studying electrical engineering to make TV broadcasts more accessible to the blind.



Phillips



1



2



3

Chapter Engineer of the Year Awards

Several SBE chapters recognized chapter members with a chapter engineer of the year award. These individuals were also candidates for the Robert W. Flanders SBE Engineer of the Year Award.

1. Chapter 59 Kansas City: Engineer of the Year Award Winner Ben Weiss, CPBE (l), with Chapter Chairman Mike Rogers (r) and chapter members.
2. Chapter 45 Charlotte: Engineer of the Year Award Winner Brad Humphries (r) with Chapter Chairman Ben Brinitzer, CPBE, AMD (l), and Alan Lane.
3. Chapter 38 El Paso: Engineer of the Year Award Winner Bruno Cruz (l) with Chapter Chairman Jose Castro.



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4K



LEGAL PERSPECTIVE

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

Look! Up In The Sky: It's a Bird; It's a Plane...

It seems as though I am writing in every issue of *The Signal* about some new spectrum threat to the Broadcast Auxiliary Service. This time it is the 6.5GHz BAS band at 6425-6525MHz. That band is mobile-only and is very heavily used in some markets for electronic news gathering, and for various purposes for event video production. It is used for portable camera relays to jumbotron screens at major sporting events and for musical concerts at large venues, indoors and outdoors. It is also used for video relay to production trucks and for multi-hop relay of video signals from ENG events to either a satellite news truck, a fixed receive site or a temporary relay site. The use of this band is unpredictable and the paths, and path lengths, vary hourly.

In April, the FCC issued a huge report and order and notice of proposed rule making in Docket 15-99. Deep within this document, which proposed to implement the final acts of the 2007 and 2012 World Radiocommunication Conferences (WRCs), was a proposal to make available the bands 4400-4940MHz and 5925-6700MHz bands for use by federal and non-federal aeronautical mobile telemetry (AMT) stations. AMT is for flight testing of aircraft. It is an aeronautical mobile service that transmits from an aircraft station

to a ground-mounted receive dish the results of measurements made onboard an aircraft, including those related to the functioning of the aircraft. The FCC said that it had long urged additional allocations for AMT prior to WRC-07 and had estimated then that there would be an additional 650MHz needed for AMT. Not having received support at WRC-07 for an additional international allocation, the FCC took this opportunity to propose a domestic allocation for AMT in two bands, one of which encompassed the entire 6425-6525MHz band, which broadcasters refer to as (the 6.5GHz band). The notice asked whether AMT can compatibly share spectrum with incumbent radio services at 5925-6700MHz.

Non-federal AMT spectrum in the United States is administered by the Aerospace and Flight Test Radio Coordinating Council (AFTRCC) which is a nonprofit entity comprising several aerospace companies. Federal AMT is of course administered by NTIA and the Department of Defense. Both the DOD and the AFTRCC are friends of broadcasters and video producers. The AFTRCC routinely allows short-term, FCC STA use of existing AMT bands at 1.4GHz and 2.3GHz conditioned on prior coordination through the AFTRCC (a simple and quick process). The DOD is a long-time compatible sharing partner in shared federal/ BAS bands and likewise is easy to work with. These are good people.

But that isn't the only issue in considering proposed AMT and BAS sharing at 6.5GHz of course. AMT, which is routinely conducted in the airspace near military bases, can have an RF footprint of more than a 200-mile radius of operation from the test location. With that large an area, it would be impossible to protect the use of the 6.5GHz band from interference from unpredictable flight paths. The transmitter power from the aircraft is typically 10 watts TPO. The receivers on the ground use tracking antennas, and the occupied bandwidths of the signals reportedly vary between 5-10MHz but could be up to 20MHz for some data applications. The tests, the SBE understands, are between 2 hours and 12 hours duration, all of which are planned. AMT use of the entirety of the 6425-6525MHz band over an area of up to 500 miles in diameter with transmitter power levels from aircraft at 10 watts, apparently using omnidirectional transmit antennas, for periods of up to 12 hours is not a use that can be coordinated in advance with real-time, unpredictable terrestrial uses of the same band.

BAS, CARS and LTTS operations at 6.5GHz do not appear possible within the geographic footprint areas of the AMT operations. Conversely, since the 35-45dB AMT tracking receive antennas have typical elevations in the 5-15 degree range, there is an apparent, significant potential for interference to the AMT receivers on the ground from itinerant, mobile terrestrial BAS, CARS and LTTS facilities. The FCC said that it doesn't have to have a specific sharing plan in place, but it wants to know if the sharing proposal is feasible. So far, it seems incompatible.

The FCC plan for 6.5GHz completes the perfect storm of compromises in the use of microwave video spectrum. The 2025-2110MHz band has to accommodate displaced DoD facilities. The 2450-2483.5MHz band may have to share with ancillary terrestrial component MSS facilities; and 6875-7125MHz is now shared with fixed wireless backhaul. Inter-service sharing of BAS bands may be the order of the day at FCC but it is compatible sharing that counts.



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FOCUS ON SBE

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

72 SBE Chapters Achieve Quality Status

When local SBE chapters meet regularly and provide informative and interesting programs, you can be reasonably sure that a good percentage of the members of those chapters are actively engaged and are getting good value for their membership. During 2014, 72 SBE chapters met the minimum standards for SBE Quality Chapter status and received a cash rebate from SBE Headquarters to use to help fund their local programs.

Rebate checks totaling \$38,750 were mailed on June 1 to the chapter chairs of qualifying chapters; those who met at least five times during 2014 and submitted meeting reports and attendance for those meetings. Many of these chapters actually met 10 to 12 times during 2014.

In addition to providing regular meetings and educational opportunities, other important aspects of chapter activity are beneficial to members. Quality chapters provide recognition of member achievements (announcements of new certifications, industry and company awards), leadership opportunities (chapter officers and event chairs, program speakers) and opportunities to develop professional relationships with other members, are just a few.

The SBE is pleased to recognize those chapters that met the Quality Chapter standard in 2014.

Will your chapter achieve SBE Quality Chapter status in 2015? There are still a few months to qualify. We hope that even more chapters will make this list next year.

Chapter	Chairman
1 Binghamton	Eric Adler
2 Northeastern Pennsylvania	Joseph Glynn, CPBE
3 Kansas	Vern Wirka, CPBE
5 Atlanta	Dewey Newton, CBT
7 Jacksonville	Craig Butler, CSRTE
9 Phoenix	Charles Beck, CSRE, CBT
11 Boston	Robert Yankowitz, CPBE
14 Connecticut Valley	Frederick Krampits, CPBE, CBNT
15 New York City	Jeffrey Smith, CPBE
16 Seattle	Martin Hadfield, CPBE
17 Minneapolis	Nathan Hart
18 Philadelphia	William Gellhaus, PE, CPBE, CBNT
21 Spokane	Tye Barnett
22 Central New York	Christopher Baycura
24 Madison	Kevin Ruppert, CPBE, CBNT
26 Chicago	Gordon Carter, CPBE, DRB, CBNT
28 Milwaukee	Todd Boettcher, CPBE

30 South Bend	Timothy Chapman, CBTE, CBNT
32 Tucson	Robert Russell*, CBTE
34 Albuquerque	Scott Arthur, CBTE, 8-VSB, CBT, CBNT
37 Washington, DC	Kent Kramer, CBRE
38 El Paso	Jose Castro
39 Tampa Bay Area	Paul Kempster, CPBE
40 San Francisco	Arthur Lebermann, CPBE
41 Central Pennsylvania	Randall Miller, Jr., CBT, CBNT
42 Central Florida	Michael Flynn, CBTE
43 Sacramento	Robert Hess, CPBE
44 Shreveport	Troy Jones
45 Charlotte	Ben Brinitzer, CPBE, AMD
46 Baltimore	Robert Lenio, CSRE
47 Los Angeles	Michael Tosch, CSRE, CSTE, AMD, CBNE
48 Denver	Shane Toven, CBRE, CBNT
51 Tri-Cities	Jack Blum
52 Central Ohio	John Owen
53 South Florida	Carlos Sanchez, CPBE
54 Hampton Roads	Raymond Lenz
55 St. Louis	Terrence Dupuis, CBRE, CBNT
56 Tulsa	Roger Newton, CSTE, CBNT
58 Northeast NY	Charles Zariello, CBTE
59 Kansas City	Michael Rogers
60 Richmond	Scott Parker
66 Fresno	Ken Holden, CPBE
67 North Texas	William Ryan
68 Birmingham	John Batson, CPBE, CBNT
69 South Texas	Richard Barton, CBT
70 Northeast Ohio	John Hovanec, CSRE, AMD, DRB, CBNT

72 New Orleans	Ernest Kain
74 Midland, NE	James Skinner, CPBE, CBNT
76 Eugene	Dennis Hunt
78 Blue Ridge	J. Paxton Durham
79 Austin	Edward Rupp, CBTE, CBNT
80 Fox Valley, WI	Stephen Konopka, CBRE
81 Grand Junction	Alfred Ladage
85 Central Western OK	Brian Ryel, CBTE
88 West Palm Beach	Steve Billing
96 Rockford	Ben Pflederer
102 Grand Rapids	Glenn Gunnufsen, CSTE, CBNT
103 Nashville	James Campbell III, CPBE
105 Houston	George Schank, CPBE, CBNT
109 Des Moines	Jon Strom, CBTE
111 Huntsville	Kevin Kidd, CSRE, AMD
112 Western Wisconsin	Mark Burg
113 Knoxville	Glen Wright, CBTE
115 Southern Idaho	Thomas Kettwig, CBT
118 Montgomery	Wiely Boswell, CBRE, CBNE
122 Youngstown	Wesley Boyd, CBT
124 North Oregon	Everett Helm, CPBE
128 Las Vegas	William Croghan, CPBE
131 Inland Empire	Don Bartie, CPBE, CBNT
133 Buffalo	Raymond Felckowski
141 Medford	Keane Laguatan, CBT
145 Magic Valley	Thomas Lowther, CSRTE, CBNT

*Has since moved to Philadelphia

TA

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Engineering Perspective

By Barry Thomas, CPBE, DRB, CBNE
barryt@sbe.org
Director of Engineering, Wilks Broadcast Group

Data and Network Security

Every couple of months, it seems we are hearing a new story about a broadcast facility that has been hacked or suffered a breach of the computer network that resulted in corruption of files inappropriate messages sent over a radio display or even the total loss of programming and files. In the most notorious cases the event exposed an existing, sometimes obvious vulnerability that was exploited by a determined hacker or even a disgruntled employee.

Since media and broadcast facilities must be increasingly interconnected and interactive, security and capability is often a matter of balance. The important thing is to know where network weaknesses may be and mitigate them as best as possible. Total immunity to a concerted attack is almost impossible but fortunately just doing some basic things will go a long way to securing your network from intrusion:

- Disable or change the default user and password on IP-accessible equipment
- If possible, change the IP ports used to connect to IP-based equipment to something other than the default ports.
- Avoid the username “administrator” or its variations on anything. Ideally disable the account and create a new one with administrative rights.
- Do not use mission-critical PCs or workstations such as automation or transmitter control to browse the Internet.
- Use complex passwords and change them regularly.

Document your password and port

changes – and not on a Post-it sitting on your computer.

Avoid putting any equipment or part of the network directly on the Internet without some sort of firewall protection in front. Ideally, any data link from the studio to a remote location, such as a transmitter site would use a private link using a dedicated wireless or wired data link but more often it's easier and less expensive to install



Document all passwords and port settings, but not on a Post-it in plain view.

an Internet circuit at the remote site connected to the site over the public Internet. If this is done there must be a firewall not just at the studio site but at every connection to the Internet. If the same model firewall is used, a VPN tunnel can be set up to establish an encrypted path from the studio to the remote site, which can help security, but ensure the firewall is configured to protect the Internet connection so it doesn't become a hacker's path to your main network.

Connection to the outside world by automation workstations or transmitter and

facility control systems may be necessary, but be extremely mindful of how the software uses that connection and disable, if possible, access outside of what is necessary. Follow the manufacturer recommendations.

Know all the network connection points to the outside world. So many times a network gets hacked because of a vulnerability that no one knew was there. And a big reason for that is that the network wasn't carefully designed, but instead grew organically. For broadcast stations with such an organic network, it's important to go back and document the network. If there is no documentation at all, start with an IP list. Run an IP scanner program inside your network and make sure every device that appears in the scan is something that should be there. Make sure to scan on IP addresses outside your known ranges. From that, then build a diagram of the network that graphically displays the network layout, either

physically or functionally. The objective of these two exercises is to know what's on the network and to identify every potential connection point to the outside world. With that information those connection points need to be tightly limited to the intended purpose.

Be very wary of remote control programs; particularly the variances of VNC. VNC is an incredibly useful tool but it's also a very popular exploit. One of the basic hacker methods is to poke an IP address for open ports. The default VNC IP port 5900 is a really popular one to poke but VNC running on any port is fairly easy to recognize by a hacker.

A seasoned network and security professional can provide the best guidance of network design but IP security of a broadcast facility is always a matter of balance between the needs of the creative staff, technical capabilities, and management of vulnerabilities. But even if you can't afford to engage a networking and security expert just following basic “best practices” and identifying and limiting all the potential entry points will go a long way to keeping your facility from becoming one of the stories in the trade press about the latest creative network hack.

Accredited SBE Frequency Coordinators

The SBE provides accreditation to broadcast auxiliary spectrum (BAS) frequency coordinators who agree to conduct their coordination using a voluntary national standard of procedures. Accreditation has been recently granted to:

- Joseph Fleming • Midlothian, VA Chapter 60
- Lewis Carter • Myrtle Beach, SC

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- Audemat-Worldcast Systems Inc. • 2000**
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Control Manufacturer
- AVCOM of Virginia, Inc. • 2010**
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- AVDB Group • 2014**
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- Belden Electronic Division • 1991**
Steve Lampen 800-235-3361
Cable and Connectivity
- Black Box • 2014**
Brian Kutchma 724-873-6719
HD-KVM Switching & Extension
- Blackmagic Design • 2012**
Terry Frechette 978-337-0991
Switchers, Digital Cameras, Routers
- Bracke Manufacturing LLC • 2012**
Patra Largent 949-756-1600
RF & Microwave Components
- 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 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
- Comark • 2013**
Jack McAnulty 860-763-1100
Manufacturer Broadcasting Transmission
Equipment
- Comrex Corporation • 1997**
Chris Crump 978-784-1776
Audio Codecs & Telephone Interface Products
- 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
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- Davicom, Division of Comlab, Inc. • 2014**
Guy Fournier 418-682-3380
Site Remote Controls
- DEVA Broadcast • 2015**
Todor Ivanov 305-767-1207
Monitors, IP Audio Codecs, 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
- du Treil, Lundin & Rackley, Inc. • 1985**
Jeff Reynolds 941-329-6000
Consulting Engineers
- Drake Lighting • 2015**
Dave Sheppard 270-804-7383
FAA Obstruction Lighting - High Intensity
- 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, SATCom Amplifiers
- Econco • 1980**
Debbie Storz 800-532-6626,
530-662-7553
New & Rebuilt Transmitting Tubes
- Emerson Network Power/Avocent • 2014**
George Morgan 917-592-0956
Avocent High Performance KVM
- ENCO Systems Inc. • 2003**
Kenneth Frommert 800-362-6797
Audio Automation and Playback
- 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
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- Frontline Communications • 2015**
Tracy Brink 727-280-8843
Broadcast Vehicle Manufacturer
- Fujinon, Inc. • 1986**
Thom Calabro 973-633-5600
Broadcast & Communications Products
- GatesAir • 1977**
Dave Hopson (TV) 513-445-5243
Mark Goins (Radio) 513-899-9124
Broadcast Equipment Manufacturer
- Gepco/General Cable • 1995**
Dennis Thompson 407-405-0756
Innovative Cabling & Custom Solutions
- Graham Brock, Inc. • 2012**
Marilyn Matheny 912-638-8028
Technical Consultation - Radio/TV
- HD Radio/iBiquity Digital • 2014**
Rick Greenhut 443-539-4335
HD Radio Technology
- Heartland Video Systems, Inc. • 2011**
Dennis Klas 920-893-4204
Systems Integrator
- IEWC • 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
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Radio Broadcast Equipment
- Integrated Microwave Technologies • 2009**
Elena Waldhuber 908-852-3700
Microwave Video Transmission and Receive
Systems
- JAMPRO Antennas Inc. • 2011**
Alex Perchevitch 916-383-1177
DTV/DVBT & HD Radio-IBOC Solutions
- JVC • 2014**
Lon Mass 973-317-5117
Professional Video Products
- 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
- LBA Technology Inc. • 2002**
Katie Sneed 252-757-0279
AM/MW Antenna Equipment & Systems
- LYNX Technik • 2007**
Steve Russell 661-251-8600
Broadcast Terminal Equipment Manufacturer
- Markertek Video Supply • 2002**
Andrew Barth 845-246-3036
Audio, Video, A/V Broadcast Supply
- Maxell Corporation of America • 1991**
Patricia Byrne 973-653-2423
Data/Broadcast Video Media
- Micronet Communications Inc. • 2005**
Jeremy Lewis 972-422-7200
Coordination Services/Frequency Planning
- Microwave Video Systems • 2011**
Warren J. Parece 781-665-6600
Microwave Equipment Rental, Sales & Service
- Middle Atlantic Products • 2005**
David Amoscatto 973-839-1011
Equipment, Mounting, Solutions
- MoreCom Inc. • 2009**
Kyle Moorehead 763-533-5535
Networking & AV Construction
- Moseley Associates Inc. • 1977**
Dave Chancey 805-968-9621
Digital STLs AM/FM/TV
- 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
- 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
- Quintec 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**
Jay Martin 207-523-0990
Broadcast & Telecom Antennas & Systems
- RCS • 2003**
Diana Stokey 308-284-3007
Audio and Video Content Management
- RDL • 2004**
Chuck Smith 928-778-9678 x142
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
Broadcast Transmitters, Test & Measurement
- Ross Video Ltd. • 2000**
Darren Budrow 613-228-0688
Manufacturer, Television Broadcast Equipment
- Sage Alerting Systems Inc. • 2010**
Gerald LeBow 914-872-4069 x210
Emergency Alert Systems Products
- SCMS Inc. • 2000**
Bob Cauthen 800-438-6040
Audio and RF Broadcast Equipment Supplier
- Seacomm 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 Engineering Inc. • 2011**
Al Salci 818-840-6749
Routers, Mixers, Consoles, Intercoms
- Signiant • 2012**
Steve Gillen 781-221-4000
Signiant Content Delivery Software
- Snell Advanced Media • 1995**
John Shike 818-556-2616
Video Equipment Manufacturer
- Solid State Logic • 2014**
Steve Zaretsky 212-315-1111
Digital Audio Consoles/Routers
- Staco Energy Products Co. • 2010**
Paul Heiligenberg 937-253-1191 x128
Manufacturer of Voltage Regulators, UPS
- Super Electric • 1995**
Michael J. Miga 860-507-2025
Power Protection Equipment
- Sutro Tower Inc. • 1989**
Eric Dausman 415-681-8850
Broadcast Tower Leasing
- Tektronix Inc. • 1977**
Michael Brett 503-627-5888
Video Test & Measurement, Equipment
Manufacturer
- Telemark • 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 RF Licensing Company • 2003**
Jennifer Smith 888-373-4832
FCC Broadcast Auxiliary Licensing Services
- The Durst Org. - 4 Times Square • 2004**
John M. Lyons, CPBE 212-997-5508
TV/FM/Microwave Tower Site
- The Switch • 2011**
Peter Hartz 323-645-8011
Fiber Transmission Provider
- Thomson Video Networks • 2014**
Matt Tietze 301-537-6288
Video Compression and Processing
- Tielne The Codec Company • 2003**
John Lackness 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 Broadcast • 1991**
Mark Tommey 978-671-5700
Video Microwave Systems
- Volicon • 2015**
Russell Wise 781-221-7400
Broadcast Monitoring 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
Broadcast Microwave, Tower & ENG
Installation, Integration Maintenance Services
- WnewTech Corporation • 2014**
Luiz Santiago 310-220-5664
Systems Integration

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Member Spotlight: Steve Johnston

Member Stats

First Joined the SBE: 1984
Certifications: CSRE, CBNT
Chapter: 24, Madison, WI
Employer: Wisconsin Public Radio
Position: Director of Engineering and Operations
Location: Madison, WI

I'm Best Known For: My "can do" attitude: I will do my darndest to accomplish the task at hand in the best manner possible. I have a strong instinct to learn and grow, and of course a sense of humor. These elements combined are powerful.

Q What do you enjoy or value most about your SBE involvement?

A Education is perhaps the most critical responsibility of the Society, served through the SBE certification program as well as the sharing of knowledge at local chapter meetings, regional gatherings, and national conferences.

Q What got you interested or started in broadcast engineering?

A I started taking radios apart as a youngster and became a ham radio operator at age 13. My career started at



Steve Johnston using his FCC RadioTelegraph license #1 as the operator of coast station KSM/KPH in Point Reyes, CA.

age 19 as a part-time operator and assistant engineer with Susquehanna Radio at WHLO in Akron, OH. I became chief engineer of WHLO in 1983. I stayed with Susquehanna in engineering management at WKIS and the Florida Network, Norfolk, VA, and York, PA. In 2000, I shifted to public broadcasting when I became director of engineering and operations for Boise State Radio. In 2005 I moved to Wisconsin Public Radio as director of engineering and operations.

Q Who was your mentor?

A I would like to thank John Loving, Fred Greaves, Charlie Morgan, and other senior engineering managers at Susquehanna who

helped me grow into the professional I am today. And on the personal side, my appreciation goes to my wife Christy as she has helped me be a better all-around person.

Q What do you find most satisfying in your job?

A I really appreciate the efficiency of radio and television broadcasting. We provide a tremendous service to the public at a relatively small cost per-person. I also get a huge amount of satisfaction in hearing from listeners that they appreciate our work.

Q Tell us something others may not know about you.

A I hold an FCC RadioTelephone license, but I also hold the first FCC RadioTelegraph license, #T000000001, to be issued after the FCC restructured those tickets. To celebrate, I traveled to California to operate the living-history coast radio station KSM/KPH where I sent this Morse code message by hand on 500kHz: IE XXX XXX CQ DE KSM KSM KSM PACIFIC HIGH SEAS WEATHER QSW 426/HF AR

In years gone by this message would have advised ship radio operators (all monitoring 500kHz for emergencies) that a special weather advisory was about to be sent on 426kHz, which I later used a computer to send. After all, the weather report for the entire Pacific Ocean is pretty long!

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Robert Raffaele, Albany, NY
SBE Chapter 24, Madison, WI

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John Harrington, Modesto, CA
James O'Connor, Overland Park, KS

In Memoriam



David Hultsman,
CSRE
Member #1337

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2002-2005

WELCOME TO THE SBE

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 David Belisle - Las Vegas, NV
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 Kurt R. Caylor - Whittier, CA
 Josh A. Crawford - Crawfordville, FL
 Melvin D. Hayden - Tallahassee, FL
 Darryl Ferguson - Atlanta, GA
 Je'Quan O. Gold - Fort Bragg, NC
 Elaine D. Grubbs - New York, NY
 John J. Hayes - Woodbridge, VA
 Adam Hazell - Bainbridge Island, WA
 Cody M. Hein - Green Bay, WI
 Jason M. Hinton - Newport Beach, CA
 Rodney R. Hogg - Scott City, KS
 Christopher W. Knox - Denver, CO
 Zachary Laughlin - Douds, IA
 Charles G. Lelievre - Westport, CT
 Dana M. Liman - Brookville, NY
 Samuel G. Molyneux - Agat, GU
 William Mullen - Westland, MI
 James C. Myers - Charlestown, IN
 Karl Niemoller - Indianapolis, IN
 Fernando Ortiz - Caguas, PR
 Mark R. Parsons - Orange, CA
 Krishna Gopaul Paul - Lalbagh Dhaka, Bangladesh
 Charles S. Price - Vidor, TX
 Bradley S. Rakestraw - Tupelo, MS
 Jason Roach - Dallas, TX
 Ricky Rotaru - Milwaukee, WI
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 Logan Swift - Santa Anna, CA
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 Kelly G. Kittleson - Aurora, CO
 William W. Martin - Lancaster, PA
 Joseph P. Miklos - St. Johns, FL
 Joseph Pandolfo - Crawfordville, FL
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 Leonardo Groba Alonso - Chicago, IL
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MEMBERS ON THE MOVE



◀ **Jeff Schick, CBT**, is the director of technology at Sprite Media, a digital signage company for radio stations.

Mike Sheffer, CBT, is now implementation project manager for Ross Video. He's based in Tampa, FL, and will support Ross efforts in the US and Canada.

John-Erick Rempillo, CPBE, is now area broadcast engineer at Blackburn Radio CHYR-FM, CKUE-FM, CJWF-FM and CJSP-FM, Windsor-Essex Area, ON.

Bobby Gray is the market chief engineer of the Salem Communications stations in Little Rock, AR.

▶ **Steve Densmore** is now station manager at Strategic Social, Bagram Airfield, Afghanistan.

Romualdo "Rolin" Lintag is now assistant chief engineer at KRON4, San Francisco, CA.

Tony Gervasi is the sales manager, US and Canada, for 305 Broadcast. He is based in Miami.



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Wisconsin Broadcasters Clinic
Oct. 13 - 14, 2015

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AES Convention
Nov. 1, 2015 sbe.org/certification
Application deadline is Oct. 2, 2015.

SBE Certification Exams
Local Chapters
Nov. 6 - 16, 2015 sbe.org/certification
Application deadline is Oct. 2, 2015.

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Pope Francis' visit to the Shroud of Turin broadcast live on RAI 1. Photo courtesy of Ivo Bonato, Broadcast Production SAS

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