

THE Signal

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The Association for Broadcast and Multimedia Professionals

www.sbe.org

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SBE Announces National Award Winners

The 2019 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. The winner of the award for 2019 is Charles Wooten of Panama City, FL.

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 2019 James C. Wulliman SBE Educator of the Year award is Bill Hubbard, CPBE, of Green Bay, WI. Hubbard is a member of Chapter 80.

On October 10, 2018, Hurricane Michael bared down on the Florida Panhandle. The Category 5 hurricane came ashore and knocked out terrestrial and wireless communications and all util-

ities. Because of Charlie's experience, planning and system redundancy, the citizens of Bay County tuned in their radios the morning after the storm and found iHeart Media signals live. Locals had access to critical information regarding, food, water and emergency health care.

Bill Hubbard recently retired from a long career in broadcast engineering. Bill is a charter member of Chapter 80. Among his service with the University of Wisconsin Green Bay, Bill spent much of his time volunteering with the Wisconsin Broadcasters Association Broadcast Clinic Program Committee. In that role, he assisted in putting together two educational seminars each year. Bill has also helped contribute to the "Media Technology Institute," a seminar to train new graduates in the basics of broadcast engineering. In 2019, Bill also developed and helped implement an



see [AWARDS](#), p. 8

SBE National Meeting Webcast to Air Live from Broadcasters Clinic

If you aren't able to attend the SBE National Meeting this year in person, do the next best thing and tune in to the live webcast of the Annual SBE Membership

Meeting. It takes place from 4:00 to 5:00 p.m. EDT (1:00 p.m. – 2:00 p.m. PDT) on Wednesday, Oct. 16. The meeting is part of the SBE National Meeting, this year being hosted by the Broadcasters Clinic in Madison, WI.

Hosted by SBE President Jim Leifer, the webcast will include updates on the latest developments with SBE education, certification and frequency coordination. The newly elected officers and directors of the national SBE Board of Directors will be inducted. An interview segment with a special guest, to be announced, will also be featured.

To tune in, go to the SBE website (sbe.org) and click on the webcast icon. Reminders will be emailed to members the day

before and the day of the webcast.

SBE National Meeting events begin on Tuesday, Oct. 15 with meetings of the national SBE Certification Committee and the SBE Board of Directors. On Wednes-

see [WEBCAST](#), p. 9



The 2019 SBE Membership Meeting will be streamed live.

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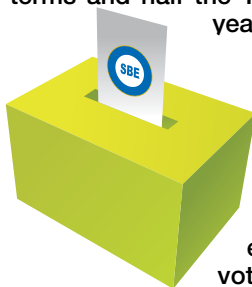
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SBE National Office
317-846-9000 www.sbe.org

Vote by August 28 in SBE Election

The annual election of SBE officers and directors is currently underway. Up for election are all four officers for one-year terms and half the 12 directors for two-year terms.



All ballots are due by 4:30 p.m. EDT on Aug. 28. 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. An email test message was sent on July 10, and the ballot link was sent to valid email addresses on July 26. Reminder emails will also be sent.

For members who received a paper ballot in the mail, your ballot must be received in the SBE National Office by mail, express delivery or in person (no facsimiles) by 4:30 p.m. ET on Aug. 28.

If you have not yet cast your vote, do so today.

Directors: (top six vote getters will be elected):
Dave Bialik, CBT; Chapter 15 New York; New City, NY

Mark Fehlig, PE, CPBE, 8-VSB; Chapter 40 San Francisco; Walnut Creek, CA

Jeff Juniet, CBTE; Chapter 42 Central Florida; Orlando, FL

Charles "Ched" Keiler, CPBE, 8-VSB, CBNE; Chapter 53 South Florida; Ft. Lauderdale

Gary Kline, CBT; Chapter 5 Atlanta; Atlanta, GA

Geary Morrill, CPBE, CBNT; Chapter 91 Central Michigan; Saginaw, MI

Jason Ornellas, CBRE, CRO; Chapter 43 Sacramento; Sacramento, CA

Chris Tarr, CSRE, AMD, DRB, CBNE; Chapter 28 Milwaukee; Milwaukee, WI

Dan Whealy, CBTE; Chapter 96 Rockford; Waterloo, IA

Randy Woods, CBNE; 42 Central Florida; Orlando, FL



Pecena

SBE Election Candidate Slate

Officers:

President: Wayne Pecena, CPBE, 8-VSB, AMD, DRB, CBNE; Chapter 99 Bryan, TX; College Station, TX

Vice President: Andrea Cummis, CBT, CTO; Chapter 15 New York; Roseland, NJ

Secretary: Kevin Trueblood, CBRE, CBNT; Chapter 90 Southwest, FL; Ft. Myers, FL

Treasurer: Ted Hand, CPBE, 8-VSB, AMD, DRB; Chapter 45 Charlotte; Charlotte, NC





Certification Question

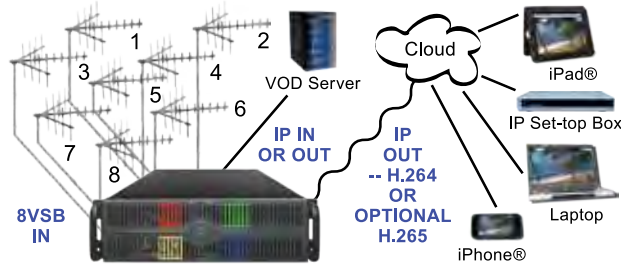
Answer on page 6

AM transmission lines are pressurized in order to:

- A. reduce moisture infiltration.
- B. cool the inner conductors.
- C. decrease the average power loss.
- D. All of the above

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LETTER FROM THE PRESIDENT

By Jim Leifer, CPBE
SBE President
jleifer@sbe.org

SBE, DoD Partner on Frequency Coordination

Part of the SBE's mission is to create working alliances within the broadcast industry and with those who work in our space. Over the past several years, the SBE has been working with the U.S. Department of Defense (DoD), which has been provided co-primary status with broadcasters in the 2025-2110 MHz Broadcast Auxiliary Spectrum (BAS) band as a result of the Advanced Wireless Services-3 (AWS-3) transition.

The DoD plans to deploy a number of training systems that utilize this spectrum it now shares with broadcasters. In our meetings with the DoD together with the NAB, we have discussed how broadcasters use this spectrum and its importance for electronic news gathering. It became clear to DoD officials that to operate their defense systems without causing or receiving interference, a substantial frequency coordination effort would need to be initiated, providing near-real-time coordination in some cases. The DoD turned to the SBE for help.

The SBE has for many years facilitated a network of volunteer frequency coordinators, most through our local chapters, across the United States and its territories. Though the majority of the country is covered by this network of volunteers, there are markets where no coordinator currently exists.

The systems the DoD intends to deploy will be located at installations of all the military branches, including the national guard and reserves. These installations are ubiquitous and located in urban and rural areas. The DoD, with the endorsement of the NAB, asked the SBE to employ a national frequency coordinator, paid for with DoD funds, who would work with our established volunteer coordinators and cover the areas that don't have their own local coordinator.

The SBE Board of Directors then went to work to determine the structure and administration of this effort, and the resources it would require. We submitted a proposal to the DoD through its primary contractor, Alion Science and Technology, to provide national frequency coordination services that will mutually serve the needs of the DoD and broadcasters. The proposal was ultimately accepted in May of this year, and I am happy to say that the program officially began in June.

The SBE has hired the broadcast consulting firm of Technical Broadcast Solutions, Inc. (TBSI) of Middletown, DE. Its principal is RJ Russell, CPBE, a 20-year member of the SBE, chair of the SBE Frequency Coordination Committee, and until recently, SBE national vice president. TBSI is heavily involved in TV repack and ATSC 3.0 implementation work for clients and is taking on the SBE as a major client to serve as our national SBE Frequency Coordination Manager (FCM). RJ has been heavily involved, along with SBE General Counsel Chris Imlay, in working with DoD officials and the NAB to develop a workable solution for this shared spectrum. RJ is most knowledgeable in this area and we are fortunate to have him and his firm on board.

RJ provides insight into the details of this spectrum-sharing effort in the Engineering Perspective column in this issue of *The Signal*. I encourage you to read it. The sub-contract agreement with Alion for this DoD project is a large responsibility for the SBE; one that will last approximately six years, and possibly longer. I am pleased to say that it will not use member dues for any of it, and in fact, a portion of the funding received from the project will help support traditional SBE programs.

Membership Drive Success: 59 New Members

The 2019 SBE Membership Drive, themed "Invest in Yourself, Invest in Your Future," brought in 59 new members. 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 receives an expense-paid trip to the SBE National Meeting in Madison, WI, this October, is Paul Jewusiak of Anchorage, AK. All the prize winners are listed here. Thanks to the SBE Sustaining Members who donated prizes for the Membership Drive.

Recruiters also earned \$5 off their 2020 dues renewal for each new member recruited. SBE members who recruited three or more new members received an upgrade to SBE MemberPlus.

Shure Pro Studio headphones from Broadcasters General Store	Maria Laing-Smith; Agoura Hills, CA
Presonus Eris-E3.5 powered monitors from BSW	Ted Hand; Charlotte, NC
Comrex swag bag	Charles Kelly; Noblesville, IN
Comrex drinking glass	H. Lee Delaney; Lexington, KY
Comrex nylon tote	Robert Sulecki; Indianapolis, IN
\$100 Amazon gift card from Davicom	Ronald Brownlow; Ruskin, FL
Dielectric polo shirt	Charles Sawner; East Syracuse, NY
Dielectric polo shirt	Howard Fine; Sherman Oaks, CA

Tropical shirt and sunglasses from DVEO	Samuel Garfield; Raleigh, NC
HVS backpack from Heartland Video Systems	Darrell Gordon; Raleigh, NC
HVS checkered blanket from Heartland Video Systems	Jason Quinn; Albuquerque, NM
HVS t-shirt from Heartland Video Systems	Dave Ratener; Kent, WA
HVS t-shirt from Heartland Video Systems	Charles Price; Vidor, TX
HVS t-shirt from Heartland Video Systems	R. Allen Fowler; Murray, KY
Thompson t-shirt from Heartland Video Systems	John Collinson; New Port Richey, FL
HVS polo from Heartland Video Systems	Joseph Glynn; Old Forge, PA
Hitachi zippered padfolio	Derek Batterham; Tucson, AZ
Hitachi zippered padfolio	Charles Price; Vidor, TX
ARRL Antenna Handbook from Kathrein	Lawrence Behr; Greenville, NC
LBAU online safety course, hardhat from LBA Group	Doug Garlinger; Fishers, IN
SBE MemberPlus upgrade from SBE	Tim Laes; Green Bay, WI
SBE CertPreview from SBE	Ronald Brownlow; Ruskin, FL
Webinars by SBE registration from SBE	Madison Batt; Mountlake Terrace, WA
SBE Store/SBE Bookstore \$25 gift certificate from SBE	Tony Rocanova; Morrison, CO
\$200 L.L. Bean gift card from Shively	Paul Jewusiak; Anchorage, AK
Tieline polo shirt	Charles Kelly; Noblesville, IN
Tieline polo shirt	Ronald Sweatte; Spokane, WA
Barbecue tool tote from Tieline	Ronald Viste; Eau Claire, WI
Barbecue tool tote from Tieline	Marcos O'Rourke; Costa Mesa, CA
FM-55 from Wheatstone	Robert Hoffman; Manchester, MO



EDUCATION UPDATE

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

Does Anybody Really Know What Time It is?

Have you ever asked a broadcast engineer “What time is it?” and minutes later you feel like it was explained to you how the clock was made, but you still wonder what the time is?

Broadcast engineers are often obsessed with time likely because they are surrounded by time. The radio engineer has likely programmed an automation schedule built around precise time program clocks that outlines the content broadcast throughout the day. Precise in terms of accuracy to the second. And of course the all-familiar FCC required legal ID at the top of the hour. The TV engineer has likely distributed analog time code throughout a broadcast facility with the intention of locking video tape recordings to a precise and consistent time reference for editing purposes. Precise in terms of accuracy to the sub-second or video frame. As broadcast facility infrastructure has moved to the information technology (IT) environments, precise time references such as the Internet Protocol (IP), Network Time Protocol (NTP), and the Precise Time Protocol (PTP) have emerged. Precise in terms of accuracy to 1 ms for NTP and 3 μ s for PTP.

Precise and synchronized time references have existed long before the first broadcast stations. In the 1850s, Western Union utilized the telegraph system to distribute time signaling from the US Naval Observatory in Washington, DC. This time reference was used to synchronize clocks in the railroad system throughout the nation. History indicates that this nationwide clock history remained in service into the 1970s and faded away as Western Union faded away. Today, a Western Union railroad clock is considered a cherished collector's item.

Today, Global Positioning System-based (GPS) time references are an integral component of the broadcast technical facility, often capable of supplying time references in several formats ranging from SMPTE time code, to NTP, and PTP. The distributed nature allows a single reference to supply time information to a variety of devices throughout the facility in lieu of each device containing its own GPS-based reference. In addition, a 10MHz frequency reference is often provided by these references, which is useful to check calibration of the station's frequency measuring devices. A 1 pulse-per-second (pps) output can also be used to synchronize other devices in the facility. GPS references are described in Stratum levels with a Stratum 0 clock defined as a high-precision reference clock, and a Stratum 16 defined as an unsynchronized clock. The Stratum n description refers to the device distance from the reference source rather than an indication of accuracy. A Stratum 2 time server can query multiple Stratum 1

sources to provide a stable and very accurate time reference.

Time code known as SMPTE 12M-2 can be found in two formats: Longitudinal (LTC) or Vertical-Interval (VITC). Time is presented in the format of hours:minutes:seconds:frames or HH:MM:SS:FF, and represented by a 32-bit binary coded decimal (BCD) number identifying an individual frame of video. In order to correct for the 29.97 frames per second rate of color NTSC, drop-frame (DF) time code is commonly used. It is typically represented as HH;MM;SS;FF with the semicolon indicating the drop-frame mode. The name is often misleading as no frames of video are actually dropped. Instead, a few time codes are dropped to match the timecode with clock time.

NTP is a protocol for time synchronization over packet-switched networks or today's common IP network. Now in version 4 (NTPv4) as defined by Internet Engineering Task Force (IETF) Request for Comments (RFC) 5905 providing accuracy to 1 ms. NTP is based on a client-server model incorporating an algorithm accounting for inherent network latency. For many, NTP is an excellent (and easily implemented) approach to time sync devices in the broadcast facility such as automation system components and network content sources.

PTP is defined under the IEEE-1588 standard now implemented in version 2 or IEEE-1588-2008. PTP is also a master-slave architecture similar to NTP, but provides accuracy in the sub-second range. IEEE 1588 is used in in-network applications where accuracy is required beyond the capabilities of NTP such as industrial automation and financial transaction markets. It is becoming common in the truly IP-based TV networks such as SMPTE ST-2110. NTP utilizes the Unix epoch. The Unix epoch (also known as POSIX time or Unix time) is based upon the number of seconds occurring since Jan. 1, 1970, as each day consists as 86,400 seconds. Unix time is represented by a 32-bit integer

string such as “1560862759.” The Internet provides ample time conversion utilities and the current Unix time can also be found at time.is/Unix_time_now.

It's no wonder a broadcast engineer is often obsessed with time when the day is expressed in terms of seconds, frames, milliseconds, and even microseconds. Oh, and you did ask what time it is. This column was submitted to the editor at 1561380426, which was prior to the deadline of 1561766399.

Your SBE Education Committee is here to help achieve your professional development goals. Let us know your thoughts on current and future programs, lend your advice and guidance to your SBE Education Committee to help establish the right mix of educational content to meet your professional development needs.



The iWatch is a Stratum 2 time reference.

For more information on any SBE education program click the Education tab at sbe.org, or contact Education Director Cathy Orosz at the SBE National Office at 317-846-9000 or corosz@sbe.org.



CERTIFICATION UPDATE

By Ralph Hogan, CPBE, DRB, CBNE
Chair, Certification Committee
rhogan@sbe.org

ATSC 3.0 SBE Certification Moves Forward

Developing a new test takes time, especially when we utilize a new technology that is still being developed and newly implemented. A small group of ATSC 3.0 experts are working with the SBE Certification Committee to create the new ATSC 3.0 specialist certification. The group has identified a list of reference materials (Table 1) that will be covered in the exam. You can also access these standards on the SBE website under certification/exam preparation. There are links to each standard.

In addition to these links, the SBE Education program has

ATSC Standard	Title
A/300:2017	ATSC 3.0 System
A/321:2016	System Discovery and Signaling
A/322:2018	Physical Layer Protocol
A/324:2018	Scheduler/Studio-to-Transmitter Link
A/327:2018	Physical Layer – Recommended Practice
A/330:2019	Link Layer Protocol
A/331:2018	Signaling, Synchronization, Delivery and Error Protection
A/360:2018	ATSC 3.0 Security and Service Protection
A/327:2018	Guidelines for the Physical Layer Protocol
A/350:2019	Guide to the Link-Layer Protocol
A/351	Techniques for Signaling, Delivery and Synchronization

Table 1. ATSC standards available through the SBE website.

produced a number of webinars aimed at the ATSC 3.0 technology. You can access these Webinars by SBE on demand, and SBE MemberPlus members can access all of them for free. See the list in Table 2.

The work to prepare the ATSC 3.0 SBE Specialist certification continues to move forward, and once it is ready, watch for announcements so you can apply to take the exam to earn the new certification mark.

Webinars by SBE Covering ATSC 3.0

SBE ATSC 3.0 Networking Series

- ATSC 3.0 Networking, Module 1 Introduction to ATSC 3.0 Station Architecture, Networking Standards and the Physical Layer
- ATSC 3.0 Networking, Module 2: Ethernet Switching
- ATSC 3.0 Networking, Module 3: IP Routing

SBE ATSC 3.0 Series

- ATSC 3.0, Module 1: Introduction to ATSC 3.0
- ATSC 3.0, Module 2: Overview of the Physical Layer
- ATSC 3.0, Module 3: Implementation of the Transport and Physical Layers
- ATSC 3.0, Module 4: MPEG Media Transport Standard and its Use in ATSC 3.0
- ATSC 3.0, Module 5: ATSC 3.0 ROUTE Protocol
- ATSC 3.0: Module 6: Advanced Emergency Information System

Table 2. Available Webinars by SBE



Answer from page 3

The answer is A

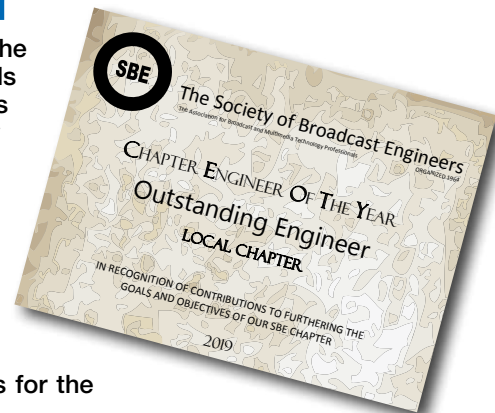
Pressurizing a line with desiccated air or nitrogen minimizes moisture in the line caused by heating and cooling of the inner and outer conductors, and reduces the chance of moisture entering through any leaks. This will reduce the chance of a voltage arc within the line.

2019 Chapter Engineers of the Year

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. Seven SBE members were selected by their chapters for the local honor this year.

- Alex Brewster, CBRE, CBNT; Ch. 16 Seattle
- John Gold, CSTE; Ch. 32 Tucson
- David Halperin, CBRE; Ch. 38 El Paso
- John Gray; Ch. 59 Kansas City
- Robert Leskovec; Ch. 70 Northeast Ohio
- Paxton Durham; Ch. 78 Blue Ridge
- Stuart Muck, CBRE; Ch. 80 Fox Valley

Each honoree will receive a plaque and will be featured in the next issue of *The Signal*.



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SBE Certification Achievements

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LIFE CERTIFICATION

Certified Professional Broadcast Engineer (CPBE)
Danny Shoen, Lexington, KY - Chapter 35
Certified Broadcast Technologist (CBT)
Robert Weiss, Philadelphia, PA - Chapter 18

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.

CERTIFIED PROFESSIONAL BROADCAST ENGINEER (CPBE)

Certified Professional Broadcast Engineer (CPBE)
John Bisset, Bedford, NH - Chapter 110
James Meyers, Mt. Wolf, PA - Chapter 41

Applicants must have 20 years of professional broadcast engineering or related technologies experience in radio and/or television. The candidate must be currently certified on the Certified Senior Broadcast Engineer level.

JUNE EXAMS

Certified Broadcast Radio Engineer (CBRE)
Michael DeLaRosa, Quincy, IL - Chapter 49
Certified Broadcast Television Engineer (CBTE)
Ryan Dale, Delphi, IN - Chapter 25
Phat Le, Salt Lake City, UT - Chapter 62
Certified Audio Engineer (CEA)
Frank Cerbini, Jr., Bellmore, NY - Chapter 15

Certified Video Engineer (CEV)
Daniel Kulin, Fort Worth, TX - Chapter 67
Certified Broadcast Networking Technologist (CBNT)
Adam Barry, Burke, VA - Chapter 37
Michael Baxter, Norfolk, VA - Chapter 54

Certified Broadcast Technologist (CBT)
Mindy Hoffman, East Brunswick, NJ - Chapter 15
Levi Malan, Odin, IL - Chapter 55
Spencer Miles, Verona, NJ - Chapter 15
Mike Travis, Prairie Du Sac, WI - Chapter 24

SPECIAL PROCTORED EXAMS

Certified Broadcast Networking Engineer (CBNE)
Nathan Russell, Indianapolis, IN - Chapter 25

Certified Senior Radio Engineer (CSRE)
Gregg Richwine, Des Moines, IA - Chapter 109

SBE CERTIFIED SCHOOL COMPLETION

Certified Broadcast Technologist (CBT)
Southern Alberta Institute of Technology
Martin Fournier-Montalvo, Calgary, AB
Biran Hanington, Calgary, AB

Tyler Holdener, Calgary, AB
Anthony Hosemann, Calgary, AB
Li Linzhou, Calgary, AB
Blayne Ly, Calgary, AB

Louie Paccalagan, Calgary, AB
Christian Turingan, Calgary, AB
Alyssia Wong, Calgary, AB

CERTIFIED BY LICENSE

Certified Broadcast Technologist (CBT)
Peter Bankwitz, Saco, ME - Chapter 82

Michelle Bradley, Mardela Springs, MD - Chapter 73

Frank Magarelli, Scottsdale, AZ - Chapter 9
Glenn Stilwell, Sacramento, CA - Chapter 43

CERTIFIED RADIO OPERATOR (CRO)

Sharlene Birdsong, Indianapolis, IN
Heath Evans, Chidester, AR
Andrew Moerschel, Kenilworth, IL
Nilolai Roginskii, West Palm Beach, FL
Cedar Ridge High School
Cameron Balch, Bradford, AR
Ashley Brinkley, Newark, AR
Rhiannon Bromley, Newark, AR
Clayton Campbell, Charlotte, AR
Allyson Carlton, Newark, AR
Nathan Carpenter, Sulphur Rock, AR
Maria Cervantes, Sulphur Rock, AR
Nevin Crotts, Sulphur Rock, AR
Laura Cullum, Newark, AR
Solomon Daniels, Sulphur Rock, AR
Raven Emerson, Cave City, AR
Madison Ireland, Oil Trough, AR
Tanner Johnson, Newark, AR
Natalie Looney, Sulphur Rock, AR
Tanner Morgan, Sulphur Rock, AR

Emilee Ann Pollard, Sulphur Rock, AR
Joseph Pritchett, Saffell, AR
Noah Smith, Sulphur Rock, AR
Ian Talley, Newark, AR
Elsa Timbs, Batesville, AR
Callisto Wade, Oil Trough, AR
Riverside High School
Damien Trejo, El Paso, TX
Killeen Career Center
Natalie Albo, Killeen, TX
Devan Sellers, Killeen, TX
Devan Sellers, Killeen, TX
Mesquite ISD
Lindsey Stephan, Mesquite, TX
St. Petersburg College
Nick Ciraci, Clearwater, FL
Nicholas Haras, St. Petersburg, FL
Kevin Lovelace, St. Petersburg, FL
Doron Smith, St. Petersburg, FL

New Castle Career Center
Blake Burris, New Castle, IN
Drew Cupp, Knightstown, IN
Maddalyn Matthews, Shirley, IN
Simon Pierce, Lewisville, IN
Nick Stearns, New Castle, IN
Pasadena City College
Laurie Jobu, Los Angeles, CA
Casey Johnson, Pasadena, CA
Stephanie Meade, Studio City, CA
Esteban Sanchez, El Monte, CA
Malick Sanneh, Los Angeles, CA
Yael Soto, San Gabriel, CA
Daniel Volozov, Pasadena, CA
Daniel Won, Los Angeles, CA

Got your SBE Certification pin?
sbe.org/pins

CERTIFIED TELEVISION OPERATOR (CTO)

Katrina Alexander, East Chicago, IN
James Edwards, Oklahoma City, OK
Sandra Edwards, New Bern, NC
Steven Smith, Long Beach, CA
San Benito High School
Jacob Garcia, San Benito, TX
Leticia Gutierrez, San Benito, TX
Bates Technical College
Luciana Barrera, Federal Way, WA
Solie Bates, Poulsbo, WA

Bates Technical College (cont.)
Rebecca Hamilton, Puyallup, WA
Rebecca Harrison, Tacoma, WA
Tristan McClain, Milton, WA
Paloma Rodriguez, Tacoma, WA
Mathew Shaffer, Tacoma, WA
Loren Toy, Seattle, WA
Cleveland High School
Daniel Aguilar, Cleveland, TX
Ahime Andrade, Cleveland, TX

Cleveland High School (cont.)
Devyn Dugas, Cleveland, TX
Raina Enloe, Cleveland, TX
McKenzie Henning, Cut and Shoot, TX
Manuel Vazquez, Cleveland, TX
Friendswood High School
Lily DeVillez, Friendswood, TX
Kelly Greenwood, Friendswood, TX
Jasmyn Habibi, Friendswood, TX
Erika Sykes, Friendswood, TX

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)
Jessie Balos, Moreno Valley, CA - Chapter 131
Marshall Rice, Troy, IL - Chapter 55
Certified Professional Broadcast Engineer (CPBE) AM Directional Specialist (AMD)
William Harris, Albuquerque, NM - Chapter 34
Certified Professional Broadcast Engineer (CPBE) AM Directional Specialist (AMD) Digital Radio Broadcast Specialist (DRB)
Thomas Ray, New Windsor, NY - Chapter 15
Certified Senior Radio Engineer (CSRE) AM Directional Specialist (AMD) Digital Radio Broadcast Specialist (DRB)
John Hovanec, North Royalton, OH - Chapter 70
Certified Senior Radio Engineer (CSRE)
Thomas Nelson, St. Paul, MN - Chapter 17
Certified Broadcast Networking Engineer (CBNE)
Michael Gurthie, Charlotte, NC - Chapter 45

Certified Broadcast Radio Engineer (CBRE)
Michael Lennen, Omaha, NE - Chapter 74
Mark Saia, Painted Post, NY - Chapter 1
Certified Broadcast Television Engineer (CBTE)
John Garcia, Las Vegas, NV - Chapter 128
James Lien, Gilbertsville, PA - Chapter 18
Tom Manning, Spokane, WA - Chapter 21
Edward Rupp, Austin, TX - Chapter 79
Beau Stenkamp-Strahm, Boise, ID - Chapter 115
David Williams, Santa Barbara, CA - Chapter 47
Certified Audio Engineer (CEA)
Chris Connelly, Clovis, CA - Chapter 66
Certified Broadcast Networking Technologist (CBNT)
Mark Guralnik, Henderson, NV - Chapter 128
John Hovanec, North Royalton, OH - Chapter 70
Mark Saia, Painted Post, NY - Chapter 1

Certified Broadcast Technologist (CBT)
Chris Connelly, Clovis, CA - Chapter 66
Payne Toy, Calgary, Alberta, Canada
Justin Wynn, Louisville, KY - Chapter 35
Certified Television Operator (CTO)
Juan Dent, Augusta, Ga
Relah Eckstein, Tarzana, CA
Dennis Lamb, Lima, OH
Christopher Roach, Luzerne, PA
Heidi Roach, Luzerne, PA - Chapter 2
Joel Rodriguez, Santa Rosa, TX
Rohan Shand, Lynwood, CA
Londal Thorpe, Kissimmee, FL
Ramon Villavicencio, Camarillo, CA
Eric Williams, Spring Valley, CA
Certified Radio Operator (CRO)
John Dutton, Marshall, MO
John Marcon, Little Rock, AR
Eric Wolf, Lakewood, OH

2019 SBE Compensation Survey

The SBE conducted its third compensation survey in April and May. The survey goal is to provide practical information to SBE members about individual compensation (salary and benefits) based on the type of broadcast or multimedia involvement, market size, and job title category. 479 respondents answered all the survey questions.

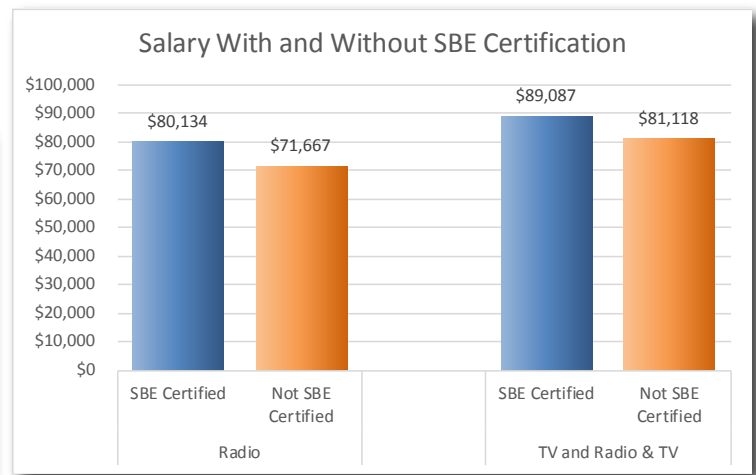
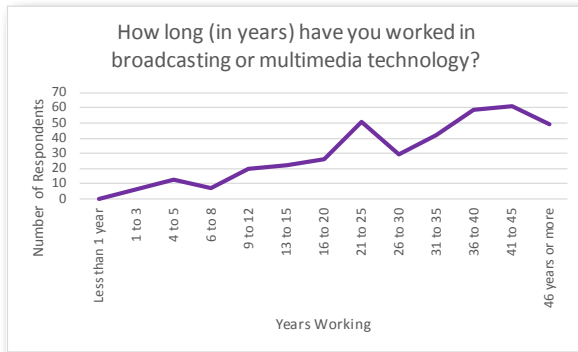
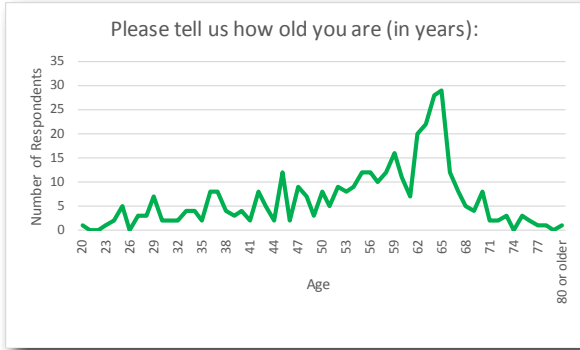
We asked if respondents received a raise in

the last year, and if so, how much, and to report benefits received. We also asked about contract engineering rates and practices.

Respondents were asked if they held any broadcast- or media-relevant professional certifications. We also compared salaries of respondents with and without SBE Certification and reported the results. Shown here are samples of the full survey results.

The survey report is available via the SBE Bookstore and is free to SBE members as a member benefit. You will need your SBE website login to access it. Also, the PDF report is password protected. The password is noted on the download page. Non-members can purchase the survey via the SBE Bookstore.

If you participated in the survey this year, thank you. We encourage your participation next year so we can provide the most useful results.



AWARDS from p. 1

incentive plan for Chapter 80 members to become SBE certified. The plan allows for Chapter 80 fundraising proceeds to be used to reimburse members for SBE certification exams and study materials.

Blackmagic Design has been awarded the 2019 SBE Technology Award for its 8K Workflow Technology. The 8K Workflow Technology revolutionized the broadcast industry with the introduction of a complete range of 8K broadcast workflow products. To make sure customers truly benefit from these 8K products, this is based on the latest hardware processors running an embedded Linux operating system, which incorporates 30 years of experience and knowledge in the remote site management industry.

Chapter and Individual Awards

Chapters are the lifeblood of the SBE, and 2019 marks the seventh year that the Chapter Engineer of the Year Award has highlighted the achievements of members within their chapters. This year, seven chapters selected their own award recipients. Each winner will be presented with a special plaque 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 2018 Broadcasters Clinic in Wisconsin has won for Best Chapter Regional Educational Event. Chapter 16 in Seattle, WA, has won for Best Chapter Communication.

Doug Irwin, CPBE, AMD, DRB, of Chapter 47 has won the award for Best Technical Article, Book or Program by an SBE member for his three-part *Radio World* article series on the Repack.

Statistical Awards

Greatest Growth in New Members

Class A: Chapter 115, Southern Idaho, Chapter Chairman Thomas Kettwig, CBT

Class B: Chapter 85, Central Western Oklahoma, Chapter Chairman Brian Ryel, CBTE

Most Certified Chapters

Class A: Chapter 7, Jacksonville, FL Chapter Chairman Craig Butler, CSRTE, and Certification Chairman Alan Alsobrook, CSRE, AMD, CBNT

Class B: Chapter 24, Madison, WI, Chapter Chairman Britny Williams, CBT, CBNT, and Certification Chairman James Hermanson, CPBE, CBNT

Highest Member Attendance

Class A: Chapter 112, Western Wisconsin, Chapter Chairman Todd Zschemtitz, CBTE

Class B: Chapter 79, Austin, TX, Chapter Chairman Ed Rupp, CBTE, CBNT

Nominations for the 2020 awards will open in February.

Class awards are determined using the median chapter size as of Dec. 31, 2018, as the dividing line between Class A (fewer than the median) and Class B (more than the median).

WEBCAST from p. 1

day, Oct. 16, activities continue with the annual SBE Fellows Breakfast (invitation-only), sponsored by Kathrein USA, SBE Annual Membership Meeting (web-cast live), sponsored by Blackmagic Design, Dielectric, DVEO, Jampro, Shively, Comark, Drake Lighting and Ross Video.

That is followed by the SBE Annual Awards Reception, sponsored by Comrex, and the SBE National Awards Dinner, sponsored by Telos Systems. Presentation of the society's major awards will be made, including the SBE Fellow Award to John Collinson, CPBE, 8-VSB, AMD, CBNE, of New Port Richey, FL. Also to be presented are, the Robert W. Flanders SBE Broadcast Engineer of the Year, James C. Wulliman SBE Educator of the Year, the SBE Technology Award to a Sustaining Member company and the Best Technical Article, Book or Program by a SBE member.

SBE chapters will be presented with awards recognizing achievement for Best Chapter Communications, Best Regional Educational Event, Greatest Member Growth, Highest SBE Certified Chapter and Highest Meeting Attendance. Winners of the local SBE Chapter Engineer of the Year will also be recognized.

SBE National Meeting and the Broadcasters Clinic will be held at the Marriott Madison West, in Middleton, WI, a western suburb of Madison. The Broadcast-

ers Clinic is a three-day broadcast technical conference with trade show hours on the first two days. The annual event attracts broadcast engineers and technicians from Wisconsin and surrounding states and is known for its excellent conference. Conference sessions focus on radio/audio topics on Day 1, topics of interest to everyone on Day 2, and TV/video topics on Day 3. It is presented by the Wisconsin Broadcasters Association in cooperation with the four SBE chapters of Wisconsin.

Registration for the three-day Broadcasters Clinic is required. A two-day package is also available. Visit the WBA website (WI-broadcasters.org) for details and to register for the clinic.

Tickets for the SBE National Awards Reception and Dinner (\$16) are available

through the SBE website (sbe.org) and by telephone, Monday - Friday from 8:30 a.m. to 4:30 p.m. EDT at 317-846-9000. There is no registration or fee to attend the Annual SBE Membership Meeting.

Accommodations at the Marriott Madison West may be reserved by calling 888-745-2032 or 608-831-2000. The SBE has a limited number of rooms reserved at the discounted rate of \$134. Ask for the SBE room block to receive the discount. Rooms are on a first come, first-served basis, so don't wait too long.

The SBE National Meeting and the Broadcasters Clinic are open to anyone interested in media technology. We invite SBE members, especially those in the Upper Midwest area, to take advantage of this opportunity and attend all of the events on Oct. 15-17.

National Awards Dinner Sponsor

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Production Technology Experts

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DVEO
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ANTENNAS, INC.

Shively Labs

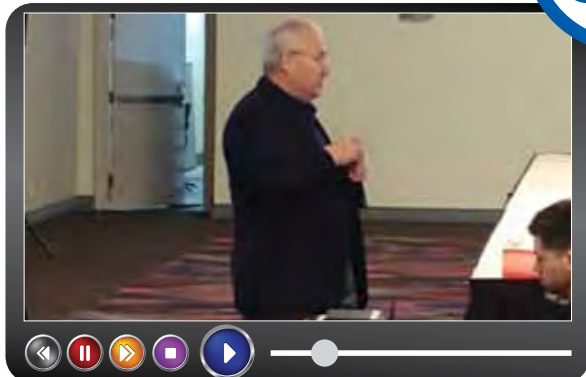
SBE @ PBS TechCon 2019 Videos Available

In April, the SBE partnered with PBS to produce a day-long educational program at the end of the 2019 PBS TechCon. Fred Baumgartner organized the presenters to deliver an extensive program about ATSC 3.0. The presentations were designed to give attendees real insight into implementing and getting the most out of ATSC 3.0 at their stations. Topics

ranged from regulations and the physical layer to how to convert a transmitter and proof it. Other practical topics were covered by showing receivers, dongles, displays and test and measurement tools that are available, and how to use them. The presenters list is a who's who of NextGen Broadcast development.

A team of subject matter experts gathered to deliver a nine-part program. The day's sessions were recorded, and are being offered online through Webinars by SBE. SBE mem-

bers can watch each installment for \$59. Non-members can watch them for \$89 each. SBE MemberPlus members have full access to them, plus all the Webinars by SBE in the library. Paid registrants for SBE @ PBS TechCon will receive access instructions by email.





LEGAL PERSPECTIVE

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

TV White Spaces Devices at UHF; They're Back

Microsoft Corporation is attempting to breathe new life into what is left of the UHF television band, and in the process it is making wireless microphone manufacturers very much concerned. Here is what is happening so far.

On May 3, 2019, Microsoft filed a petition for rulemaking in ET Docket 14-165, asking the FCC to issue a further notice of proposed rulemaking in that Docket to liberalize the rules governing TV White Spaces Devices (WSDs) in the UHF television bands. Microsoft noted that the 2014 Notice of Proposed Rulemaking in that docket was primarily focused on changes needed to allow the UHF TV-band incentive auction to proceed, which was two years ago. Now, says Microsoft, there is a need for some “refinements to the rules governing WSDs in order to promote “rural deployment” of broadband (a key buzzword at the FCC these days). Microsoft proposes to (1) permit fixed WSDs in the second-adjacent channel to broadcasters in less congested areas to operate at a higher radiated power limit; (2) to permit fixed WSDs to operate at greater than 40 mW on the first-adjacent channel at locations within the protected service contour of the Station where the potential for harmful interference is low; (3) to permit fixed WSDs to operate at heights above average terrain of up to 500 meters, subject to a special set of coordination procedures modeled on the Part 101 rules; (4) promote development of narrowband WSDs that can support IoT applications by modifying existing technical and operational rules and providing licensees the same level of protection from harmful interference as the rules for broadband WSDs; and (5) permit geofenced operation of fixed WSDs on mobile platforms.

Microsoft claims that these changes will eliminate needless WSD regulations, allow Microsoft to partner with companies to advance affordable rural broadband, provide new classes of uses and in the rural economy, and stimulate innovative IoT applications.

It took the FCC only six days to place this Petition on public notice, and afford

it file number RM-11840. Apparently the term “rural broadband” is a magic password, unlocking FCC efficiency. By contrast, some recently filed petitions for rule making have taken the better part of a year to appear on a public notice and start the comment and evaluation process.

Let's put this in perspective. WSD rules are almost ten years old now. The overarching condition of allowing them in the first place was so that TV broadcast reception and wireless microphone operation would be protected. To do this, the FCC provided the concept of a white space database system with multiple, private sector administrators, so as to allow WSDs to operate but to protect broadcast and some other wireless microphone users, which could register routine operation and avoid interference through reserved channels in areas of normal operation. However, the database essentially failed, so that there was no way to register for interference protection from WSDs or to determine channel availability locally. The FCC's TV Query database doesn't help either, since it is outdated. None of the repacked TV stations are reflected in it, and the LMS system is not complete in terms of the data contained in it to be a suitable replacement. In short, the WSD database is a mess.

But that has not been a problem thus far, because honestly, WSDs are not ubiquitous (unlike wireless microphones, which are ubiquitous, even in the limited remainder of the UHF television band and even given the ongoing repack process). Microsoft says that interference caused by WSDs has not been a problem, which is probably true (though unquantified) because (1) it is hard to ascertain the cause of a given interference source in the context of operating mobile wireless microphones, and (2) because there is not a high level of WSD deployment so far.

It is not a great strategy these days to argue against anyone who is offering to provide rural broadband to consumers. Sennheiser is well-aware of this. Their comments on this petition make good sense. Sennheiser says that it is in favor of fostering rural broadband, but the rule changes proposed by Microsoft have no place whatsoever in more congested areas. Sennheiser accurately notes that

wireless microphones are very intolerant of interference and that “(m)ost applications, such as live news, sports, and stage productions, do not afford the possibility of a second take. This makes any interference unacceptable, regardless of duration.” So Sennheiser suggests the FCC limit the WSD rules sought by Microsoft be limited to “less congested areas”, defined by the FCC at Section 15.703(h) of the Rules as “geographic areas where at least half of the TV channels for the bands that will continue to be allocated and assigned only for broadcast service are unused for broadcast and other protected services and available for white space device use...”. There is no discussion, however, of the limited enforcement resources available to the Commission to enforce a geographic limitation such as this one.

The NAB takes a more straightforward view, and urges generally that WSDs continue to be prohibited in first adjacent channels to television stations. Shure makes the same arguments in their comments as do Sennheiser and the NAB, but in addition argues that the FCC should not allow Microsoft's proposed geofencing “mobile fixed device” unless it is limited to dramatically lower power levels, and subject to all rules, including distance separation rules, that apply to fixed WSDs. Shure also urges the FCC to review the status of the WSD database and take steps to ensure that it works. Finally, Shure suggests adopting a rule that expands Part 74 eligibility to professional wireless microphone users who may not be eligible under the current rules which restrict eligibility to users who routinely use 50 microphones or more; and if the proposed narrowband WSDs are to be allowed, they should be required to comply with the same emission mask requirements as wireless microphones.

It is getting harder and harder to find UHF spectrum for wireless microphones, and major events are going to have a very difficult time finding sufficient channels in which to operate for ENG and event production purposes. The SBE's view is that this is not the best time to attempt to revive a concept that has simply not been validated or to limit further the few remaining opportunities for UHF wireless microphone operation.

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FOCUS ON SBE

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

69 Chapters Earn Quality Chapter Status

For many SBE members, the local chapter provides access to affordable continuing education and a ready network of contacts and friends in the industry. The SBE likes to recognize chapters that meet those needs by rewarding them with an annual rebate of a portion of the SBE dues paid by its members.

The chapters have to qualify for the rebate by holding at least five meetings during the calendar year and documenting those meetings to the national SBE office. Documentation includes a brief description of the meeting and a list of attendees.

In 2018, 69 chapters qualified for Quality Chapter status and the SBE paid out a total of almost \$38,000 to them. Chapters

typically use the money to fund their own operations. Expenses can include website hosting fees, printing, postage, scholarship programs, and sometimes meals for chapter meetings or social events. SBE instituted the rebate system many years ago to help chapters avoid the administrative burden of collecting local dues, instead, allowing them to concentrate on producing successful meetings and other chapter functions.

Below is a list of chapters that attained Quality Chapter status during 2018 and received a cash rebate from the national SBE office in June of this year. Our congratulations to them and to their leadership!

Chapter	Chair
1 Binghamton	James Pratt
3 Kansas	Robert Locke, CPBE, CBNT
7 Jacksonville	Craig Butler, CSRTE
9 Phoenix	Tom Foy, CSTE
14 Connecticut Valley	Frederick Krampits, CPBE, CBNT
15 New York City	Jeffrey Smith, CPBE
16 Seattle	Jon Kasprick, CBRE, DRB, CEA
17 Minneapolis	Joseph Conlon
21 Spokane	Jerry Olson, CSRE
22 Central New York	Thomas McNicholl, CBTE
24 Madison	Britny Williams, CBT, CBNT
26 Chicago	Gordon Carter, CPBE, DRB, CBNT
28 Milwaukee	Chris Tarr, CSRE, AMD, DRB, CBNE
30 South Bend	Jakob Foglesong, CBNT
32 Tucson	Robert Nemitz, CBNE
34 Albuquerque	Jason Quinn, CBTE, CBT
36 San Diego	Anthony McDaid
37 District of Columbia	Kent Kramer, CBRE
38 El Paso	Jose Castro
39 Tampa Bay Area	Dustin Hapli, CBNE
40 San Francisco	Arthur Lebermann, CPBE
41 Central PA	Randall Miller, CBT, CBNT
42 Central Florida	Randy Woods
43 Sacramento	Robert Hess, CPBE
45 Charlotte	Brad Humphries
46 Baltimore	James Richardson
47 Los Angeles	Matthew Anderson, CBRE
48 Denver	Shane Toven, CBRE, CBNT
51 Tri-Cities	John Mazza, CBNT
52 Central Ohio	John Owen

Chapter	Chair
53 South Florida	Carlos Sanchez, CPBE
54 Hampton Roads	Chris Gunnufsen
55 St. Louis	Terrence Dupuis, CBRE, CBNT
56 Tulsa	Donald Dobbs, CBTE
57 Rochester	Gregory Carter, CBT, CBNT
58 Northeast NY	Nolan Stephany, CSRTE
59 Kansas City	Michael Rogers
66 Fresno	Jaime Gonzalez
67 North Texas	William Ryan
68 Birmingham	Darrell McCalla, CBRE, CEA, CEV, CBNT
69 Alamo Area	Christopher Anderson
70 Northeast Ohio	Blake Thompson, CBNT
72 New Orleans	Ernest Kain
74 Midland	James Duchesneau
76 Eugene	Dennis Hunt
78 Blue Ridge	Daniel Ullmer
79 Austin	Edward Rupp, CBTE, CBNT
80 Fox Valley	Stephen Brown, CPBE, CBNT
85 Central Western	Brian Ryel, CBTE
88 West Palm Beach	Steve Billing
90 Southwest Florida	Kevin Trueblood, CBRE, CBNT
91 Central Michigan	Gary Blievernicht
93 Raleigh-Durham	Darrell Gordon CBT, CBNE
96 Rockford	Ben Pfiederer
102 Grand Rapids	Mark Wittkoski, CBNT
103 Nashville	James Campbell III, CPBE
105 Houston	Thomas Daniels, Jr., CPBE
109 Des Moines	Jon Strom, CBTE
111 Huntsville	Kevin Kidd CSRE, AMD, DRB, CBNE
112 Western WI	Todd Zschernitz, CBTE

Chapter	Chair
113 Knoxville	Robert Holden, CBT, CTO
115 Southern Idaho	Thomas Kettwig, CBT
118 Montgomery	Wiely Boswell, CBRE, CBNE
122 Youngstown	Robert Flis
124 North Oregon	Everett Helm, CPBE
131 Inland Empire	Paul Claxton, CPBE, CBNE
133 Buffalo	Raymond Felckowski
141 Medford	David Katz
145 Magic Valley	Thomas Lowther, CSRTE, CBNT

Chapter Check

Chapter 37 District of Columbia

In June, Chapter 37 District of Columbia met at WTOP in a combined SBE/AES/SMPTE gathering. About 73 people attended the meeting that evening, which covered the recent facility build of the station. WTOP engineers and contractors provided insight into the project. Photo by Fred Willard, CPBE, 8-VSB, CBNT.





ENGINEERING PERSPECTIVE

By RJ Russell, CPBE
 Chair, SBE Frequency Coordination Committee
 jrussell@sbe.org

Sharing Is Caring

We all remember our kindergarten lessons on the value of sharing and how sharing can work out best for everyone involved. Now it's time that we apply this lesson to the 2025-2110MHz Broadcast Auxiliary Spectrum (BAS) band where we are all familiar with for electronic news gathering (ENG), Cable Television Relay Service (CARS), and Local Television Transmission Service (LTTs). As part of the Advanced Wireless Services-3 (AWS-3) transition, the Department of Defense (DoD) has been provided co-primary status in this band for some of its systems. Welcome to the days of inter-service instead of intra-service frequency coordination.

The DoD will develop transition plans for four systems that need to be able to access this spectrum. The first and simplest to integrate is Tactical Radio Relay (TRR). These systems are ground-to-ground, field-deployable radio systems. The second is Small Unmanned Aerial Systems (SUAs). These are small, hand-launched drones comparable to what broadcasters have begun using for ENG. The third is Tactical Targeting Network Technology (TTNT), and the fourth is High Resolution Video (HRV). We are still developing the definitions for these systems.

Tactical Radio Relay (TRR)

These radios operate two 3MHz signals, one to transmit and one to receive, that require 50MHz of separation. This is not due to out-of-band emissions (OOBE) but a requirement of some of their radios. There are two TRR systems, one for the Army and one for the Navy, with which we have already conducted field tests. The Army system was tested in conjunction with WRAL-TV at Fort Bragg, NC, and the Navy system was tested in conjunction with KUSI-TV at Camp Pendleton, CA. We are still working on flushing out all of the test reports and will make those available to our frequency coordinators and members when they are available. These tests proved that the systems can operate within the band successfully without interference provided proper coordination has taken place.

Small Unmanned Aerial Systems (SUAs) These systems are still under development by DoD contractors. The SBE and the NAB were invited to watch a field trial from various manufacturers to observe the spectrum emissions to have a better understanding of how these may be integrated into the band. The systems we observed operated on a 5MHz signal using time-domain for bi-directional communications to keep everything within that pedestal.

If we look at these two systems and how they can be integrated into the existing BAS band-plan, it's fairly simple: We add them to the home channel plans in the television markets affected. We have already added them in some of the priority markets by evaluating the existing channel plan and optimizing it for both broadcaster and DoD usage. In the chart below you will see the priority markets and those where we have successfully added the DoD to the home channel plan. In the majority of cases we have split their home channel between A1 lower (2025.5

- 2031.5 MHz) and A7 upper (2103.5 - 2109.5 MHz). This allows the two primary systems we are currently working with, TRR and SUAs, to operate without interfering with broadcast operations nor broadcast operations interfere with DoD operations. This chart also provides two other examples of coordination we are working on.

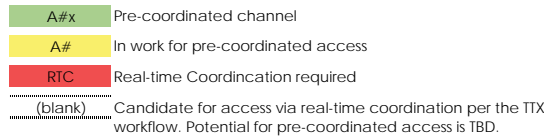
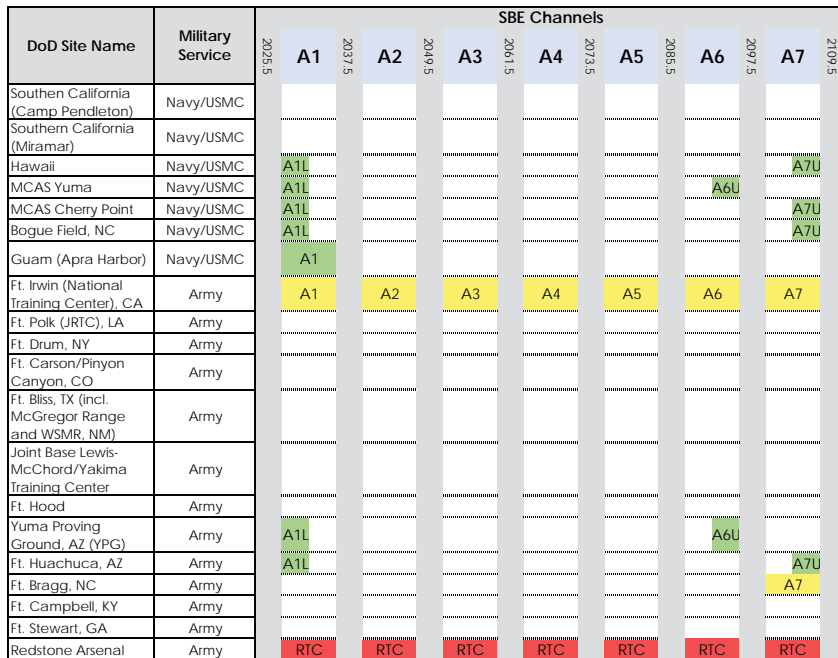
In the case of Ft. Irwin, CA, we are attempting to allow them to use the full spectrum since this is a geographically isolated area and some preliminary testing that was conducted several years ago didn't show any interference to the area broadcasters. We

are working to firm this up to allow the DoD to begin moving forward with operations in this area.

Coordinating Redstone Arsenal, AL, has proven to be much more difficult as

the home channel plan is completely full, partially due to several fixed links used for news bureaus in use. We couldn't identify a home channel for the DoD in this market so instead we identified a primary and secondary sharing partner for them to work with. In this case, the DoD will contact its partners and work out a real-time coordination plan when it needs to use the spectrum.

While we anticipate one of these plans will work in many markets, we know there will always be exceptions to the rule. Our goal is to find the right plan for the right situation, define it, and ensure there are open lines of communication. As we continue to move forward with these transitions, we will be looking to work with the local frequency coordinators and licensees to find a way to say "yes" to DoD coordination requests. Our experience has been that the DoD is willing to work with us, develop databases and clean-up existing licensee data, and help us develop tools to facilitate real-time coordination. In other words, a partner that understands sharing is a two-way street.



AC Video Solutions • 2014 Andrea Cummis 201-303-1303 Consulting, Systems Design/Integration	Dielectric • 1995 Cory Edwards 207-655-8131 TV & FM Transmission & Cellular Products	Lawo AG • 2017 Michael Dosch 888-810-4468 AoIP Consoles & Virtual Radio	Rohde & Schwarz • 2003 Walt Gumbert 724-693-8171 Transmitters, Test & Measurement, Video
AEQ Broadcast International • 2015 Peter Howarth 954-581-7999 Broadcast Audio, Video and Communications	Digital Alert Systems, LLC • 2005 Bill Robertson 585-765-1155 Emergency Alert Systems	LBA Technology Inc. • 2002 Javier Castillo 252-757-0279 AM/MW Antenna Equipment & Systems	Ross Video Ltd. • 2000 Jared Schatz 613-228-0688 Manufacturer, Television Broadcast Equipment
American Tower Corporation • 2000 Peter A. Starke 781-926-4772 Development/Construction/Management	DoubleRadius, Inc. • 2012 Jeffrey Holdenrid 704-927-6085 IP Microwave STL	Linkup Communications Corporation • 2017 Mark Johnson 703-217-8290 Satellite Technology Solutions	Sage Alerting Systems Inc. • 2010 Harold Price 914-872-4069 x113 Emergency Alert Systems Products
Audemat-Worldcast Systems Inc. • 2000 Christophe Poulain 305-249-3110 Control Manufacturer	Drake Lighting • 2015 Dave Sheppard 270-804-7383 FAA Obstruction Lighting - Medium and High Intensity	LYNX Technik • 2007 Steve Russell 661-251-8600 Broadcast Terminal Equipment Manufacturer	SCMS Inc. • 2000 Bob Cauthen 800-438-6040 Audio and RF Broadcast Equipment Supplier
AVCOM of Virginia, Inc. • 2010 Tom Pagonis 804-794-2500 Spectrum Analyzers	DTS Inc./HD Radio Technology • 2014 Rick Greenhut 443-539-4335 HD Radio Technology	Markertek • 2002 Wesley Brewer 800-522-2025 Specialized Broadcast & Pro-Audio Supplier	Seacomm Erectors, Inc. • 1997 John Breckenridge 360-793-6564 Tower/Antenna Erections
Belden Electronic Division • 1991 Sales 800-235-3361 Cable and Connectivity	du Treil, Lundin & Rackley, Inc. • 1985 Jeff Reynolds 941-329-6000 Consulting Engineers	Micronet Communications Inc. • 2005 Jeremy Lewis 972-422-7200 Coordination Services/Frequency Planning	SEG • 2014 Chris Childs 913-324-6004 Supply Chain Products and Services
Blackmagic Design • 2012 Terry Frechette 408-954-0500 Production Switchers, Digital Cameras, Routers, Video Editing and Monitoring, Color Correction, Video Converters	The Durst Org. - 4 Times Square • 2004 John M. Lyons, CPBE 212-997-5508 TV/FM/Microwave Tower Site	Microwave Video Systems • 2011 Warren J. Parece 781-665-6600 Microwave Equipment Rental, Sales & Service	Shively Labs • 1996 Dale Ladner 888-SHIVELY FM Antennas & Combiners
Bracke Manufacturing LLC • 2012 Patra Largent 949-756-1600 RF & Microwave Components	DVEO - Division of Computer Modules Inc. • 2011 Laszlo Zoltan 858-613-1818 Everything About Transport Streams	Middle Atlantic Products • 2005 David Amoscatto 973-839-1011 Equipment, Mounting, Solutions	Shure Incorporated • 2012 Bill Ostry 847-600-6282 Microphones, Wireless Systems, Headsets
Broadcast Depot • 2018 John Lackness 305-599-3100 TV, Satellite, Radio, IP	Econco • 1980 Debbie Storz 800-532-6626, 530-662-7553 New & Rebuilt Transmitting Tubes	Moseley Associates Inc. • 1977 Bill Gould 805-968-9621 x785 Digital STLs for Radio and Television	Sierra Automated Systems and Eng. Inc. • 2011 Al Salci 818-840-6749 Routers, Mixers, Consoles, Intercoms
Broadcast Devices, Inc. • 2015 Robert Tarsio 914-737-5032 Audio/RF Support Products	ENCO Systems Inc. • 2003 Ken Frommert 800-362-6797 Playout and Automation Solutions	MusicMaster • 2014 Shane Finch 352-351-3625 Advanced Music Scheduling Solutions	Silvus Technologies • 2015 Mark Tommey 617-816-6588 Wireless Video Mesh Network
Broadcast Electronics Inc. • 1978 Tom Beck 217-224-9600 Radio Equipment Manufacturer	ERI - Electronics Research • 1990 David White 812-925-6000 Broadcast Antennas, Transmission Line, Filters/Combiners, Towers and Services	Nascar Productions • 2014 Abbey Kielcheski 704-348-7131 Live/Post Production Services	Solid State Logic • 2014 Steve Zaretsky 212-315-1111 Digital Audio Mixing Consoles, Networked Audio Routing, Embedded Audio Solutions
Broadcast Software International • 2016 Marie Summers 888-274-8721 Radio Automation, Audio Logging	Florical Systems • 2008 Shawn Maynard 877-774-1058 Television Broadcast Automation	National Association of Broadcasters • 1981 Industry Trade Association 202-429-5340	Staco Energy Products Co. • 2010 Paul Heiligenberg 937-253-1191 x128 Manufacturer of Voltage Regulators, UPS
Broadcast Supply Worldwide • 1986 Shannon Nichols 800-426-8434 Audio Broadcast Equipment Supplier	Fujifilm/Fujinon • 1986 Gordon Tubbs 973-686-2769 Broadcast & Cine Lens Products	National Football League • 1999 Ralph Beaver 813-282-8612 Game Day Coordination Operations	Sutro Tower Inc. • 1989 Eric Dausman 415-681-8850 Broadcast Tower Leasing
Broadcasters General Store • 2004 Buck Waters 352-622-7700 Broadcast Audio Video Distributor	GatesAir • 1977 Dave Hopson (TV) 513-445-5243 Mark Goins (Radio) 513-899-9124 Broadcast Equipment Manufacturer	Nautel Inc. • 2002 Jeff Welton 877-662-8835 Radio Broadcast Transmitter Manufacturer	Technical Broadcast Solutions, Inc. • 2018 Robert Russell 215-983-0855 Engineering and Consulting Services
Burk Technology • 2019 Tom French 978-486-0086 x613 Transmitter Facility Control Systems	Heartland Video Systems, Inc. • 2011 Dennis Klas 920-893-4204 Systems Integrator	Nemal Electronics Int'l Inc. • 2011 Benjamin L. Nemeser 305-899-0900 Cables, Connectors, Assemblies and Fiber Optic	Tektronix Inc. • 1977 Jim Lang 503-627-2980 Video Test & Measurement, Equipment Manufacturer
Calrec Audio • 2016 Helen Carr 703-307-1654 Audio Mixing Equipment	Highlights, Inc. • 2016 Timothy Nash 352-564-8830 Obstruction Lighting Maintenance	Neutrik USA, Inc. • 2012 Kathy Hall 704-972-3050 Ruggedized Optical Fiber Systems	Teledyne e2v US • 1997 Dominic Pianulli 845-578-6137 Electronic Components
Complex • 2017 Daniel Coscarella 800-445-7568 x7409 Fiber Optic Cable Assembler	Hitachi Kokusai Electric Comark • 2013 Jack McNulty 413-998-1523 Manufacturer Broadcasting Transmission Equipment	NPR Distribution Services • 2019 Dan Riley 202-513-2624 Your Content Delivery Partners	Televue USA, LLC • 2018 Andy Ruffin 937-475-7255 ATSC 3.0 Transmission Solutions, Antennas
Canon USA Inc. • 1985 Larry Thorpe 201-807-3300, 800-321-4388 Broadcast Lenses & Transmission Equipment	iHeartMedia, Inc. • 2019 Troy Langham 918-664-4581 Radio Group Owner	Orban Labs, Inc. • 2011 Mike Pappas 480-403-8300 Audio Processing AMFMTV	Telos Systems/Omnia/Axia • 2003 John Bisset 216-241-7225 Telos Systems Talk-Show Systems
Cavell, Mertz & Associates Inc. • 2011 Gary Cavell 703-392-9090 Consulting Services	IMT-Vislink • 2009 John Procacci 908-747-3011 Wireless Video Systems	Pasternack Enterprises • 2001 Christine Hammond 949-261-1920 Coax & Fiber Products	Teradek • 2011 Jon Landman 949-743-5783 Camera-top ENG Solutions
Comrex Corporation • 1997 Chris Crump 978-784-1776 Audio & Video Codecs & Telephone Interfaces	Indiana Association Broadcasters • 2019 Dave Arland 317-701-0084 Indiana Association for Radio & TV Broadcasters	Potomac Instruments • 1978 Zachary Babendreier 301-696-5550 RF Measurement Equipment Manufacturer	Tielne The Codec Company • 2003 Dawn Shewmaker or Jacob Daniluck 317-845-8000 Audio Codec Manufacturer
Continental Electronics • 1976 Dale Dalesio 412-979-3253 TV and Radio Transmitters	Inovonics Inc. • 2012 Gary Luhman 831-458-0552 Radio Broadcast Equipment	ProAudio.com - A Crouse-Kimzey Co. • 2008 Mark Bradford 800-433-2105 x560 Proaudio Broadcast Equipment Distributor	Unimar Inc. • 2001 Thad Fink 315-699-4400, 813-943-4322 Tower Obstruction Lighting Designer, Manufacturer, Distributor
CueScript • 2014 Michael Accardi 203-763-4030 Teleprompting Software & Hardware	JAMPRO Antennas Inc. • 2011 Alex Perchevitch 916-383-1177 DTV, FM-HD Radio, DVB-T/T2, ISDB-T, DAB	Propagation Systems Inc. - PSI • 2010 Doug Ross 814-472-5540 Quality Broadcast Antenna Systems	Wheatstone • 2010 Jay Tyler 252-638-7000 IP Consoles, Routers & Processors
D2D Technologies • 2018 Jessica Colyer 619-248-0618 PSIP & EAS Insertion, IP Gateways, Multiplexers, SRT Transmission	JVC Professional Video • 2014 Edgar Shane 973-317-5000 Professional Video Products, Camcorders, Display Monitors, Recording Decks	QCommunications • 2019 Tony zumMallen 816-729-1177 Services Behind the Scenes	Wireless Infrastructure Services • 2006 Travis Donahue 951-371-4900 Repacking Services - West Coast Turnkey Services
Davicom, Division of Comlab, Inc. • 2014 Louis-Charles Cuierrier 418-682-3380 x512 Remote Site Monitoring and Control Systems	Kathrein USA Inc. • 1985 Les Kutasi 214-238-8835 Antennas for Broadcasting & Communications	QVC • 2011 Kevin Wainwright 484-701-3431 Multimedia Retailer	
DEVA Broadcast • 2015 Todor Ivanov 305-767-1207 Monitors, IP Audio Codecs, RDS/RBDS Encoders, Audio Processors, Broadcast Tools	Kintronc Labs, Inc. • 2015 Joacuin Raventos 423-878-3141 Radio Broadcast Antenna Systems - ISO9001 Registered Company	Radio Frequency Systems • 2015 Eddy Vanderkerken 214-471-6693 Broadcast Infrastructure Manufacturer	
Dialight Corporation • 2006 US Headquarters 732-919-3119 FAA Obstruction Lighting, LED Based		RF Specialties Group • 2008 www.rfspecialties.com Everything from the Microphone to the Antenna	

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Member Spotlight: Stan Carter

Member Stats

SBE Member Since: 2013

Chapter: 125 Mississippi

Employer: Educational Media Foundation

Position: Field Engineer – MS/LA/AL

Location: Pearl, MS

I'm Best Known For: Attitude. Always being available to help co-workers when needed.

Q What do you value most about your SBE involvement?

A The resources and continuing education opportunities. Meeting with fellow engineers to exchange ideas.

Q What got you started in broadcast engineering?

A A neighborhood ham operator when I was 8 years old. I've been tinkering with electronics ever since!

Q Who do you consider to be a mentor?

A George Thomas, who hired me as an assistant engineer at WJDX/WMSI in 1988 and I've been in broadcast engineering full time ever since.



Just another day on the job for Stan Carter.

Q What do you like most about your job?

A It's always something different each day!

Q When I'm not working...

A ...I'm either spending time with my wife, kids and grandkids or playing bass in our church praise band.

Q What's something most people don't know about you?

A In 1993, I traveled to Ottawa, Canada, to look at a used transmitter. I had never traveled out of the country and no one told me I needed a passport. Fortunately, Canadian customs let me in and back out after a very lengthy explanation.

Q What's your favorite gadget?

A My Keysight N9912A spectrum analyzer – all time favorite piece of test equipment.

Chapter Check

Chapter 17 • Minneapolis ▼

The Chapter 17 Minneapolis annual picnic was held June 28 at the foot of this 1,500' broadcast tower in Shoreview, MN. Photo by Mark Persons.



▼ Chapter 9 • Phoenix

Chris Crump of Comrex catches a selfie at the Chapter 9 June meeting held at KTAR Newstalk 92.3 FM, where the group met for "good barbecue and great conversation."



Chapter 85 • Central Western OK ▼

Don Backus of Rohde & Schwarz discusses liquid-cooled transmitters at the chapter meeting in June.



SBE Chapters on Facebook

The SBE has a group on Facebook called SBE Chapters. It's the perfect place to share photos of your chapter meetings and events, especially if they are interesting, informative or entertaining.

Need ideas for a chapter meeting? Turn to SBE Chapters for inspiration.

sbe.org/facebook

Have You Watched?



The SBE Chapter of the Web

The SBE launched the SBE WEBxtra in January. Part of its objective is growing and retaining membership, attracting new and younger members to the SBE, and increasing participation in SBE activities among members.

Sponsored by Wheatstone, this monthly, virtual program, provides information about the SBE or broadcast technology for SBE members who do not have a chapter near them, or have conflicts that prevent them from attending chapter meetings. Viewing the SBE WEBxtra qualifies for 0.5 SBE recertification points, just like attending a local chapter meeting. Watch past episodes on our YouTube channel.

sbe.org/youtube

Attending the 147th AES Convention?

The SBE is providing an SBE certification exam session during the convention on Oct. 18 in New York.



Want to take an SBE certification exam while you're there? Submit your application to the SBE office by Sept. 10. sbe.org/certification

And be sure to check out the broadcast and streaming sessions at the convention. Full details: aes.org/events/147/



WELCOME TO THE SBE

NEW MEMBERS

Rusty D. Backer - Merritt Island, FL
 Robert L. Berger - Milan, IL
 Beau P. Brakman - Clearwater, FL
 Tyler J. Brock - Jacksonville, FL
 Albert L. Brown - Zanesville, OH
 Aaron Brown - Clearwater, FL
 Frank P. Cerbini, Jr. - Bellmore, NY
 Animam P. Chukwunalu - Lagos, Nigeria
 Nicholas Church - Rhinelander, WI
 Clarence D. Copeland - Baton Rouge, LA
 Steven J. Cuchetti - Wixom, MI
 Kenneth S. Doughty - Alvin, TX
 Matthew J. Eppright - Kansas City, MO
 Alejandro Escarcega - El Marqués, MX
 Tyler Everitt - Saskatoon, SK
 Francois O. Gauthier - Granby, QC
 Robert J. Goolsby - Abernathy, TX
 Rachel A. Haggerty - Iselin, NJ
 Ma'en Halawani - Clearwater, FL
 Markel S. Hawkins - Silver Spring, MD
 Alejandro Hernandez - Long Beach, CA
 Cody L. Howard - Eagle River, AK
 Carly Inselmann - Clearwater, FL
 Rod Julian - Soap Lake, WA
 Robert Karlinsky - Milwaukee, WI
 Michael Kirk - Enfield, NH
 Jeremy R. Landers - Clearwater, FL
 Alex Mackensen - Charleston, WV
 Frank M. Magarelli - Scottsdale, AZ
 Cousteau H. Martell - Bend, OR
 Josh A. Merrill - Gainesville, FL
 Christina Minor - Willow Spring, NC
 John D. Moeller - Davenport, IA
 Michael W. Moore - Kennewick, WA
 Brian Morel - Lincoln, CA

Jason Murphy - Clovis, NM
 Jamie G. Nettles - Columbus, MS
 James Patrick - Pasadena, CA
 Michael Pfaeffle - Millford, PA
 Christopher L. Ranck - Salisbury, MD
 Linda Rheinstein - Sherman Oaks, CA
 Ruben C. Rodriguez - San Antonio, TX
 Joshua A. Sauvageau - Chicago, IL
 Kevin Scorza - Clearwater, FL
 Grace E. Singletary - New Carrollton, MD
 Ryan E. Smith - Maineville, OH
 Nathaniel C. Steele - Cookeville, TN
 Justin Strauber - Ladson, SC
 Reza Taher - Atlanta, GA
 Carlos Thomas - Washington, DC
 Alfredo Walker - Miami, FL
 Joseph Wilkinson - Decatur, GA
 Parker Woodruff - Austin, TX
 Tyler N. Woodward - La Crosse, WI
 Curtis Young - Lynchburg, VA
 Christine M. Zuba - Blackwood, NJ

NEW YOUTH MEMBER

Jacob P. Thomas - Columbia, SC

RETURNING MEMBERS

Peter R. Bankwitz - Saco, ME
 Sam Black - Rockville, MD
 Matthew J. Butcher - Arlington, VA
 Michael Englehaupt - Wilmette, IL
 Jon E. Hall - Normal, IL
 Joshua J. Heymig - Avon, IN
 Peter J. Koenig - Grosse Pointe Park, MI
 Kwok-Luen Lam - Tai Po, N.T., HK
 Steven R. Martin - Burnsville, MN
 Jeremiah R. McKenzie - Zanesville, OH
 Ethan A. Miller - New Bern, NC
 James A. Moore - Madera, CA
 Lee A. Mosley - Albertville, AL
 Kevin W. Potter - Walland, TN
 Robert E. Schwab - Fairfield, OH
 Glenn A. Stilwell - Sacramento, CA
 Brian S. Vanderwoude - Millbrook, AL

NEW STUDENT MEMBERS

Lewis J. Callaway - Clear Lake, IA
 Martin Fournier-Montalvo - Calgary, AB
 Tyler M. Grandy - Boise, ID
 Biran Hanington - Calgary, AB
 Tyler Holdener - Calgary, AB
 Anthony Hosemann - Calgary, AB
 Li Linzhou - Calgary, AB
 Blayne Ly - Calgary, AB
 Tristan McClain - Milton, WA
 Louie J. Paccalagan - Calgary, AB
 Christian Turingan - Calgary, AB
 Alyssia Wong - Calgary, AB



Add these upcoming Webinars by SBE to your calendar.

Aug. 22: 50 Tips for the Broadcast Technical Professional

Sept. 19: RF 201: Module 7: FM Filters and FM Combiners

Sept. 25: Part 1: Fundamentals of SNMP

Oct. 23: RF 201: Module 8: AM Multiplexed Antenna Systems



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MEMBERS ON THE MOVE



▲ The Association of Federal Communications Consulting Engineers has elected (left to right) **John George** as president. **John Lyons**, CPBE, is treasurer (previously president), **Stephen Pumple** is secretary, and John Edwards is vice president. They are joined by **B. Ben Evans** on a four-year term as a member, and **Jim Leifer**, CPBE, on a three-year term as an associate member.

► **David Stewart** received the Texas Association of Broadcasters George Marti Award for Engineering Excellence at TAB 2019.



◀ **Nathan Russell**, CBNE, is chief engineer at Black News Channel, Jacksonville, FL.

Juan M. Diaz is senior engineer at Walt Disney Direct-to-Consumer and International, Coral Gables, FL.

Have a new job? Received a promotion? Send your news to Chriss Scherer at cscherer@sbe.org.

MARK YOUR CALENDAR

S M T W T F S

SBE Certification Exams

Local Chapters
Aug. 2 - 12, 2019 sbe.org/certification
Application deadline closed

Webinar: 50 Tips for the Broadcast Professional

online
Aug. 22, 2019 sbe.org/webinars

Webinar: RF201, Module 7 - FM Combiners

online
Sept. 19, 2019 sbe.org/webinars

SBE National Meeting

Madison, WI
Oct. 15-16, 2019 sbe.org

WBA Broadcasters Clinic

Madison, WI
Oct. 15-17, 2019 wi-broadcasters.org

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