



the SIGNAL

BIMONTHLY PUBLICATION OF THE SOCIETY OF BROADCAST ENGINEERS

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Volume 22, Number 2

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Orange Beach, Ala.

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2008 SBE
National Awards

Have you visited us
on the web yet?

www.sbe.org

SBE Partners with NAB for Engineering Conference

Schedule of SBE Events and Meetings during 2009 NAB Show

For the fifteenth consecutive year the Society of Broadcast Engineers will be an organization partner with the NAB for its Broadcast Engineering Conference (BEC) at this year's NAB Show. The BEC features the special in-depth Ennes Workshops on Saturday plus informative sessions covering the latest in broadcast technology from Sunday through Thursday. SBE also has a full slate of meetings and will exhibit during the trade show.



The Las Vegas Convention Center is the site of the 2009 NAB Show. Visit the SBE booth in the South Hall, 2nd Floor Lobby Booth 27. Photo courtesy of Las Vegas News Bureau/LVCVA.

SBE EXHIBIT BOOTH

SBE's exhibit booth will be in the same location as the last several years; the second floor concourse of the Las Vegas Convention Center South

Hall, Lobby Booth 27. The location is just up the escalator from the South Hall main entrance and just outside the entry to the exhibits on the second floor. The BEC technical sessions will be located

See **NAB** on page **10**

Candidates Sought for National Board

Because you're a member of the Society of Broadcast Engineers you already know the advantages of membership in our professional organization. But your participation in the SBE can extend beyond simple membership. The SBE exists because of the volunteer efforts of its members. Participation at a local chapter is always welcomed. But perhaps you have thought about doing more – perhaps even on the national level.

The SBE Nominations Committee is cur-

rently seeking candidates to run in the summer elections for the upcoming terms. The SBE is governed by a 17-person board of directors that determines the policies and programs for the national organization. Capable members, from all corners of the field of broadcast engineering, are needed to serve.

Of the 17 members of the board, 12 serve as directors and four serve as officers. Rounding out the board is the immediate past president.

See **CANDIDATES** on page **13**

ADDRESS SERVICE REQUESTED

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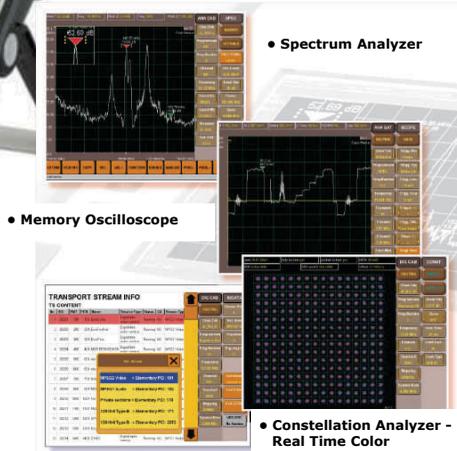
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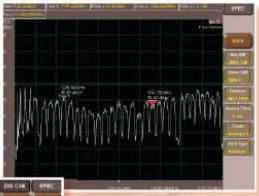
• Memory Oscilloscope

• Spectrum Analyzer

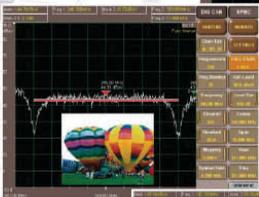
• Constellation Analyzer - Real Time Color

- MPEG Monitor
- DiSEQC Monitor
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Satellite Band Scan



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Alabama Gulf Coast Site of May 15 Ennes Workshop

The SBE will present an Ennes Workshop at the Perdido Beach Resort in Orange Beach, Alabama on Friday, May 15. The host chapter for the Workshop is Chapter 118 of Montgomery. The Workshop, which is being conducted as a part of the Alabama Broadcasters Association (ABA) Annual Convention, is open to all broadcast engineers and those in related fields. You don't have to be from Alabama to attend!

The Ennes Workshop will feature a full day of technical presentations of interest to broadcast engineers and technicians. Attendees will also have the opportunity to visit broadcast exhibits, organized by the ABA. Those working in television or radio, as well as in related fields, will find the Ennes Workshop an excellent educational experience. Attendance at Ennes Workshops qualifies for SBE recertification credit.

SPEAKERS AND TOPICS:

General Sessions

Steve Lampen, Belden Cable –
Maximizing HD Cable Performance

David Davies, ERI – *Tower Failures
Resulting From Hidden Galvanic Corrosion*

Bob Surette, Shively Labs – *Antennas 101*

TV Technical Sessions

Skip Erickson, Harris Technical Solutions
– *The Real World of Disaster Recovery*

Richard Schwartz, Axcera – *Optimizing
Fixed & Mobile DTV Coverage with
On-Channel & Translator Technologies*

Stephane Gauthier, Ross Video –
*Considerations for Designing an Open
Standard Platform for Broadcast
Applications*

Radio Technical Sessions

Tim Anderson, Harris Corp. – *Content
Management and Control of HD
Radio™ Networks via HD Protocol*

Tim Bealor, Broadcast Electronics –
*FM Synchronous Boosters & Single
Frequency Networks*

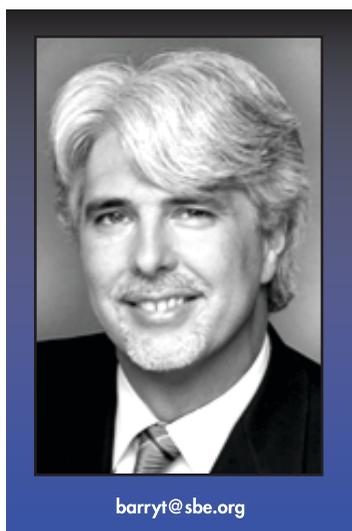
Chris Crump, Comrex – *Audio-Over-IP
Transmission*

Ennes Trustee, Fred Baumgartner, CPBE, CBNT has organized the Workshop program. Local organizational support is being provided Larry Wilkins, CPBE, AMD, CBNT of SBE Chapter 118 and Sharon Tinsley of the ABA.

The Ennes Workshop will begin at 9:00 am and conclude by 5:00 pm. The complete program details are posted on the SBE National website, www.sbe.org in the Calendar and Education sections. Registration for the Ennes Workshop may be done on-line, also at www.sbe.org. The Workshop fee is just \$35 for SBE members and \$45 for non-members and includes Continental breakfast and lunch. Those arriving Thursday evening are also invited to attend the ABA welcome dinner, which begins at 6:30 pm, at no extra charge. Questions? Call the SBE National Office at (317) 846-9000 and ask for Debbie.

The Perdido Beach Resort on Alabama's Gulf Coast is a great location for a weekend getaway. Consider bringing family members with you for the weekend. Reservations at the Perdido Beach Resort may be made by contacting Tina at the ABA at (800) 211-5189 or (205) 982-5001. There are other hotel options near by, including the Island House and the Hilton Garden Inn. For those who wish to attend additional ABA Convention meal events Friday night or Saturday, please contact Tina for that also.

Demonstrate your commitment to your profession



BY **Barry Thomas, CPBE, CBNT**
SBE President

We've all heard enough about the dire economic situation; layoffs, business failures, government bailouts, reorganization. You don't need another reminder. During tough economic situations, it's not unusual for organizations like the SBE to see an increase in member hardship waiver requests or even a drop in renewals. While paring personal spending to minimum levels is smart economics, cutting back on your Society participation during times like these is an unwise reduction in investment in yourself and your profession. Henry Ford once said: "A man who stops advertising to save money is like a man who stops a clock to save time." Cutting back on investment in your own profession is very similar to that.

Too many people – our own engineering colleagues often being the offenders – treat the work we do as a "trade" as opposed to a profession. This is unfortunate. Our counterparts in other aspects of broadcasting can't be expected to hold us in any higher regard than that which we hold ourselves. Broadcast engineering is not a trade, it's a profession; a

profession with a history of mutual support and working for the collective good. The Society of Broadcast Engineers is a unique conduit for working together as well as for individual advancement.

SBE membership is a demonstration of your commitment to your profession. It's part of a commitment to improving our own profession and developing its future, while helping ourselves keep up with new technology. We join our time, money and effort so we can make our own careers more rewarding. We also join together to grow and train those who will follow. These are the actions of a group of professionals who care about the future of our own and the industry in which we are employed.

I've had many discussions with engineers about the value and benefits of SBE membership. The discussion invariably includes a reminder of the tangible benefits of SBE membership: The certification program; SBE educational opportunities, unique and targeted job search and staffing resources, group insurance for contract engineers. All of these benefits are exceptional and important, but they pale in comparison to the value of networking with SBE colleagues at local and regional meetings, or conversing online or during the monthly meeting of Chapter 73, the "Chapter of the Air" on Ham radio. In spite of the intrinsic value of membership, there are engineers who still do not join.

Generally; broadcast engineers who are not SBE members have one or both of these characteristics:

1) They do not recognize value from SBE membership. Even if they intellectually understand that certification, education, fellowship, recognition, and representation has value these engineers

feel the benefits simply do not apply to them.

2) They do not feel that the SBE's mission to promote, educate, and certify present and future broadcast engineers is a productive use of their limited time and money.

While not becoming a member or not attending a chapter meeting appears to be a passive act, the choice to do so is straightforward and deliberate. The simple truth is that we make time and resources available for things that are important. During difficult economic times like these, we all take a look at where we spend our money and sometimes make even more deliberate choices about that which is important. I urge you, when you're making these decisions, to think about our profession and how your participation in the SBE has helped (or could help) you...but more importantly think about how we all help each other.

SBE Membership has been, since I helped form a local chapter, something that has been important and vital to me as an extension of my own deliberate and conscious career choice. The primary reasons are the antithesis of the two reasons above. I see value in every program in which the Society engages and have gained individually from many.

The most important reason, however, has been because the opposite of the second reason: It's an important use of my time and money to promote, educate, and certify the broadcast engineering community. The Society of Broadcast Engineers is the singular organization chartered to promote our profession so naturally; my commitment to my own profession is demonstrated by my commitment to this Society.

Strategic planning for SBE's future

BY **Vinny Lopez, CEV, CBNT**

SBE Vice President and Strategic Planning Committee Chairman

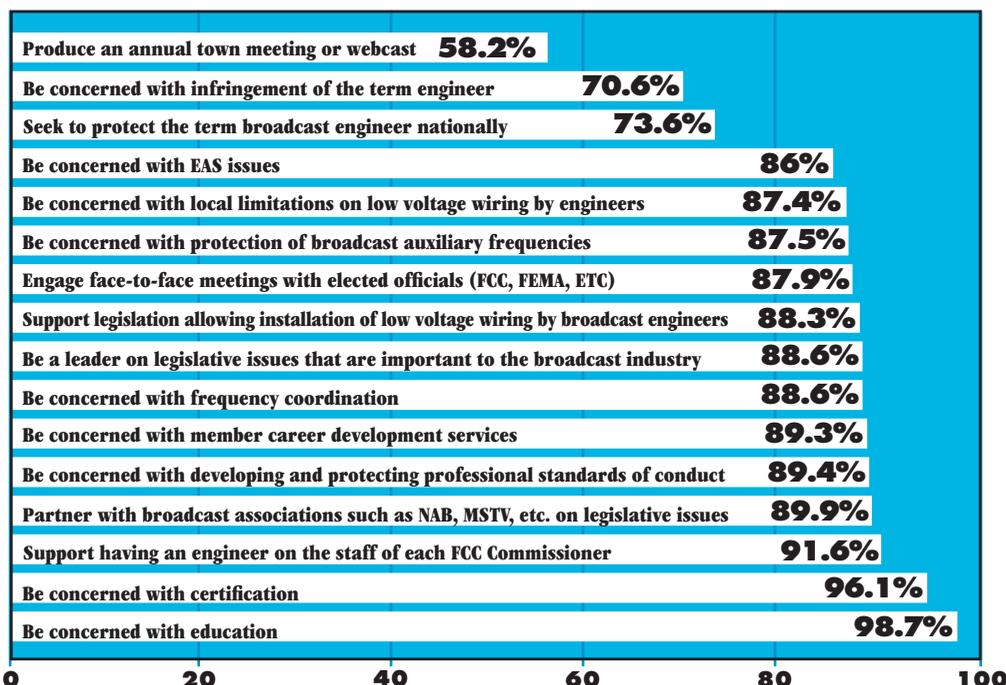
The SBE Strategic Planning Committee has been hard at work finding out what you, our members, are looking for in the future of our society. We have conducted two member surveys in the past two years.

The first survey was a get-to-know you effort and the most recent survey was about your opinions regarding legislative issues and programs that the Society is involved in. What we were looking for was an indication about how we best allocate the Society's limited, mostly volunteer resources across these efforts – FCC advocacy, BAS frequency coordination, EAS, education, certification, chapter support, regional and national conventions, while working to assure the tangible benefits of your membership.

The survey was sent to 4,098 of our 5,700+ members via e-mail. The response rate to the survey was 10.7%. The results could be considered somewhat skewed in favor of members who make their email addresses available for the *SBE-news* bi-weekly newsletter and are therefore, perhaps more connected members.

Below is a chart showing the results of Question #2 of the survey, ranked from lowest to highest. I will hit the high points below.

Your opinions regarding legislative issues and programs that the Society is involved in:



Almost all respondents told us you were most concerned with education. The SBE Board has been hard at work through our Education Committee chaired by Cris Alexander, to add educational opportunities for SBE members. Most notably, in the form of the SBE University, our new cost-effective on-line education service. Four courses are currently available, with more in development. We have put a lot of time and development costs into this area, where many of you have expressed great interest. This is an area that we need to continue to work hard in and expand in the coming years.

Members continue to believe in the SBE Certification Program and what it offers to the membership. The SBE Certification Committee under chairman, Jim Bernier, CPBE CBNT, is hard at work reviewing the entire question pool and making updates as necessary due to the demise of full power analog NTSC transmissions. They have also produced a new 7th edition of the *SBE TV Operator's Handbook*, which is now available from the website, or national office.

You also felt strongly that SBE should be partnering with other related organizations, such as NAB and MSTV, on issues important to the broadcast industry on issues that have an impact on engineers. This process has begun with SBE, NAB and

MSTV looking at partnering on current hot-button issues in our world. We also have been working with MSTV on the Trucker TV issue and with NAB and MSTV on the 2 GHz relocation project. We also are working with NAB, NASBA and various state broadcasters associations on the next generation of EAS.

Members were also concerned with protecting professional standards of conduct and career development. SBE has long been working to support these goals. Our Leadership Development Course, taught by Rodney Vandever, is a popular career development tool. We are investigating ways to make this available to more members and possibly offering it at other locations around the country.

see **SURVEY** on page 17

"It Ain't Over 'Til the Fat Lady Sings." But Not Into a 700 MHz Wireless Mic...

BY **Chris Imlay, CBT**
SBE General Counsel

Okay, so where exactly are we on wireless microphones that are operating between 698 and 806 MHz? Limbo, that is where. The FCC hasn't as of this writing resolved the Docket 08-166 and 08-167 proceeding, which proposed to set a sunset date for wireless mic operation on channels 52-69 (which is commonly called "700 MHz"), even though those television channels are pretty well gone. Here is where this stands right now, for those of you, like me, who are completely confused by the FCC's unwillingness to resolve this on anything like a timely basis.

The FCC Notice of Proposed Rule Making and Order in these dockets was released August 21, 2008. There were quite a few comments filed, and since no one just files written comments and leaves it at that these days, there are dozens of reports of ex parte meetings held at FCC by the wireless industry, wireless mic (WM) manufacturers and users (licensed and unlicensed) and of course from broadcasters. The NPRM and Order proposed generally to prohibit 700 MHz WMs after the DTV transition deadline, so as to avoid interference to public safety and commercial broadband operations that are commencing operations in that band after DTV transition. The notice also proposed to prohibit after the DTV transition all manufacture, importing and sale of 700 MHz WMs. It is not clear whether that would apply to WMs that are capable of operating at both 698-806 MHz and the lower TV channels pursuant to a Low Power Auxiliary BAS license. The manufacturers seem to believe that the prohibition would not apply to previously authorized WMs that can operate in BAS

bands below 698 MHz.

But there has been no order released in this proceeding yet. Perhaps one will be by the time you read this. SBE filed comments last September generally concurring that 700 MHz WMs should be prohibited after the DTV transition date, because, from the experience of our frequency coordinators, there is potential incompatibility between continued 700 MHz WM operation and public safety use of the 700 MHz band. Public Safety requires a high degree of reliability and WM operation, which is mobile, itinerant and unpredictable, is difficult to justify after the spectrum allocation actually changes over on TV Channels 52-69. SBE said there was no magic date for such a transition, but the DTV transition date (which at the time was February of 2009 made as much sense as any. SBE concluded that there was not much interference potential from WMs to commercial broadband services as there was to narrowband public safety systems at 700 MHz, but it is of course difficult to coordinate two mobile services. SBE noted, though, that the intensification of the uses of the TV channels below 52 made it absolutely critical for the Commission to find alternative replacement spectrum for wireless mics. Of course, that hasn't been anything that FCC has been interested in spending time doing. Quite the contrary; it has spent a lot of time figuring out how to justify putting TV White Space devices in those same TV channels into which WMs stand to be compressed, starting right away. But the bottom line for SBE is that its coordinators could not comfortably coordinate 700 MHz WMs after public safety had commenced its operations in the 700 MHz band in earnest.

Shure proposed a 24-month transition period during which time WMs could

continue to operate at 700 MHz. That, given the limited time between now and the June 12 DTV conversion deadline, sounds pretty reasonable, and would provide for an "orderly" transition. However, that proposal is distinctly unpopular with the likes of APCO, CTIA, NPSTC and other public safety land mobile and commercial wireless groups who are champing at the bit to commence 700 MHz operations. They want the band cleared muy pronto and all 700 MHz WM equipment "cleared from inventory and store shelves" so that it is no longer available 30 days after the FCC order is published in the Federal Register. They recognized that there should be a transition of presently authorized users who already have equipment on the air at 700 MHz though, and while they said that may take some time, all such operations should be expressly secondary to public safety and commercial broadband during that transition, whatever it turns out to be, and WMs must have to shut down if there is harmful interference to either one. Finally, they recommend that there should be an "enforceable" plan for migrating all WM users, licensed and unlicensed, legal and illegal, out of the 700 MHz band.

Enforceable is a big thing to ask for in such a plan, of course, because the number of licensed (Low Power Auxiliary BAS Part 74-licensed) users is far eclipsed by the number of illegals, including churches and theaters, which are using Part 74-certified WMs. And if there is a transition plan adopted by the Commission for 700 MHz WMs, the longer the Commission



cimlay@sbe.org

waits to start it, and thus the shorter the transition period, the less “enforceable” it becomes. About the unlicensed users, the public safety folks just say to FCC: “you fix it”. Easier said than done.

What really is the interference potential of a 700 MHz WM to public safety? The APCO/CTIA/NPSTC group cited an engineering study by a wireless engineering firm that concluded that co-channel LP Auxiliary device operating at authorized parameters could cause loss of service on CMRS or public safety portables within 200 meters, or 700 feet. In stadiums, open space or outdoor venues, a line of sight interference range of 1300 feet (400 meters) was a predicted interference range. At those ranges, the study concluded, CMRS portable and public safety portables would be wiped out “at an entire concert or sporting event” and cause loss of service “to tens of thousands of customers.” Sounds more than a bit exaggerated to me, but perhaps it is accurate.

In any case, the rules already protect land mobile operations of all sorts in the television broadcast bands. Section 74.803(b) of the rules makes all LP Auxiliary operation secondary not only to TV broadcasting but also to any “land mobile stations operating in the UHF-TV spectrum” and LP Aux devices “must not cause harmful interference.” Perhaps this gives the FCC some comfort in the delay in resolving this issue.

NAB and MSTV have proposed their own specific phase-out plan for 700 MHz WMs. They suggest that this be done gradually: by the earlier of (1) 60 days prior to the date on which a 700 MHz wireless entrant notifies the LP Aux licensees in writing that it intends to commence operations at 700 MHz on a specific frequency and in a specific geographic area, or (2) February 17, 2012. This plan has the distinct advantage of avoiding clearing the band completely in markets where no wireless licensee intends to commence operations, and it

permits additional time to do what SBE has urged: find replacement spectrum so there isn't gridlock on the channels below 52 starting right away. The downside, of course, is that there is a lot of written notifications, a lot of potential non-receipts, and still, a lot of illegals. So what if the broadcasters do what they are supposed to do, and doubtless will do: shut down when and if notified by a wireless provider. The churches and small theaters, and the AV systems at hotels won't cease operations, because they won't get notified and they won't have any idea in most cases that they have done anything wrong. Really, that is the flaw with any plan other than a blanket shutdown order as FCC has essentially proposed but not done.

So, what should you do about 700 MHz and WM operations? So far, still good to go. Just don't make any long term plans for that band, and listen for the fat lady singing- connected up to plenty of cable.

Renew your membership

It's that time of year again, time for Regular, Senior, Associate and Student Members to renew their SBE memberships.

SBE Membership dues for Regular, Senior and Associate Members are \$63. Dues for Student Members are \$20.

Membership renewal notices were mailed out to all Regular, Senior, Associate and Student members in early February. If you do not receive your renewal notice, contact the SBE National Office at (317) 846-9000.

Membership Renewals for Youth and Sustaining Members are due on the anniversary month of joining the Society.



What will the exam be like?

The SBE National Certification Committee offers sample test software for the SBE certification examinations. Each sample test contains 100-150 questions typical of those found on an actual exam. Correct answers move you to the next question; wrong answers stop to give you the right answer. Each CD also includes suggested reference materials for further study and an application for the actual exam.



CERTpreView

Certification Sample Test Software

Go to <http://www.sbe.org/CertPreview.php> for more information and to access an order form.

What are you waiting for? Stand Out to Employers!

BY **Megan Clappe**

Certification Director

With so many layoffs and reorganizations in the broadcasting field you might be thinking about how you can stand out to current or future employers.

One way is to become SBE certified. You might ask, How do I become certified? Read on and find out.

First let me start with a quick background of how SBE Certification came to be.

The Society of Broadcast Engineers' Program of Certification began 34 years ago as a way to recognize and raise the professional status of Broadcast Engineers by providing a standard of professional competence. It has become recognized in the industry as the primary method of verifying the attainment of educational standards.

Eligibility for some of SBE's certifications are based on years of experience in the broadcast industry.

ENTRY-LEVEL CERTIFICATIONS:

Certified Television Operator® (CTO®) and **Certified Radio Operator® (CRO)** – These two certifications are targeted to the entry-level, non-technical pool of applicants filling board operator and master control positions in today's radio and television marketplace and include the

opportunity to be tested and certified. The exam consists of 50 multiple choice questions. It is closed book and you are allotted one hour. Passing score is 90%.

Certified Broadcast Technologist® (CBT) – This exam will consist of either AM/FM or TV questions. Content of these questions will consist of electronic fundamentals, FCC rules pertaining to operating tolerances and safety. The exam is 50 multiple choice questions. It is open book and you are allotted three hours to take the exam. Passing score is 70%.

Certified Broadcast Technologist® (CBT) – If you hold a valid FCC Amateur Extra Class license or a valid General Class license and have two continuous years or three out of the last five years work experience in broadcast engineering or a related technology you can apply for the CBT certification without taking the exam. Please contact the national office for more information.

Certified Broadcast Networking Technologist® (CBNT®) – This certification is designed for persons who wish to demonstrate a basic familiarity with networking hardware as utilized in business and audio/video applications in broadcast facilities. This exam will consist of questions on network topologies and layouts, common network protocols,

wiring standards and practices, maintenance, troubleshooting and connectivity issues and challenges unique to broadcast-based networks. The exam is 50 multiple choice questions. It is open book and you are allotted three hours to take the exam. Passing score is 70%.

5-YEAR CERTIFICATIONS:

Certified Audio Engineer® (CEA®), **Certified Video Engineer® (CEV®)**, **Certified Broadcast Radio Engineer (CBRE®)** and **Certified Broadcast Television Engineer (CBTE®)** – These certifications are based partially on the years of experience you have in the field of broadcast engineering or related technology. You may substitute years of experience to supplement the five year requirement (see acceptable substitutions below). This exam will consist of questions regarding safety, problems, operation practices and theory. The exam is 50 multiple choice questions. It is open book and you are allotted three hours to take the exam. Passing score is 70%.

10-YEAR CERTIFICATIONS:

Certified Senior Radio Engineer

See **CERTIFICATION** on page 12



New SBE Certification Achievements

LIFE CERTIFICATION

Certified Professional Broadcast Engineers® and Certified Senior Broadcast Engineers® who have maintained SBE certification continuously for 20 years and are current members of SBE may be granted Life Certification if so requested. All certified who have retired from regular full-time employment 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®)

Roger Dowdy, Cottontown, TN – Chapter 103
Louis Johnson, IV, Clinton Township, MI – Ch. 82
Tom Norman, Centennial, CO – Chapter 48
Robert Shotwell, Sunderland, MA – Chapter 14
William Tessman, Plymouth, WI – Chapter 80
Edward Tipler, Ridgecrest, CA

CERTIFIED SENIOR TELEVISION ENGINEER (CSTE®)

Stephen Alhart, Mills River, NC – Chapter 86
John Scoon, Portland, OR – Chapter 124

CERTIFIED BROADCAST NETWORKING TECHNOLOGIST® (CBNT®)

Roger Dowdy, Cottontown, TN – Chapter 103
Harold Schardin, Forest Lake, MN – Ch. 17

NEWLY CERTIFIED CPBE®

Applicant must have had 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.

CERTIFIED PROFESSIONAL BROADCAST ENGINEER® (CPBE®)

Tracy Gibson, Manhattan, KS – Chapter 3

SBE CERTIFIED SCHOOL COURSE COMPLETION

CERTIFIED BROADCAST TECHNOLOGIST® (CBT®)

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Natasha Branch, Dupont, WA – Chapter 16
Dale Comer, Burien, WA – Chapter 16

Larry Martin, McKenna, WA – Chapter 16
Chris Thomas, Bremerton, WA – Chapter 16
Benjamin Rodriguez, Puyallup, WA – Ch. 16
Jason Van Hoy, Tacoma, WA – Chapter 16

MICHIGAN CAREER & TECHNICAL INSTITUTE
Keith Lilley, Plainwell, MI – Chapter 102
William Shaw, Bronson, MI – Chapter 91

SPokane COMMUNITY COLLEGE
Ettore Albuquerque, Spokane, WA – Ch. 21

DEFENSE INFORMATION SCHOOL
Ip Tat, Fort Bragg, NC – Chapter 93

FEBRUARY EXAMS

*"Thank You" CHAPTER CERTIFICATION
CHAIRS FOR YOUR ASSISTANCE*

CERTIFIED SENIOR TELEVISION ENGINEER (CSTE®)

Duane Everts, Parker, CO – Chapter 48
Jason Knapp, Columbus, OH – Chapter 52
George Molnar, Las Vegas, NV – Chapter 128
Gary Pearcey, Sr., Stone Mountain, GA – Ch. 5
Randolph Staley, Redlands, CA – Chapter 131

CERTIFIED SENIOR RADIO ENGINEER (CSRE®)

Gregory Davis, Palatine, IL – Chapter 26
John Hovanec, North Royalton, OH – Chapter 70
Donald Kolbert, Wabasha, MN – Chapter 112
Dana Swann, Ellicott City, MD – Chapter 37

CERTIFIED BROADCAST RADIO ENGINEER (CBRE®)

William Blum, San Francisco, CA – Chapter 40
Mark Fate, Pomona, CA – Chapter 131
James Glanz, Brooklyn, NY – Chapter 15
Patrick Gleason, Midvale, UT – Chapter 62
Thomas Shanks, III, Atlanta, GA – Chapter 5

CERTIFIED BROADCAST TELEVISION ENGINEER (CBTE®)

Keith Altavilla, Riverside, IL – Chapter 26
Dana Cole, Stillwater, OK – Chapter 85
William Dorsey, Jr., Belleville, IL – Chapter 55
Dana Tyler, Webster, NY – Chapter 57
Elizabeth Wolfe Hamrick, Columbus, OH – Ch. 52

CERTIFIED AUDIO ENGINEER® (CEA®)

Philip Barreca, New York City, NY – Ch. 15
Chris Connelly, Clovis, CA – Chapter 66
Patrick Gleason, Midvale, UT – Chapter 62

8-VSB SPECIALIST (8-VSB)

Daniel Rapak, Randolph, NJ – Chapter 15

DIGITAL RADIO BROADCAST SPECIALIST (DRB)

Dennis Baldrige, Hillsboro, WI – Chapter 24
Douglas Irwin, Jersey City, NJ – Chapter 15

CERTIFIED BROADCAST NETWORKING TECHNOLOGIST® (CBNT®)

John Andrews, III, Vienna, VA – Chapter 37
David Baker, Carol Stream, IL – Chapter 26
Erika Byers, Kansas City, MO – Chapter 59
Alex Cordero, New York, NY – Chapter 15
Jeff Craigmile, Spokane, WA – Chapter 21
John Davis, Missouri City, TX – Chapter 105
David Dunning, Seattle, WA – Chapter 16
Michael Echenique, Moreno Valley, CA – Ch. 131
Mark Fate, Pomona, CA – Chapter 131
Kenneth Fiedler, Fridley, MN – Chapter 17
Steven Gallagher, Derry, NH – Chapter 110
James Glanz, Brooklyn, NY – Chapter 15
Enrique Gonzalez, Ponte Vedra Beach, FL – Ch. 7
Larry Hamlin, Oklahoma City, OK – Chapter 85

James Hardy, Belmont, NC – Chapter 45
John Hovanec, North Royalton, OH – Ch. 70
Michael Huntington, Kerman, CA – Chapter 66
Daryl Jones, Chapter 131
Mark Kaska, Orlando, FL – Chapter 42
Kevin Kelly, North Brunswick, NJ – Chapter 15
Edith Kirkland, Inman, SC – Chapter 86
Michael Lipford, Crossroads, TX – Chapter 67
David Lodge, Mount Laurel, NJ – Chapter 15
Edmund O'Leary, Cranford, NJ – Chapter 15
Richard O'Neill, Stoughton, MA – Chapter 11
Mark Riegel, Reading, PA – Chapter 120
James Romine, Conroe, TX – Chapter 105
Christopher Scherer, Gahanna, OH – Ch. 52
Walter Sewell, Belleville, IL – Chapter 55
William Shearn, Cheney, WA – Chapter 21
Daniel Smith, Perris, CA – Chapter 131
Randolph Staley, Redlands, CA – Chapter 131
Mark Weisheimer, Blacklick, OH – Chapter 52
Peter Williams, Dallas, TX – Chapter 67

CERTIFIED BROADCAST TECHNOLOGIST® (CBT®)

James Pollock, Mount Laurel, NJ – Chapter 18
Jeremy Preece, Sacramento, CA – Chapter 43
Scott Trask, Alpharetta, GA – Chapter 5

CERTIFIED RADIO OPERATOR® (CRO)

Alvaro Montealegre, Tampa, FL – Chapter 39

CERTIFIED TELEVISION OPERATOR® (CTO®)

Jordan Grover, Crobett, OR – Chapter 124
Bjoern Johansson, College Park, MD – Chapter 37
Eric Kuglin, Chandler, AZ – Chapter 9
Valerie Rostkowski, Brooklyn, NY – Chapter 15
Brian Tee, Clarkston, MI – Chapter 82

CERTIFIED BY LICENSE

CERTIFIED BROADCAST TECHNOLOGIST® (CBT®)

George Becht, Sarasota, FL – Chapter 39
Damion Giunta, Simi Valley, CA
Joshua Kelly, Independence, IA – Chapter 109
Jonathan Kramer, Los Angeles, CA – Ch. 47
David Krauskopf, Austin, TX – Chapter 79
James Roethig, Boise, ID – Chapter 115
Thomas Shanks, III, Atlanta, GA – Chapter 5
Randolph Staley, Redlands, CA – Chapter 131
Dana Tyler, Webster, NY – Chapter 57
Robert Worek, Cheswick, PA – Chapter 20

CERTIFIED RADIO OPERATOR® (CRO®)

CERTIFIED RADIO OPERATOR® (CRO)

Benjamin Conroy, Fullerton, CA
Tom Finnegan, Valley Village, CA
William Linenkugel, Temperance, MI
Christopher Rogers, Monroe, MI
Vincent Schultz, Ormond By the Sea, FL

COLORADO PUBLIC RADIO

Don Dixon
Jonathan Finger
Aniesha Jojoua
Dean Phannestiel
Matt Weesner
Jeffrey Zumfelde

CERTIFIED TELEVISION OPERATOR® (CTO®)

CERTIFIED TELEVISION OPERATOR® (CTO®)

Samuel Astuto, Jr., Delray Beach, FL
Benjamin Bates, Kalamazoo, MI
Philip Brooks, Oklahoma City, OK
Chelsea Carleton, Salt Lake City, UT

Samantha Daniel, Winston-Salem, NC
Tony Flores, San Antonio, TX
Mark Heller, Two Rivers, WI – Chapter 80
Steven Lewis, Oklahoma City, OK
Cindy Marshall, Ormond Beach, FL
James Roethig, Boise, ID
Todd Sternberg, Las Vegas, NV
Kirstie Williams, Boise, ID
Joshua Wood, Medford, OR
Bryan Wooten, Chattanooga, TN

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®)

Sergio Beristain, Mexico City
Chris Calnan, Lomita, CA – Chapter 47
Robert Kornstadt, Jenison, MI – Chapter 102
Gary Thayer, Arlington, VA – Chapter 37

CERTIFIED PROFESSIONAL BROADCAST ENGINEER® (CPBE®) AM DIRECTIONAL SPECIALIST (AMD)

Joseph Huk, Adrian, MI – Chapter 82
Timothy Walker, Tucson, AZ – Chapter 9

CERTIFIED PROFESSIONAL BROADCAST ENGINEER® (CPBE®) AM DIRECTIONAL SPECIALIST (AMD) DIGITAL RADIO BROADCAST SPECIALIST (DRB)

Hal Kneller, Punta Gorda, FL – Chapter 127

CERTIFIED PROFESSIONAL BROADCAST ENGINEER® (CPBE®) 8-VSB SPECIALIST (8-VSB)

William Magliocco, Atlanta, GA – Chapter 5

CERTIFIED SENIOR RADIO ENGINEER (CSRE®)

Erik Barklow, Lyndhurst, NJ – Chapter 15
David Dobes, Waterloo, IA – Chapter 65
Philip Hartman, San Francisco, CA – Ch. 40
Frank McLemore, Smith Station, AL – Ch. 118
Kishore Persaud, Fairfax, VA – Chapter 60

CERTIFIED SENIOR TELEVISION ENGINEER (CSTE®)

John Billiard, Monrovia, IN – Chapter 25
Stuart Jagoda, Silver Spring, MD – Chapter 37
James Myers, Mt. Wolf, PA – Chapter 41
Mark Pridgeon, Osceola, IN – Chapter 30
Adrian Washington, Riverside, CA – Ch. 131

CERTIFIED SENIOR RADIO/TELEVISION ENGINEER (CSRTE)

Thomas Lambert, Eagle River, AK – Chapter 89

CERTIFIED BROADCAST RADIO ENGINEER (CBRE®)

Brian Cunningham, Buffalo, NY – Chapter 133
Guillermo Franco, Presidio, TX – Chapter 38
Dale Schiesser, Marshall, MI – Chapter 91
Robert Sharkey, Pittsburgh, PA – Chapter 18
John White, Portland, OR – Chapter 124
William Wright, Boone, NC – Chapter 84

CERTIFIED BROADCAST TELEVISION ENGINEER (CBTE®)

Dennis Desrochers, Rochester, MA – Ch. 11
Jarrett Liddicoat, Cedar Falls, IA – Chapter 109
Gregg Richwine, Des Moines, IA – Ch. 109
Kenneth Scott, Seattle, WA – Chapter 16
Mark Seekins, Columbus, OH – Chapter 52
Robert Sullivan, Secaucus, NJ – Chapter 15

Dennis Wallace, Waldorf, MD – Chapter 37

CERTIFIED BROADCAST RADIO TELEVISION AUDIO VIDEO ENGINEER (CBRTAVE)

Lewis Lawrence, Jr., Destrehan, LA – Ch. 72

CERTIFIED AUDIO ENGINEER® (CEA®)

Charles Youngs, Atlanta, GA – Chapter 5

CERTIFIED VIDEO ENGINEER® (CEV®)

Christopher Baycura, Liverpool, NY – Ch. 22

CERTIFIED BROADCAST NETWORKING TECHNOLOGIST® (CBNT®)

Rafael Aguilon, Murrieta, CA – Chapter 131
Robert Army, Jr., Moreno Valley, CA – Ch. 131
Hal Kneller, Punta Gorda, FL – Chapter 127
Robert Kornstadt, Jenison, MI – Chapter 102
Jarrett Liddicoat, Cedar Falls, IA – Chapter 109
William Magliocco, Atlanta, GA – Chapter 5
Cristie Ogden, Riverside, CA – Chapter 131
Pete Ramos, Moreno Valley, CA – Chapter 131
Kishore Persaud, Fairfax, VA – Chapter 60
Kenneth Scott, Seattle, WA – Chapter 16
Robert Sullivan, Secaucus, NJ – Chapter 15
Timothy Walker, Tucson, AZ – Chapter 9
Adrian Washington, Riverside, CA – Ch. 131
Mark Wittkoski, Grand Rapids, MI – Ch. 102

CERTIFIED BROADCAST TECHNOLOGIST® (CBT)

Joshua Baranoff, Philadelphia, PA – Ch. 18
Marvin Brown, Maryville, TN – Chapter 113
Craig Clark, Raymond, ME – Chapter 110
Andrea Cummins, Bensalem, PA – Chapter 15
Art Cutting, Tacoma, WA – Chapter 16
Ron Davis, Lynnwood, WA – Chapter 16
William Dean, Williamsport, MD – Chapter 46
Stan Dragic, Largo, FL – Chapter 39
Gregory Ehrman, Phoenix, AZ – Chapter 9
Charlie Farr, Jr., Virginia Beach, VA – Ch. 54
Gregory Frank, New Cumberland, WV – Ch. 116
Douglas Green, Littleton, CO – Chapter 48
Chad Hagedorn, Tacoma, WA – Chapter 16
Mark Hoffman, Des Moines, IA – Chapter 109
Ronald Huffaker, Maryville, TN – Chapter 113
Robert Hughes, Vienna, VA – Chapter 37
Jeff Kerata, Parker, CO – Chapter 48
Christopher King, Murfreesboro, TN – Ch. 103
Keane Laguatan, Central Point, OR – Ch. 141
Roy Luke, Martinez, GA
Jerry Manes, Mableton, GA – Chapter 5
Don Mussell, Kilauea, HI – Chapter 63
Teresa Park, Cottonwood, CA – Chapter 43
Donald Perkins, Johnson City, NY – Chapter 1
Alan Rhodes, Jacksonville, FL – Chapter 7
Marlow Saady, New Windsor, NY – Chapter 15
Charles Sawner, Ithaca, NY – Chapter 22
Daniel Shields, Stratford, CT – Chapter 15
Gary Shirk, Koror, Palau – Chapter 126
Urban Stiess, Los Angeles, CA – Chapter 47
Robert Sullivan, Secaucus, NJ – Chapter 15
Timothy Trendt, Platteville, WI – Chapter 24

CERTIFIED TELEVISION OPERATOR® (CTO®)

Richard Beinlich, Essington, PA – Chapter 18
Robin Heslop, Davie, FL – Chapter 53
Jean Leishman, Parker, CO
Michael McGuire, Cape Girardeau, MO
Kimberly Merritts, Cape Girardeau, MO
Nadine Redwood, El Cajon, CA – Chapter 36
James Smith, Littleton, CO

CERTIFIED RADIO OPERATOR® (CRO)

Michael McCormick, Ogallala, NE – Ch. 87

nearby in the South Hall second floor meeting rooms.

Be sure to stop by the SBE booth while at the convention. We'll have the new and totally revised 7th edition of the *SBE TV Operator's Handbook*, the popular "CertiPreview" exam preparation software programs, and information on the new SBE University on-line, on-demand courses for broadcast engineers.

We'll also have a great assortment of technical books from national publishers, as well as the SBE Chief Operators Handbook, SBE Handbook for Radio Operators and the SBE Guide to Writing Station Operations Manuals. Most are available to members at discount prices. There will also be an assortment of SBE logo items. Membership renewals and new memberships may also be transacted at the booth.

BOOTH HOURS

Sunday - 2pm to 4pm

Monday – Wednesday - 9am to 6pm

Thursday - 9am to 4pm

BOOTH LOCATION

LVCC South Hall Lobby Booth 27 near the entrance to the second floor exhibit hall. See the SBE web site, www.sbe.org for a floor plan indicating the booth location.

SBE SPRING MEMBERSHIP MEETING

Something you'll not want to miss is the annual spring SBE Membership Meeting, held on Tuesday, April 21 from 5:00 pm to 6:00 pm in S228 of the Las Vegas Convention Center. We will be recognizing a number of our local chapter certification chairs during the meeting. We'll also have a special SBE logo souvenir for the first 100 members in attendance and some other nice prizes including a SONY Camcorder and three dinner gift certificates. The Spring SBE Membership Meeting is sponsored by **Microwave Radio Communications**, which we thank for their continuing support. MRC

also made a generous donation to the Ennes Scholarship fund as a part of their support of the 2009 SBE Spring Membership Meeting. Be sure to include the SBE Membership Meeting on your 2009 NAB Show schedule.

SBE will hold several other meetings during the 2009 NAB Show that may be of interest to you. (Located at the Las Vegas Hilton Hotel unless otherwise indicated)

Board of Directors Meeting

Sunday, 8:30 am - 12:00 pm;

Conference Rooms 1 & 2

EAS Meeting, Monday, 2pm – 4 pm,

Conference Rooms 7 & 8

SBE Frequency Coordinators Meeting,

Tuesday, 10am – 12pm, Conference Rooms 7 & 8

SBE Spring Membership Meeting,

Tuesday, 5pm – 6pm, LVCC Room S228

REGISTRATION DISCOUNTS FOR SBE MEMBERS

Members of SBE can register for the NAB convention at a special "partner" rate, a savings of \$100 off the NAB non-member rate. To get the discount, SBE members register using the regular NAB on-line registration form. When completing the form, check the "Partner" box at the bottom and select "Society of Broadcast Engineers" from the drop-down box.

The BEC is chaired this year by SBE member, Joseph L. Snelson, Jr., CPBE, 8-VSB. Snelson is corporate engineer for Meredith Broadcast Group.

Other members of the committee include: Dom Bordonaro, CSRE, Cox Radio; Michael Cooney, CSRE, Beasley Broadcast Group; David Folsom, Raycom Media; Thomas Hankinson, ABC; Andy Laird, Journal Broadcast Group; Glenn Reitmeier, NBC Universal and Jeff Smith, Clear Channel Radio. John Marino of NAB and John Poray of SBE also work with the committee.

Focusing on the Ennes Workshop presented by SBE are Lew Zager, LZ Solutions and Fred Baumgartner, CPBE, CBNT, of the Ennes Educational Foundation Trust.

ENNES WORKSHOP to address "Continuing the Digital Transition"

On the Saturday before the NAB convention floor opens (April 18), the Las Vegas Convention Center in Rooms S219/220 hosts the all-day 2009 Ennes Workshop, "Continuing the Digital Transition," presented by the Society of Broadcast Engineers.

Attendance at the Ennes Workshop requires full NAB conference registration. Topics and speakers are listed below. The full session descriptions are available at the NAB web site, www.nab.org. As is our tradition, the Workshop begins with a tutorial.

Donald Vanderweit, Agilent Technologies, Inc.:

Digital Transmission 101, Parts 1 & 2

Mike Starling, National Public Radio: IBOC Performance: The 1% or 10% Solution

Steve Densmore, iBiquity:

IBOC's Opportunities

Geoffrey Mendenhall, Harris

Broadcast Communications:

Five Good Reasons to use a Tube for High Power FM+HD Radio

William Meintel, Meintel, Sgrignoli & Wallace: DTV Transmission Status

Jay Adrick, Harris Communications Division and Wayne Bretl, Principal Engineer, Zenith Electronics LLC:

Implementing Mobile/Handheld

Richard Schwartz, Axcera:

Improving DTV and Mobile TV: Coverage through On-Channel and Translator Technologies

Dennis Wallace, Meintel, Sgrignoli, & Wallace: DTV Maximization: The Value of the Power

Kerry Cozad, Dielectric Communications: Antenna Choices for Digital Systems

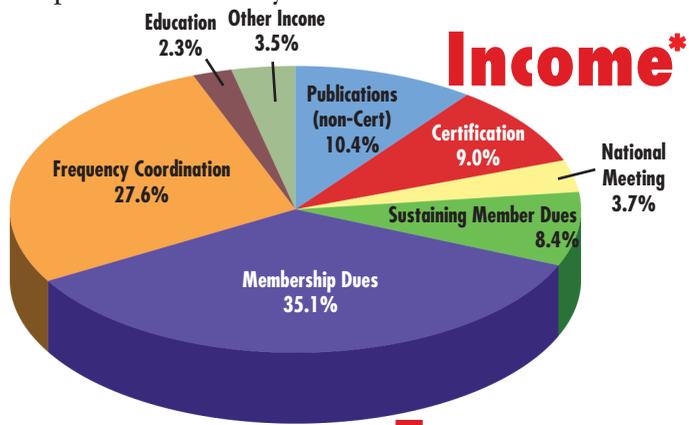
Moderators for the Ennes Workshop will be Andy Butler, CPBE of PBS and Tom Mikkelsen of Andrita Studios.

We hope you'll join many of your fellow SBE members April 18-23, in Las Vegas for the 2009 NAB Show and NAB Broadcast Engineering Conference!

2008 SBE Financial Review

The Society of Broadcast Engineers, Inc. completed 2008 with net revenue from cash operations of \$3,497. Net revenue from all sources, including investments and depreciation, was -\$178,844. Gross income from all sources was \$669,050 while expenses were \$847,895. The value of SBE medium and long term investments as of December 31, 2008 was \$836,630, which was \$167,283 less than at December 31, 2007. Total SBE assets as of December 31, 2008 were \$1,085,493, a decrease of \$179,034 over 2007.

A percentage breakdown of SBE income and expenses is depicted in the accompanying charts. A financial statement will be published in the June issue of *the SIGNAL*, following completion of the Society's annual audit.



* Does not include interest and dividends from savings or unrealized gain/loss on investments

In the Circle ... a snapshot of an SBE Member

Steven Callahan, CBRE, AMD

Director of Engineering
Rhode Island Public Radio
Providence, R.I.
SBE Chapter 11
Joined SBE in 2001

Involvement with SBE:

I appreciate the time that Chapter 11 members give to the SBE for certification exams and to coordinate guest speakers for the Chapter's monthly meetings. I also appreciate the depth of education and current information available at Ennes Workshops. It is well worth all the time and effort for all SBE members to attend an Ennes Workshop nearest you.



Getting Started: I started as a weekend announcer back in 1971 at WCNL, a 250 watt daytimer in Newport, New Hampshire. Back in those days, WCNL was frequently without an engineer, so I just fixed what was broken. I've been fixing broken stuff ever since.

Job Satisfaction: I truly enjoy the calls from listeners who are listening to our stations and appreciate what we're doing. When I get a call from a listener with a reception problem, I steer them toward a resolution. When they call back to express their appreciation, that really makes my day.

When I'm not working: I spend my vacations at a thatch-roofed cottage on a hillside in western Ireland.



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(CSRE®) and Certified Senior Television Engineer (CSTE®) – These two certifications are based on years of experience you have in the field of broadcast engineering or related technology. You may substitute years of experience to supplement the ten year requirement (see acceptable substitutions below). The exam is 50 multiple choice questions. It is open book. There is an essay portion associated with the senior exams. You will be given a choice of three essays (choose one). The essay is closed book. You are allotted three hours to take the exam. Passing score is a combined score of 84%.

For the five-year or ten-year certifications you may substitute the years of experience by holding a state registered Professional Engineer's license (four years), a Bachelor Degree (four years), an Associate Degree (two years) or years of related accredited education can be substituted, year for year (up to four years).

20-YEAR CERTIFICATION:

Certified Professional Broadcast Engineer® (CPBE®) – This certification requires 20 years of professional broadcast engineering or related technologies experience in radio and/or television. Educational credits will not be counted towards the 20 years. There isn't an exam associated with this certification. However, the applicant must first be certified on the Senior (10-year) level in order to apply for the CPBE.

To apply you must fill out the application and include three letters of reference. Two must be from a certified Professional Broadcast Engineer, Certified Senior Broadcast Engineer or State Registered Professional Engineers. At least one other letter of reference must be from a person who has supervised your work. However, if he or she is certified at one of the above-mentioned levels, that reference will be counted as two letters. In addition to the application and letters of reference

you must submit a resume and a statement showing why you believe your professional experience, educational background and training qualifies you for certification.

Your application will then go for review to your SBE Local Chapter Certification Chairman and then to the National Certification Committee.

SPECIALIST CERTIFICATIONS:

Certified 8-VSB Specialist (8-VSB), Certified AM Directional Specialist (AMD) and Certified Digital Radio Broadcast Specialist (DRB) – These certifications were created by the National Certification Committee to establish a benchmark of individual strengths. In order to apply for the Specialist exams you must first be certified on the five-year, 1ten-year or 20-year level. The exam is 50 multiple choice questions. It is open book. You will be given one essay. The essay is closed book. You are allotted three hours to take the exam. Passing score is a combined score of 84%. Upon passing, your Specialist certification will be linked to the expiration of your host certification.

All SBE certifications are valid for a period of five years at which time you will need to recertify by professional credits. These credits will be valid from the five-year period of your certification. Credits can be obtained by continuing your education, working in the broadcasting field, attending seminars, SBE meetings, active membership in SBE or other national technical broadcasting societies.

To apply for any of these certifications, please fill out an application from SBE's website at www.sbe.org or you may call the SBE National Office to request an application at (317) 846-9000. Exams are given year-round at your local chapter during exam sessions.

So now you see that there are many SBE certifications out there that you can qualify for. If you have any questions, please contact me at mclappe@sbe.org.

The Program of Certification would not be possible without the diligent volunteer force that is our Chapter Certification Chair-

men. In 2003, we began the tradition of honoring our local Certification Chairmen on a recurring five-year cycle. This year at NAB we will continue this practice of recognizing the service anniversaries of our volunteers at the SBE Membership Meeting. The annual SBE Membership Meeting will be held at the 2009 NAB Show on Tuesday, April 21, from 5 to 6 p.m., in Room S228 of the Las Vegas Convention Center. During the meeting we will present plaques to the following:

20 YEARS

- Henry A. Kaul, CPBE – Ch. 63, Hawaii
- Samuel B. Straus, CPBE – Ch. 60, Richmond, VA

15 YEARS

- Thomas A. Green, CSTE – Ch. 45, Charlotte, NC

10 YEARS

- Edmund Barry, CPBE – Ch. 9, Phoenix, AZ
- Oscar Medina, CSTE – Ch. 36, San Diego, CA
- Thomas Taylor, CPBE, CBNT – Ch. 115, Southern Idaho

5 YEARS

- Chris Heck, CPBE – Ch. 76, Eugene, OR
- Harold (Hal) Kneller, CPBE, AMD, DRB, CBNT – Ch. 127, Southwest Florida
- James Perry, CPBE, CBNT – Ch. 18, Philadelphia, PA
- Ernie Sutton, CPBE – Ch. 113, Knoxville, TN

FIRST YEAR OF SERVICE

- Steve J. Epstein, CPBE - Ch. 143, Mid Mo

2009 also brings two anniversaries for the National Certification Committee.

- Dane Ericksen, PE, CSRTE, 8-VSB, CBNT – 20 years as a Certification Committee member
- Terrence Baun, CPBE, AMD, CBNT – five years as Certification Committee member

Thank you to the local Chapter Certification Chairmen and the National Certification Committee for the endless hours they devote to the Program of Certification. Without their help and dedication the program would not be what it is today.

CANDIDATES from page 1

All of the directors serve in an at-large capacity.

To be eligible, candidates for national office must be Regular, Senior or Life members of the SBE, or be the designated representative of an SBE Sustaining Member in good standing. All candidates must hold a current SBE engineering-level certification and must maintain that certification through all terms of office. Directors serve terms of two years and are expected to attend two full meetings of the board each year. These meetings are held in the spring during the NAB Show, and in the fall during the SBE National Meeting. Terms of officers are one year. Officers are expected to attend the two full meetings of the board plus two meetings of the executive committee, which are held during the winter and summer.

Members of the board may be appointed by the president to serve as a chairman or as a member of a national committee. All those who serve must be willing to cover their own travel expenses to attend the meetings. Some employers and chapters have helped cover this expense for some members of the board in the past.

Are you interested? If you meet the eligibility requirements, contact me or one of the committee members and we'll tell you more.

The Nominations Committee must submit its list of candidates to the National Office by April 30, so if you are interested, be sure to contact someone on the committee before that date.

Election ballots will be mailed no later than July 28 to all voting members. The results will be known on August 28 when all the ballots mailed to SBE National Headquarters are counted by an official board of tellers. Those elected will be inducted into office on Oct. 7, 2009, during the SBE National Meeting, which will be held in Verona, NY, in conjunction with the SBE22 Broadcast and Technology Expo, sponsored by Chapter 22 of Central New York.

I hope you will seriously consider contributing your leadership and experience to the Society by offering to serve as a member of the national board of directors. Not only will your Society

benefit, but you will too, as you develop friendships and strengthen your professional network with other members from around the country.

NOMINATIONS COMMITTEE

Chris Scherer, CPBE CBNT
 chairman
 cscherer@sbe.org
 913-967-7201

Jim Bernier, CPBE CBNT
 jim.bernier@sbe.org

Roswell Clark, CSRE CBNT
 roz.clark@coxradio.com

Bob Hess, CPBE
 bhess@cbs.com

Mark Simpson, CPBE, AMD, CBNT
 mark.simpson@citcomm.com



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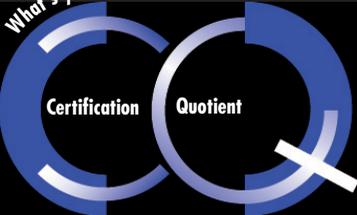
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The power input to a 50 ohm coaxial line is 10kW. The current flowing in the line is:

- A. 14.14A
- B. 200A
- C. 196A
- D. 20.5A

answer on page 20

SBE Certification 2009 Exam Schedule

Dates	Location	Application Deadline
April 21, 2009	NAB	April 1, 2009
June 5-15, 2009	Local Chapters	April 17, 2009
August 7-17, 2009	Local Chapters	June 5, 2009
November 6-16, 2009	Local Chapters	September 18, 2009

MARK YOUR CALENDAR

April 18

Ennes Workshop at the 2009 NAB Show
Continuing the Digital Transition
8:00 am - 5:00 pm
Las Vegas Convention Center

April 18-23

The 2009 NAB Show/BEC
Las Vegas Convention Center

April 21

Spring 2009 Membership Meeting
5:00 pm - 6:00 pm
Las Vegas Convention Center

May 15

Alabama Ennes Workshop
Orange Beach, Ala.

May 21

SBE RF Safety Course
Webinar

May 31

2009 SBE Membership Drive Ends

July 1

Ennes Scholarship Deadline

August 4-6

Leadership Development Course
Crowne Plaza Indianapolis Airport Hotel

August 27

SBE National Board of Directors Election

October 6-7

SBE National Meeting
Chapter 22 Regional Convention
Broadcast & Technology Expo
Verona, NY

October 13-15

Chapter 24 Regional Convention
Broadcasters Clinic
Madison, Wis.

October 19-20

Chapter 20 Regional Convention
Pittsburgh, Pa.

November 13

Ennes Workshop
Eugene, Ore.

Attend the NEW SBE Leadership Development Course

Do not miss out on this year's Leadership Development Course. This year's course is August 4-6, 2009 in Indianapolis. The deadline to register for the 2009 Leadership Development Course is July 2, 2009. Register now to reserve your spot to gain valuable leadership skills this summer.

This course is taught by Rodney Vandever, a Purdue University Professor in the Organizational Leadership Department, who has vast leadership experience and has conducted leadership development program for companies such as Medtronic, Allen Bradley and many more.

Past course graduate Michael Linz stated, "Rodney Vandever is most excellent. I have never been so moved by a speaker and educator in my life."

This course is specifically created for broadcast engineers. If you have or aspire to have management responsibilities and want to gain valuable leadership skills, this course is for you!

The Leadership Development Course is designed to take technically proficient people and instill in them sound supervisory and management skills. In today's market place, the company and even the individual with the leadership and management skills has the competitive advantage.

Many of the most respected broadcast engineering managers in the country today are graduates of this program and continue to send members of their staffs

to the course. "My leadership skills improved and now our department will excel. Every aspect was beneficial and relevant," Linz said.

Cost of registration is \$580, which includes three days of instruction, all course materials, a certificate of completion and classroom refreshments. All transportation, housing and meals are the responsibility of the participant.

The course will be held at the Crowne Plaza Indianapolis Airport Hotel. A block of rooms have been reserved for Monday, August 3 through Wednesday, August 8. These rooms are available for a special guest room rate of \$109 per night, for single or double occupancy. This special rate is available until July 13th, afterwards rooms and rates are subject to availability. To make reservations call 317-244-6861. The course starts promptly at 8:00 am Tuesday, August 4.

Register now, as space is limited. Fax your registration to 317-846-9120 or mail it to SBE, 9102 N. Meridian St., Suite 150, Indianapolis, IN 46260. If you would like more information on the SBE Leadership Development Course, please contact Holly Essex at (317) 846-9000 or hessex@sbe.org.



Leadership Development Course Instructor
Rodney Vandever.



Society of Broadcast Engineers

2009 Leadership Development Course

August 4 - 6, 2009

(Registration deadline: July 2, 2009)

COURSE INFORMATION: Course includes three days (24 hours) of instruction, all seminar materials, certificate of completion and classroom refreshments. Class size is limited to a minimum of 10 and a maximum of 25 participants per course.

Name of Participant: _____ E-mail: _____

Company: _____ Title: _____

Address: _____

City: _____ State: _____ Zip: _____ Daytime Phone: _____

If someone other than the participant is filling out this form, please provide the following information:

Company Contact: _____ Title: _____

City: _____ State: _____ Phone: _____ E-mail: _____

PAYMENT INFORMATION: Registration for each course is \$580. Payment is required in advance via credit card or check (payable to SBE).

Total: \$ _____ by (check one): Check Visa MasterCard American Express

Credit Card No.: _____ Exp. Date: _____ Security Code* _____

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* 3 digits in signature strip on back of card to the right of the (partial) card number (for Amex, it is 4 non-raised digits on the front).

NOTE: Cancellation, with no substitution, within 10 days of the seminar will result in forfeiture of full registration fee; a \$50 charge may be applied if cancellation, with no substitution, occurs more than 10 days from the seminar.

MAIL TO:

Leadership Development Course
Society of Broadcast Engineers
9102 North Meridian Street
Suite 150
Indianapolis, IN 46260

OR FAX TO: (317) 846-9120

QUESTIONS: Holly Essex at hessex@sbe.org or (317) 846-9000

HOUSING INFORMATION:

Participants are responsible for making their own hotel reservations. The course will be held at the Crowne Plaza Indianapolis Airport Hotel, 2501 S High School Rd Indianapolis, IN 46241. A block of rooms has been reserved at the hotel for Monday, August 3 through Wednesday, August 5. These rooms are available for a special guest rate of \$109 per night, plus tax, for single or double occupancy. Hotel reservations need to be made by July 13, afterwards rooms and rates are subject to availability.

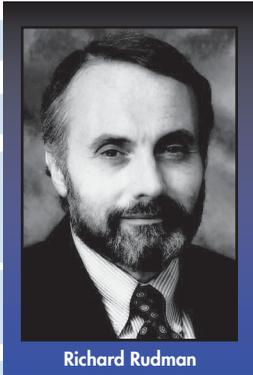
To make reservations, call the Crowne Plaza Indianapolis Airport Hotel at 317-244-6861

OFFICE USE ONLY:	Date Received: _____
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Government Relations Committee Update

BY **Richard Rudman, CPBE**

Government Relations Committee Chairman



Richard Rudman

The SBE's FCC Liaison Committee has been renamed by Board action as the Government Relations Committee (GRC). Along with the new name, we have new missions. We now have DHS/FEMA, NASA, and even the Department of Defense touching in one way or another on broadcaster interests. These interests lie in two main areas, EAS and Broadcast Auxiliary Spectrum (BAS). The Board has directed the GRC to work on a strategy that combines direct SBE action with coordinated partnerships with other broadcast industry stakeholders.

On the BAS front, Clarity Media System's "Trucker TV" proposal refuses to die. "Trucker TV" still wants to use essentially 100% of the 2 GHz TV Broadcast Auxiliary Service (BAS) band for always-on, omni-directional base stations at over 250 Flying J truck plazas throughout the United States. Although in May 2007 the FCC Media Bureau issued an Order denying the multiple Part 78 rule waivers that Clarity would have required for Trucker TV base stations, according to a January 2009 Broadcasting & Cable article, former FCC Chairman Martin directed the FCC staff to draft an Order reversing the earlier Media Bureau denial of the waivers as one of his parting acts.

However, SBE has reason to believe that the National Telecommunications and Information Agency's (NTIA) Interdepartment Radio Advisory Committee (IRAC) that is a part of NTIA, may oppose

this action. Unfortunately, as recently as March 4, the FCC's Daily Digest showed that Clarity continues to make ex parte presentations in support of Trucker TV at the FCC. SBE will continue to monitor the situation, and could make its own ex parte filing if warranted.

The "white spaces" Second Report & Order (R&O), ET Docket 04-186, was finally published in the Federal Register on February 17; this means that Petitions for Reconsideration of the November 14, 2008, Second R&O are due by no later than March 19. SBE has been hard at work on such a petition, and is coordinating this effort with the Association for Maximum Service Television (MSTV). This is such a critical issue for protection of TV broadcast spectrum, for both main-channel use and BAS uses of those channels, that in addition to a Petition for Reconsideration, the R&O will probably be challenged by a D.C. Court of Appeals filing by MSTV.

The issue of whether Part 74 Low Power Auxiliary (LPA) stations such as wireless microphones will be allowed to continue their secondary operation on out-of-core TV Channels 51-69 remains pending. This FCC rulemaking, WT Dockets 08-166/08-167, had its reply comments close on October 21, 2008; SBE and other interested parties are now awaiting an R&O. It seems likely that wireless microphones will be bumped out of the out-of-core TV channels. The real question is when. SBE will continue to monitor this. It, like the Clarity issue, deals with spectrum we all depend on to do our jobs. Many thanks to Chris Imlay and Dane Ericksen for their hard work on BAS issues.

Moving on to the Emergency Alert System (EAS), just in case you have not noticed, there are now two government entities holding its destiny in their hands. On June 26, 2006, former President George Bush signed Executive Order 13407 that designated FEMA as the lead agency to implement an improved national warning system.

On July 12, 2007, the Commission adopted their WT Docket 04-296 Second Report and Order (R&O) / Notice of Proposed Rulemaking (NPRM). The R&O portion revised Part 11 of the Emergency Alert System and said if FEMA adopts CAP, EAS Participants must accept messages using the Common Alerting Protocol (CAP). The R&O specifically states, "... should FEMA adopt CAP as the common alerting protocol for EAS alerts, EAS participants must accept CAP-based alerts 180 days after the date that FEMA publishes the applicable technical standards for such CAP alerts."

The operative phrase above is "... should FEMA adopt CAP as the common alerting protocol for EAS alerts..." All observers agree, almost two years after the release of the R&O, this is not a question of if FEMA will adopt CAP, but when.

The SBE's GRC and EAS Committee have both been watching this issue closely. In February 2009, Clay Freinwald and I, with Board approval, began joint discussions with the National Association of Broadcasters (NAB) and the National Alliance of State Broadcaster Associations (NASBA) specifically on the 180-day clock provision in the R&O. The SBE

See **GRC** on page **17**

Recognize the best of 2008-09 with the SBE National Awards

Some SBE Members go above and beyond the call of duty to do their jobs and serve SBE and the broadcast industry, and some local SBE chapters do an absolutely excellent job of serving their members. But often these efforts can go unrecognized. Don't let that happen this year. Download the nominations form at http://www.sbe.org/pub_sc.php#Awards.

There are five chapter and six individual award categories from which to choose when making a nomination. Three

chapter awards are determined by using statistical information on record at the SBE National Office. In addition, five of the chapter awards are divided into two classes so that chapters with vastly different membership sizes are not competing with each other. This means that up to 18 awards could be presented.

Award winners will be notified in July and invited to attend the 2009 SBE National Meeting, which will be held October 6-7 in conjunction with the Chapter 22

Regional Broadcast and Technology Expo in Verona, N.Y. Winners will be presented with either a certificate or plaque at the SBE National Awards Dinner.

The deadline for all nominations is May 31, 2009, recognizing all achievements since January 2008. For additional information, please contact Megan Clappe at mclappe@sbe.org or (317) 846-900 or contact Awards chairman Mark Simpson mark.simpson@citcomm.com

GRC from page 16

Board feels a critical element in this is to work with all other broadcast industry stakeholders on a common approach to bring our concerns to the attention of both FEMA and the FCC. We are working with NAB and NASBA on expanding this partnership and hope to have a real-time update about the time you read this article.

What is important about this to you? SBE, NAB and NASBA all agree the 180-day clock timeline is unworkable. SBE has proposed to our fellow stakeholder broadcast partners a "milestone-based" timeline. Our proposal would not place EAS equipment manufacturers and broadcasters in the position of having to complete the entire replacement and installation cycle of non-CAP EAS equipment in six months. SBE has identified that a

significant part of the existing 180-day period will be consumed by the manufacturers having to submit their equipment for CAP compliance certification, so the 180-day period requires more than ordering equipment, delivery and installation. Along with Clay, Gary Timm on the EAS Committee has made significant contributions identifying key issues where we have common ground with the rest of the industry.

SURVEY from page 5

82.7% of the responding members indicated that they thought it was important for SBE to continue its FCC filings on technical matters. Such filings constitute the foundation of SBE's greater government advocacy efforts. It is important for SBE, when appropriate, to continue to file with the FCC on issues of importance.

There are issues with this that you should know about. Regular SBE Membership is a modest \$63.00/year. With these dues and similarly modest certification fees, we operate the mechanics of the Society including (but not limited to) our education efforts, the certification and associated study materials, the annual rebate to your local chapter and the busi-

ness of operating the Society. Outside of the SBE's operating budget, the exceptional services of our general counsel, Chris Imlay (based in Silver Spring, Md.), the volunteer efforts of the Government Relations, EAS and Frequency Coordination Committees (based all over the U.S.) and our board of directors, which consists entirely of volunteers who travel to SBE board meetings without reimbursement or compensation, we try to advocate for the issues you have said are important.

We don't know what the future holds for our industry. SBE needs to continue to be the technically savvy, forward looking organization members expect. We need to enhance our web presence and site, offering enhanced online educational opportunities, as well as podcasts with important

member information and discussions from leaders in the broadcast engineering community.

It is important, looking forward, for the SBE Board of Directors to analyze the data that has been gathered with the two surveys we have already conducted, as well as those we do in the future, and decide as a body what programs and initiatives are most important and deserve our limited resources. We need to keep member opinions and benefits in the forefront of our decision-making, as our membership is our strength.

You may send answers or comments to me, Vinny Lopez, CEV, CBNT, at vlopez@sbe.org Please include "survey comments" in the subject line.

Get the most from your SBE membership

Attend Chapters Meetings

BY **John L. Poray, CAE**
SBE Executive Director



SBE celebrates its 45th year this month. What started as a small group of engineers has grown into an organization of more than 5,700 members in 112 chapters. For most members, monthly chapter meetings provide opportunities for regular professional and social networking, presentations on the latest technology and the chance to use or develop new skills in the area of leadership. If you've not been attending chapter meetings recently, you've been missing out!

Below is a list of SBE chapters, organized alphabetically by state. The chapter chairperson is listed with, in most cases, their e-mail address. Where we don't have an e-mail address on record, their telephone number is included. If you haven't been to a chapter meeting in a while, contact your chapter chairperson

and find out when and where the next meeting is and plan to attend. You'll be glad you did.

You'll notice that a handful of chapters say "TBD" in the chapter chairperson column. In those cases, there is no chapter chairperson and the chapter is probably not meeting currently. Would you like to see some activity in your chapter and feel you can help? Contact me at the SBE National Office, jporay@sbe.org or (317) 846-9000; or Chriss Scherer, national Chapter Liaison Chairman, cscherer@sbe.org. We'll be happy to help you get your chapter moving again.

State	Ch #	Chairperson & Contact information.
AK	Alaska	89 Terry K. Reynolds, CPBE reynolds@mtaonline.net
AL	Birmingham	68 Tim Costley, tcostley@wtto.sbgnet.com
AL	Huntsville	111 Joseph W. Kirby, CBTE, CBT, CBNT engineerjoe@bellsouth.net
AL	Montgomery	118 Montgomery Larry J. Wilkins, CPBE, CBNT, AMD larrywilkins@charter.net
AZ	Lower Colorado River	138 Robert J. Russell, CSTE, CBNT robert.russell@sprint.com
AZ	Phoenix	9 Rick R. Salsman, CPBE rsalsman@univision.net
AZ	Tucson	32 TBD
CA	Fresno	66 Patrick C. Fennacy, sbe66@hotmail.com
CA	Inland Empire	131 Jerry L. Shorter, CSTE shorterj@doimedia.osd.mil
CA	Los Angeles	47 James E. Sensenbach, CPBE jsensenbach@univisionradio.com
CA	Sacramento	43 Jack L. Davis, CPBE tvchief@engineer.com
CA	San Diego	36 Gail Pineda, gail.pineda@tvmagic.tv
CA	San Francisco	40 Arthur Lebermann, CPBE artleb@earthlink.net
CO	Denver	48 James B. Schoedler, CBNT jschoedler@usa.net
CO	Grand Junction	81 Bill Frost, CSRE bill@datavix.com
CT	Connecticut Valley	14 Valley Scott A. Baron, engineer@worc.com
DC	District of Columbia	37 Thomas P. Shedlick, tom.shedlick@citicomm.com
FL	Central Florida	42 Frank Torbert, ftorbert@wkmg.com
FL	Jacksonville	7 James O. Biggers, CPBE jobtv4@aol.com
FL	Palm Beach	88 Gary A. Minker, gary@radioworksrfconsulting.com
FL	South Florida	53 TBD
FL	Tampa Bay Area	39 Roswell D. Clark, CSRE, CBNT roz.clark@coxtampa.com
GA	Atlanta	5 William P. Magliocco, CPBE, CBNT, 8-VSB wmagliocco@earthlink.net
HI	Hawaii	63 TBD

IA	Des Moines	109	Gregg T. Richwine, CBTE gregg.richwine@whotv.com
IA	Quad Cities	65	TBD
ID	Palouse Clearwater	117	Darryl D. McGlothen, CBNT darryl.mcg@klewv.com
ID	Southern Idaho	115	Richard Kemp, rick-kemp@qwest.net
IL	Central Illinois	49	Brian L. Dougherty, react96@hotmail.com
IL	Chicago	26	Mark S. Albert, CBTE msalbert@aol.com
IL	Rockford	96	Gregory A. Dahl, CPBE gregorydahl@secondopinioncomm.com
IN	Indianapolis	25	Philip B. Alexander, CSRE, AMD dynotherm@earthlink.net
IN	South Bend	30	David E. Gooding, CPBE dgooding@fox28.com
IN	Tri-State	121	Ben A. Davis, bdavis@regentevansville.com
KS	Kansas	3	John R. Langer, CBTE jlanger@k-state.edu
KS	Kansas City	59	Robert W. Cross, crossr@umkc.edu
KY	Kentucky	35	Jerry M. May, CPBE, CBNT jmay@wtvq.com
LA	New Orleans	72	Ernest J. Kain, erniekain@i-55.com
LA	Shreveport	44	Rudolph C. Johnson, CBRE rudy707@bellsouth.net
MA	Boston	11	Robert B. Yankowitz, CPBE rbankowitz@cbs.com
MD	Baltimore	46	Vernon L. Dennis, Jr., radio.eng@verizon.net
MD	Fort Meade	132	Paul A. Curtis, Jr., CBT drillcurt@yahoo.com
MI	Central Michigan	91	Gary W. Blievernicht, garyb@wkar.org
MI	Grand Rapids	102	Patrick J. Tobin, CBTE, CBNT tobinp@ferris.edu
MI	Southeast Michigan	82	Robert D. Bracken, CBTE, CBT b.bracken@wb20detroit.com
MN	Minneapolis	17	Jon G. Blomstrand, CSRE jblomstrand@am1500.com
MO	Kansas City	59	Robert W. Cross, crossr@umkc.edu
MO	Mid-MO	123	Rick Hartford, CPBE, CBNT rickh@kmiz.com
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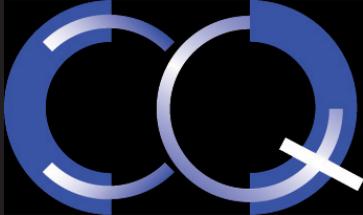
MP	Saipan	26	Robert L. Springer, CPBE saipan@febc.org
MS	Mississippi	125	Donald B. Driskell, CPBE donnie.driskell@mpbonline.org
MT	Montana	137	Eric A. Hyyppa, CBNT eric_hyyppa@montanapbs.org
NC	Charlotte	45	Michael C. Smith, CSTE, CBNT msmith@wtvi.org
NC	Raleigh-Durham	93	Charles B. Britt, cbritt@vnet.net
NC	Winston-Salem	84	TBA
NE	Holdrege	87	Laverne T. Killion, CPBE vkillion@alltel.net
NE	Midland	74	Gina L. Dierks, CBT, CBNT, CTO gdierks@kptm.com
NH	Northern New England	110	David J. Raymond, CBTE wneu.sbe.chpt_110@comcast.net
NM	Albuquerque	34	Michael F. Snyder, CPBE mike.snyder@citcomm.com
NV	Las Vegas	128	Steven Scott, CPBE, CBNT, 8-VSB kd8s@intermind.net
NV	Reno	139	Timothy J. Stoffel, CSTE timba@lionlamb.us
NY	Binghamton	1	Thomas G. Siglin, tigli@sigtomics.com
NY	Buffalo	133	Raymond Felckowski, rfelckowski@pce.net
NY	Central New York	22	Christopher P. Baycura, CEV cbaycura@sbe22.org
NY	Ithaca	140	David D. Allen, allend@ithaca.edu
NY	New York City	15	Thomas R. Ray III, CPBE tomray@wor710.com
NY	Northeast	58	Charles Zarriello, CBTE (518) 456-1516
NY	Rochester	57	Edward Y. Wright, CPBE ewright@wxxi.org
OH	Central Ohio	52	John R. Owen, (703) 930-3763
OH	Northeast Ohio	70	Ronald Bartlebaugh, CBNT bartlebaugh@wksu.org
OH	Southwestern Ohio	33	George C. Hopstetter, CPBE ghopstetter@thinktv.org
OH	Toledo	104	Kevin E. Olden, CBTE, CBNT kevin@provideosystems.com
OH	Youngstown	122	Michael A. Heim, kd0ar@sbcglobal.net
OK	Central Western	85	Leonard Youngblood, CTO lyoungbl@sbgnet.com
OK	Tulsa	56	Roger W. Newton, CBNT rnewton@oeta.tv
OR	Eugene	76	Dennis R. Hunt, dhunt@cmc.net
OR	Medford	141	Rick Carrara, rcarrara@cmc.net
OR	North Oregon	124	Everett E. Helm, CPBE everett@helm.net
PA	Central Pennsylvania	41	Randall F. Miller, Jr., CBNT randamille@state.pa.us
PA	Lehigh Valley	120	Eric D. Reinert, CBTE eric@wfmz.com
PA	Northeastern Pennsylvania	2	Joseph A. Glynn, CPBE joeglynn@wvia.org
PA	Northwest Pennsylvania	130	Michael J. Kobyłka, mkobyłka@erie.net
PA	Philadelphia	18	Mark D. Humphrey, CPBE, CBNT mark@xy-mark.com
PA	Pittsburgh	20	John J. Humphrey, CPBE john.humphrey@azcar.com
PR	Puerto Rico	142	Enrique Garcia, rgarcia@sistema102.com

SC	Charleston	107	TBA
SC	Columbia	101	David R. Tancig, CBTE, CBNT, 8-VSB, CTO, CRO speedysignal@yahoo.com
SC	Greenville Area	86	Jerry K. Massey, CPBE, CBNT, 8-VSB, AMD jmassey@entercom.com
TN	Knoxville	113	Charles D. Stallard, CPBE, CBNT doug.stallard@wvl-tv.com
TN	Middle Tennessee	135	David D. Dunsford, CBNT, CTO ddunsford@sath.com
TN	Nashville	103	Donald E. Griffey, CPBE, CBNT engineer@wnkj.org
TX	Austin	79	Ernie Saldana, esaldana@kvue.com
TX	Beaumont/Lake Charles	134	Richard N. Rhodes, CBRE rrho170@sbcglobal.net
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TX	El Paso	38	Jose A. Castro, antonio.castro@cox.com
TX	Houston	105	Thomas A. Daniels, Jr., CPBE tdaniels@univision.net
TX	North Texas	67	Paul J. Brown, CPBE buddyb@ktvt.com
TX	Rio Grande Valley	136	Jerry Jeske, jrjeske@riogrande.edu
TX	South Texas	69	Lewis E. Miller, (210) 270-9000
UT	Utah	62	Michael L. Hansen, CBRE, CBTE, CBNT, 8-VSB mike@4utah.com
VA	Blue Ridge	78	Eddie R. Durham, ecs@rev.net
VA	Hampton Roads	54	Chris G. Gunnufsen, chrisg@whro.org
VA	Richmond	60	Jon A. Bennett, CPBE, CBNT jbennett08@verizon.net
WA	Seattle	16	James A. Dalke, CPBE, AMD jim@dalke.com
WA	Spokane	21	Kent A. Abendroth, kentabendroth@clearchannel.com
WA	Tri-Cities	51	Martin L. Gibbs, (509) 547-5196
WI	Fox Valley	80	Keith M. Kintner, CPBE, CBNT kmkint3@yahoo.com
WI	UW Oshkosh	80.1	Dale J. Schroeder (Student Chapter)
WI	Madison	24	Dennis C. Baldrige, CPBE, CBNT, AMD baldrige@mwt.net
WI	Milwaukee	28	Todd A. Boettcher, CPBE tboettcher@milwpc.com
WI	Western Wisconsin	112	Paul A. Orth, CBNT paulorth@clearchannel.com
WV	Mountain State	116	Noel W. Richardson, CSRE nrichardson@wvradio.com
WY	Wyoming	129	TBA

Is an update necessary to your chapter listing? Contact Scott Jones at kjones@sbe.org.

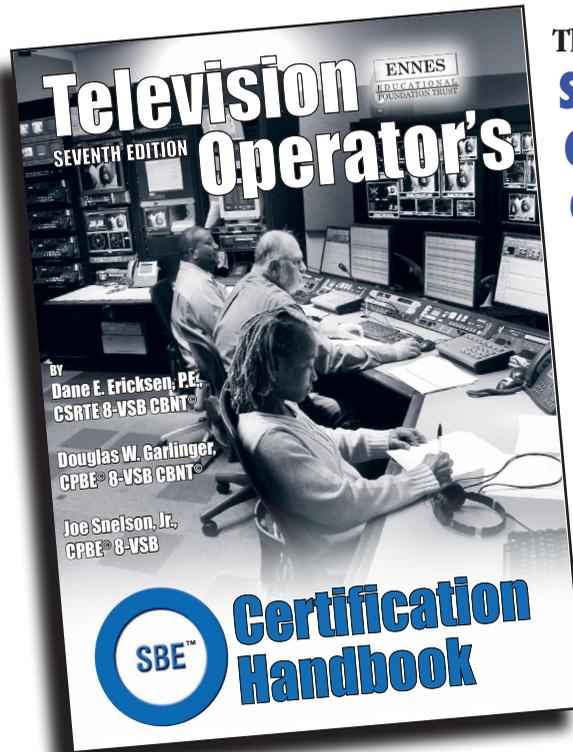
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A:
(A) This is Ohm's Law
 where current (I) equals
 the square root of power
(P) over resistance
(R) = 14.14A

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 Richard Thomas II, Okemos, MI
 Leslie Franzen, Madison, WI
 James Kirklin, Mattawan, MI

Anthony Fox, Newport News, VA
 Stu Casteel, Ukiah, CA
 Robert Griffin, San Luis Obispo, CA
 Hai-Jong Chon, Woodbridge, CT
 Wayne Estabrooks, Pittsboro, NC
 Jorge Conde, Guayama, PR
 Microwave Radio Communications

Robert Greenberg Scholarship

Dave Stewart, Dallas, TX
 Jules Cohen, Silver Spring, MD
 Russ Harbaugh, Southfield, MI
 Ernest Sutton Jr., Sweetwater, TN
 Tom Wimberly, Bakersfield, CA
 Edward Buchan, Harrisburg, PA
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Youth Scholarship

Cole McClellan, Austin, TX
 Joe Dimaggio, Wethersfield, CT
 James Pollock, Mount Laurel, NJ

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Sam Lane Memorial Contributions

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 Chapter 40, San Francisco

The Society of Broadcast Engineers would like to welcome its newest members to the organization:

NEW MEMBERS

Ronald A. Cummins - Knoxville, TN
Kevin M. Kelly - North Brunswick, NJ
Grant S. Larkin - Martinez, CA
Ruben B. Randall - The Colony, TX
Mark D. Rushton - Boulder, CO
Robert T. Simms - Washington, DC
Gilbert G. Stock - Kiln, MS
James G. Williamson - Brooklyn, NY
Henry Behring - Oakland, NJ
Michelle M. Cole - Jaffrey, NH
Bob Collom - Mickleton, NJ
Keith Ege - Baltimore, MD
Leslie G. Garrett - Terre Haute, IN
John R. Horton - Cheektowaga, NY
Stuart L. Joines - Tucson, AZ
Chad Myers - Wausau, WI
Robert J. Diaz - Columbia, MD
Tat H. Ip - Fort Bragg, NC
Joshua R. Kelly - Independence, IA
Peter C. Lundquist - Seattle, WA
Jeffrey A. Martin - Bowling Green, KY
Carlos Sosa - El Paso, TX
Michael K. Brinks - Tucson, AZ
Kai Shing Chow - Tsuen Wan, Hong Kong
John P. Davies - Washington, DC
Jesse L. Edberg - White Bear Lake, MN
Kam Woon Fung - Tsuen Wan, Hong Kong
Keith I. Graham - San Jose, CA
Peter R. Grintals - White Bear Lake, MN
Nathan Hart - White Bear Lake, MN
Sze Ki Kit - Lam Tin, Hong Kong
Tak Man Lau - Tsuen Wan, Hong Kong
Steven M. Percefull - Creve Couer, IL
Kevin W. Potter - Walland, TN
Richard T. Reyes - Las Vegas, NV
Hui Tak Sang - Tsuen Wan, Hong Kong
Robert S. Gallo - Lee's Summit, MO
Charles D. Hollis - Villa Park, IL
Nick Mairose - Santa Clarita, CA

Joel T. Wright - Lynchburg, VA
Allen L. Baylus - Reisterstown, MD
Timothy D. Dailey - Ringwood, NJ
William C. Duncanson - Marietta, GA
Duane Grotophorst - North Freedom, WI
Linden Harrigan - Westwood, NJ
Timothy L. Hatfield - Lebanon, TN
Cheng Li - Fort Bragg, NC
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Jessica Rye - Wichita, KS
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Ming Wai Lo - Tsuen Wan, Hong Kong
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Loh Ming Chung - Tuen Mun, N.T., Hong Kong
Allen Mou - Rowland Heights, CA
James M. Perryman - Stafford, VA
Ernest J. Schimizzi - Wainscott, NY
Al Szablak - Camden, NY
Pik Ying Sabine Tang - Kwai Chung, N.T., Hong Kong
Ko Lai Tsui - Tseung Kwan, N.T., Hong Kong
Shit Ying Keung - Tsuen Wan, N.T., Hong Kong
Ng Yiu Chung - Tszung Kwan O, N.T., Hong Kong
Paul R. Nebel - Muskego, WI
Lee Afflerbach - Royal Oak, MD
Bill Creighton - Flowery Branch, GA
Cindy Cservenyak - Long Beach, CA
Jeremy Lommori - Glendora, CA

Jason D. Van Hoy - Tacoma, WA

NEW ASSOCIATE MEMBERS

Ron Smith - Gulfport, FL

REINSTATED MEMBERS

Patrick N. Forman - New York, NY
Christian L. Vang - Rockville, MD
William D. Carey - Helotes, TX
John S. Worthy - Burbank, CA
Algernon E. Crawley - Laurel, MD
John L. Marcon - Christiansted, VI
Ronald E. Rowe - Lakeland, FL
Michael A. Newham - Pendergrass, GA
Thomas P. Williams - Kennewick, WA
Nadine Redwood - El Cajon, CA
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William M. Wall - Sacramento, CA
Armel W. Robinson - Pflugerville, TX
Theodore J. Alexander, III - Crystal, MN
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Rick Zach - Marlborough, MA
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Jorge Duarte - Miami, FL
Gary M. Hammond - APO, AE
David C. Politano - West Orange, NJ
Julius M. Suyat - Mesquite, TX
Frank X. Zepeda - San Francisco, CA
Lisa M. Maniaci - East Brunswick, NJ
Shaun C. Sandoval - New York, NY
Trenton J. Mengel - Alexandria, VA
Russell A. Steele - Houston, TX
Dennis M. Silver - West Valley City, UT
William C. Doerner - Corpus Christi, TX
Brian J. Steinle - North Las Vegas, NV
Gary L. Parker - Poway, CA
Curzon W. Thompson - Miami, FL
Gary E. Watkins - Columbiana, AL
Albert R. Byers - Houston, TX
Michael J. Bove - Dakota Dunes, SD
Edward K. Tipler - Ridgcrest, CA
Jamie M. McCloskey - Madison, WI
Lyle D. Kaufman - Littleton, CO
Nando P. Cialfi - Berlin, CT
Joseph A. Carollo - Saint Louis, MO
Wayne G. Mulligan - Merritt, NC
Ralph W. Cramm - Wichita, KS

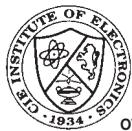
REINSTATED SENIOR MEMBERS

Jay Minkin - Seattle, WA

Cyrus Uible - Charles Town, WV

NEW STUDENT MEMBERS

Micah Haines - Palmyra, VA
William Shaw - Bronson, MI
Brittany Keen - New York, NY
Keith J. Lilley - Plainwell, MI
Robert J. Holden - Columbus, OH
Natasha R. Branch - Dupont, WA
Larry Martin - McKenna, WA



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ADC Telecommunications Inc. • 1998
Anne-Marie Gunderson
(952) 917-3072
End to End Connectivity Solutions

Advanced Test Equipment Rentals • 2006
Martin Jahn (800) 404-2832
Test and Measurement Equipment Rentals

Air • 1995
Mark Polovick (607) 215-0653
UHF TV Broadcast Transmitters

American Tower Corporation • 2000
Peter A. Starke (781) 461-6780
Broadcast Tower Development/Construction/Management

Anixter • 2005
David Ste-Marie (800) 995-6158
Audio/Video Cable & Interconnect Products

Anton/Bauer Inc. • 2004
Paul Dudeck (203) 929-1100
Battery Solutions for ENG

Audemat-Aztec Inc. • 2000
Sophie Lion Poulain
(305) 249-3110
RDS Generator, Metering, Monitoring, Remote Control Manufacturer

Autodesk • 1998
Christina Shackleton
(212) 358-3888
Digital Content Creation Software

AXCERA • 1983
Mike Rosso
(800) 215-2614 ext. 101
Television Transmitters & Exciters

Belden Electronic Division • 1991
George Stillabower
(765) 983-5200
Cable and Connectivity

Beveridge Consulting, Inc. • 2006
Gregory J. Beveridge
(720) 810-3464
Broadcast Engineering Technical Consulting

Bexel • 2009
Garrick Lewis
(818) 565-4314
Calrec

Broadcast Electronics, Inc. • 1978
Ray Miklius - Studio Products
Tim Bealor - RF
(217) 224-9600
Radio Equipment Manufacturer

Broadcast Engineering Magazine • 1984
Bradley L. Dick (913) 341-1300
Journal of the Broadcast Industry

Broadcast Microwave Services, Inc. • 1997
Russell Murphy - East
Jim Kubit - West
(540) 932-3660, (805) 581-4566, (800) 669-9667
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
One Stop Broadcast Store

CANARE • 1991
Luis Sotomayor
(818) 365-2446
Audio/Video Interconnect Products

Canon USA, Inc. • 1985
Gordon Tubbs
(201) 807-3300, (800) 321-4388
Broadcast Lenses & Transmission Equipment

Chyron Corp. • 1992
Carol Keane (631) 845-2031
HD/SD Character Generators & MOS

Clark Wire & Cable • 1991
Shane Collins (800) 222-5348
Audio, Video & Remote Camera Cables

COMET North America • 2005
Steve Claterbaugh
(214) 235-6596
Capacitors, Variable & Fixed

Communications Laboratories • 2008
Jared Maynard
(321) 409-9898
Emergency Management Network

Comrex Corporation • 1997
Chris Crump (978) 784-1776
Remote Audio Broadcast Equipment

Comsearch • 2004
Tim Hardy (703) 726-5651
Frequency Coordination Services, Continental Electronics

Continental Electronics Corporation • 1976
Michael Troje
(214) 381-7161, (800) 733-5011
AM & FM IBOC Transmitters

Crispin Corporation • 2006
Brian Gleason (919) 845-7744
Broadcast Automation Solutions

Crouse-Kimzey Co. • 2008
Mark Bradford (972) 660-6100
Broadcast Equipment Sales

CUC Broadcast • 2008
Michael Johnson
(951) 278-5626
Shared Storage System Integrator

Dataworld • 1998
John T. Neff (800) 368-5754
Coverage Maps and Services

Dialight Corporation • 2006
Doug Wochler (732) 991-2837
Obstruction Lighting, L.E.D. Based

Dielectric Communications • 1995
Jay S. Martin (207) 655-4555
TV & FM Broadcast Products

Digital Alert Systems, LLC • 2005
Bruce Robertson (520) 488-8667
IP Based EAS ENDEC

DiskStream Incorporated • 2006
Rein Taul
(519) 579-8166, ext. 57
Capsa Video Archive

DMT USA, Inc. • 2003
Tom Newman
(856) 423-0010
Television Transmitters, Translators and Antennas

DSC Laboratories • 2002
Michael Kent (905) 673-3211
Test Charts & Illuminators

DTS • 2009
Mark Seigle
(425) 814-3200

DTVInteractive • 2007
Jennifer Jang
(+82) (0)2-3446-2040
Test & Measurement Solution Provider

du Treil, Lundin & Rackley, Inc. • 1985
Jeff Reynolds (941) 329-6000
Consulting Engineers

DYMO Corporation • 2006
Robert Garvey (717) 342-8090
RHINO Professional Labeling Products

e2v technologies Inc. • 1997
Rick Bossert
(800) 433-8269, (800) 342-5338
Klystrons, MSDC IOTs, IOTs, Satcom Amps, TWTS

Econco • 1980
(800) 532-6626 or (530) 662-7553
New & Rebuilt Transmitting Tubes

Electrack Enclosure Products • 2008
Todd Schneider (714) 776-5420
Racks, Enclosures, Power, Accessories

Empower RF Systems • 2008
Jon Jacocks (310) 412-8100
DTV Transmitter & Translator

ENCO Systems Inc. • 2003
Don Backus (800) 362-6797
Digital Audio Automation & Delivery

Environmental Technology Inc. • 1997
John Cahill
(800) 234-4239, ext. 229
Dehydrators, Deicing Sensor & Controls for Broadcast/FM and Satellite Antennas

ERI - Electronics Research • 1990
David White (812) 925-6000
Antennas, Towers, Filters, Combiners

ETS-Lindgren/Holaday EMF Measurement • 2003
Dave Seabury
(908) 876-5042
RF Safety Instrumentation

Fiber Instrument Sales, Inc • 2009
David J. Porta
(315) 736-2206

Floral Systems • 2008
Jim Berry (352) 372-8326
Television Broadcast Automation

Freeland Products • 1997
Brian Freeland (800) 624-7626
Rebuilt Power Tubes

Frontline Communications Corp. • 2000
Doug McKay
(727) 573-0400, ext. 120
Broadcast/Command/HLS Vehicles

Fujinon, Inc. • 1986
Thom Calabro
(973) 633-5600
Broadcast & Communications Products

Gepeco International, Inc. • 1995
Ken Bernd
(847) 795-9555
Audio, Video Cable Products

Google Inc. • 2005
Scott Bodgan
(949) 791-1200
SS32, Maestro, ASP Solutions

Harris Corporation, Broadcast Communications Division • 1977
Joe Mack (TV), Chris Pannell (Radio), Bob Duncan (Software)
(513) 459-3406, (406) 556-0280, (719) 439-0130
Broadcast Equipment & Services

HD World • 2006
Michael Driscoll
(203) 371-6322
HD World Conference & Exposition (Oct. 10-11, 2007, New York)

Holbrook Enterprises, Inc. • 2006
Heywood Bagley
(208) 468-8797
WireCAD - Serious design tools

Image Video • 1997
Dave Russell
(416) 750-8872 ext. 230
Under Monitor Tally Display Systems, Monitor Walls, Signal Alarm Systems

IneoQuest • 2009
Tom Tucker
(508) 339-2497
Video Quality Assurance Solutions

Jay S. Gerber, CBT • 1999
(205) 491-6904
Manager, NFL Frequency Organization Group

JDSU • 2007
Brigitte Robbins
(919) 338-5061

Joseph Electronics Inc. • 2003
Jay Hahamy
(847) 501-1584
Broadcasters One-Stop Supplier

Kathrein Inc., Scala Division • 1985
Michael W. Bach or Mike Johnson
(541) 779-6500
Antennas for Broadcasting & Communications

KPFF Consulting Engineers • 2004
Madison Batt
(206) 926-0508
Tower Engineering, Inspections Design

L-3 Communications Electron Devices • 2003
Steve Bliet
(570) 326-3561, ext. 229
Tubes, Power

LBA Technology, Inc. • 2002
Jerry Brown
(252) 757-0279
AM/MW Antenna Equipment & Systems

LEA International • 2004
Carol Rassier
(208) 762-6121
Power Quality Products & Services

Lincoln Financial Media • 2007
Don Shaw
704-374-3639
Media, Communications

LYNX Technik • 2007
Steve Russel
(661) 251-8600
Broadcast Terminal Equip

Mackay Communication • 2002
Patrick Fisher (919) 850-3164
Satellite Communications Equipment & Airtime

Markertek Video Supply • 2002
Tom Moretti
(845) 246-3036
Audio, Video, Audio Visual Broadcast Supply

Maxell Corporation of America • 1991
Patricia Byrne
(201) 794-5900
Broadcast Video Products

Micro Communications, Inc. • 1998
Frank Malanga
(603) 624-4351, (800) 545-0608
TV & FM Antennas & RF Components

Micronet Communications, Inc. • 2005
Jerry Amos
(972) 422-7200
Coordination Services / Frequency Planning

Microwave Filter Company, Inc. • 2003
Sherry Bell
(315) 438-4700
Passive Electronic Filters

Microwave Radio Communications • 1991
Nadine Frechette
(978) 671-5700
Video Microwave Systems

Microwave Service Corporation • 1997
Warren J. Parece
(978) 556-0970
Microwave Equipment Rentals/Sales/Service

Middle Atlantic Products • 2005
David Amoscato
(973) 839-1011, ext. 1197
Enclosures, Power, Accessories, Furniture

Minkin Design Inc. • 2005
Jay Minkin
(206) 250-7481
System Integration/Design/Documentation

Mohawk • 1995
Jamie Silva
(800) 422-9961
Wire and Cable

Moseley Associates, Inc. • 1977
Dave Chancey
(805) 968-9621
RF & T1 STLs

National Association of Broadcasters • 1981
(202) 429-5340
Industry Trade Association

National Football League • 1999
Jay Gerber
Game Day Coordination Operations

Navtel, Inc. • 2002
Wendell Lonergan
(207) 947-8200
Radio Broadcast Transmitter Manufacturer

Nott Ltd. • 2002
Ron Nott
(505) 327-5646
Folded Unipole Antennas; Detune Systems; Lightning Prevention

Nucomm, Inc. • 1996
John Dulany
(808) 852-3700
Digital Microwave Transmission Equipment

NVISION, Inc. • 1997
Doug Buterbaugh
(530) 265-1000
Routers, Master Control & Terminal Equipment

Oldcastle Precast, Inc. • 2006
Brad Douglas
(678) 371-8315
Precast Buildings/General Construction/Program Management

OMT Technologies Inc. • 2001
Ron Paley
(888) 665-0501
Automation, Skimming/Logging Software

Orban/CRI • 2008
David Rusch
(480) 403-8300
Audio Processing

Panasonic Broadcast & Digital Systems Company • 1985
Tom Moore
(201) 392-6176
Professional Broadcast Equipment

Pasternack Enterprises • 2001
Christine Hammond
(949) 261-1920
Coax & Fiber Products

PESA Switching Systems, Inc. • 1997
Robert McAlpine
(800) 328-1008
Routing Switcher Manufacturer

Pike & Fischer • 1991
Andy Myers
(800) 255-8131, ext. 234
FCC Rules & Regulation

Prime Image, Inc. • 1997
Rodney Hampton
(408) 867-6519
Digital Audio/Video Equipment

Pro-Bel • 2002
Terry Barnham
(631) 549 5159
Automation, Routing & Infrastructure

Propagation Systems, Inc. (PSI) • 2005
Doug Ross
(814) 472-5540
Quality Broadcast Antenna Systems

ProVideo Systems, Inc. • 2000
Dave Goldsmith
(419) 874-2850
Sales, Consulting, Design & Integration

Pulsecom • 2003
Stan Bailey
(630) 961-3253
Telco Broadband Audio Transmission

Quintech Electronics and Communications Inc. • 2002
Richard E. Bush
(724) 349-1412
RF Signal Management

Radian Communication Services Inc. • 1986
John McKay
(866) 4-RADIAN
Towers, Antennas, TV Transmitter Installation

RCS • 2003
Diana Stokoy
(308) 284-30007
Audio and Video Content Management, Music Scheduling, Radio Automation

RDL • 2004
John Gatts
(928) 778-9678, ext. 111
Audio, Video, Control & Test Equipment Manufacturer

RF Central, LLC • 2005
Jeff Winemiller
(717) 249-4900, ext. 222
Digital Wireless Microwave Equipment

RF Extreme, LLC • 2009
Doon Hoeler
(908) 852-3700 ext 3110

RF Specialties of Texas, Inc. • 2008
Don S. Jones
(806) 372-4518
Transmitters, Antennas and More

RF Technologies a Ferrite Company • 2008
Bill Ammons
(800) 634-4075
Television Broadcast Antenna Systems

Richardson Electronics • 1987
Chris Chinchilla
(800) 348-5580
Power Grid Tubes

Richland Towers • 2001
David Denton
(813) 286-4140, ext. 6872
Tower Owner/Management

Rohde & Schwarz • 2003
Eddy Vanderkerken
(469) 713-5322
Broadcast Transmitters, Test & Measurement

ROSCOR Corporation • 1998
Tom Voigts
(847) 299-8080
DTV System Integration

Russ Video Ltd. • 2000
Burt Young
(613) 652-4886
Manufacturer, Television Broadcast Equipment

Salzbrenner Stageteq Media Group • 2009
Russell Waite
(888) 782-4391
Professional Audio Solutions

SCM Construction • 2009
Samuel Mitchell
(212) 274-5151
General Contractor/Transmitter/Facility Services

SCMS, Inc. • 2000
Bob Caithen
(800) 438-6040
Broadcast Equipment- New/Used

Seacomm Erectors, Inc. • 1997
John Breckenridge
(360) 793-6564
Tower/Antenna Erections

Secore, Inc. • 2005
Jeff Murray
(800) 736-2673
Audio/Video Test Equipment

Shively Labs • 1996
David Allen
(207) 647-3327 or 888-SHIVELY
FM Antennas & Combiners

Sigmat • 2008
Ed Portko
(610) 783-6666
Broadcast Equipment Support Sales

Snell & Wilcox, Inc. • 1995
John Shike
(818) 556-2616
Video Equipment Manufacturer

Stainless LLC/Doty-Moore • 2004
Les Kutasi
(215) 631-1313
Tower Engineering/Tower Service

Stratos Global Corporation • 2006
Folef Hooft Graafland (Eastern USA), Chris Mott (Western USA)
(888) 766-1313 (USA)
(709) 748-4233 (Rest of World)
Streaming & Voice via Satellite

Strobe Tech, LLC • 2008
Wes Pimentel
(931) 648-8414
Tower Lighting Experts

Sundance Digital, Inc. • 2004
Steve Krant
(972) 444-8442
Broadcast Automation Solutions

Superior Broadcast Products • 1999
Benny Springer
(800) 695-7919
Vacuum Tube & Solid State Transmitters

Superior Electric • 1995
Michael J. Miga
(860) 585-4552, (800) 787-3532
Power Protection Equipment

Sutro Tower, Inc. • 1989
Gene Zastrow
(415) 681-8850
Broadcast Tower Leasing

Switchcraft, Inc. • 1995
Jim Hoffman
(773) 792-2700
Electronic/Electromechanic Components

TC Electronic • 2008
Stacey Moran
(818) 665-4906
DTV Audio Level Processing

Tektronix, Inc. • 1977
Jon Hammarstrom
(503) 627-6936
TV Test, Measurement Equipment

Telemetrics Inc. • 2008
Jim Wolfe
(201) 848-9818

Telos Systems/Omnia/Axia • 2003
Denny Sanders
(216) 241-7225
Telos Systems - Talk-Show Systems

Terrestrial RF Licensing Company • 2003
Steven Slocum
(888) 373-4832
FCC Licensing Services

TESSCO • 2008
Scott Palermo
(410) 229-1562
STL, Cable Test Equipment

The Durst Organization - 4 Times Square • 2004
John M. Lyons, CPBE
(212) 997-5508
TV/FM/Microwave Tower Site

The Whitlock Group • 2000
Kevin Thompson
(800) 726-9843
Broadcast and Presentation Solutions

Thomson Broadcast & Media Solutions • 2000
William Powers (404) 929-5007
TV/Film Production & Broadcast Professionals

Total RF Marketing • 2001
Tom Sharkoski (215) 633-1000
Wireless Broadcasting Equipment Rental

Trilithic, Inc. • 2007
Art Leisley (317) 895-3600
EAS ENDEC Equipment

Troll Systems, Inc. • 2006
Brian Goldberg (661) 702-8900
Broadcast Control Systems

TRON-Tek, Inc. • 1993
W.M. (Bill) Grass
(888) 819-4877
Part 74 Video Links

TV Magic • 2008
Eva Langer
(858) 650-3155
Broadcast Systems Integrator

Unimar, Inc. • 2001
Michael A. Marley
(315) 699-4400, (800) 739-9169
Tower Obstruction Lighting Designer, Manufacturer, Distributor

VALCOM • 1996
Bill Burtenshaw
(519) 824-3220
AM/FM Broadcasting Antennas

V-Soft Communications • 2002
Adam Puls
(319) 266-8402
Broadcast Engineering Software & Consulting

Ward-Beck Systems Ltd. • 2004
Michael Jordan
(416) 355-5999
Metering, Monitoring, Distribution, Conversion

Warning Systems, Inc. • 20

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GRAND PRIZE

- Trip to the 2009 SBE National Meeting in Turning Stone Casino and Resort in Verona, NY from October 6 – 7
- Sony HDTV

FIRST PRIZE

- Panasonic Blu-Ray player Courtesy of Panasonic

SECOND PRIZE (four winners)

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- AKG K416P Closed Back Headphones Courtesy of Broadcast Supply Worldwide (3 available)
- Blu-ray Disc Demystified Courtesy of McGraw-Hill (2 available)
- Practical Array Processing by Mark Sullivan, Courtesy of McGraw-Hill
- GPS and Galileo, Courtesy of McGraw-Hill
- Space Based Radar, Courtesy of McGraw-Hill
- Delivering Carrier Ethernet, By Abdul Kasim, Courtesy of McGraw-Hill
- STABLINE Uninterruptible Power Supply Courtesy of Superior Electric
- Donation Prize Courtesy of Harris Corp., Broadcast Communications Division
- Logo Golf Shirt Courtesy of Continental Electronics
- Directional Antennas Made Simple by Jack Layton Courtesy of Jack Layton
- Adjustment Tweaking Tools Courtesy of Continental Electronics (25 available)

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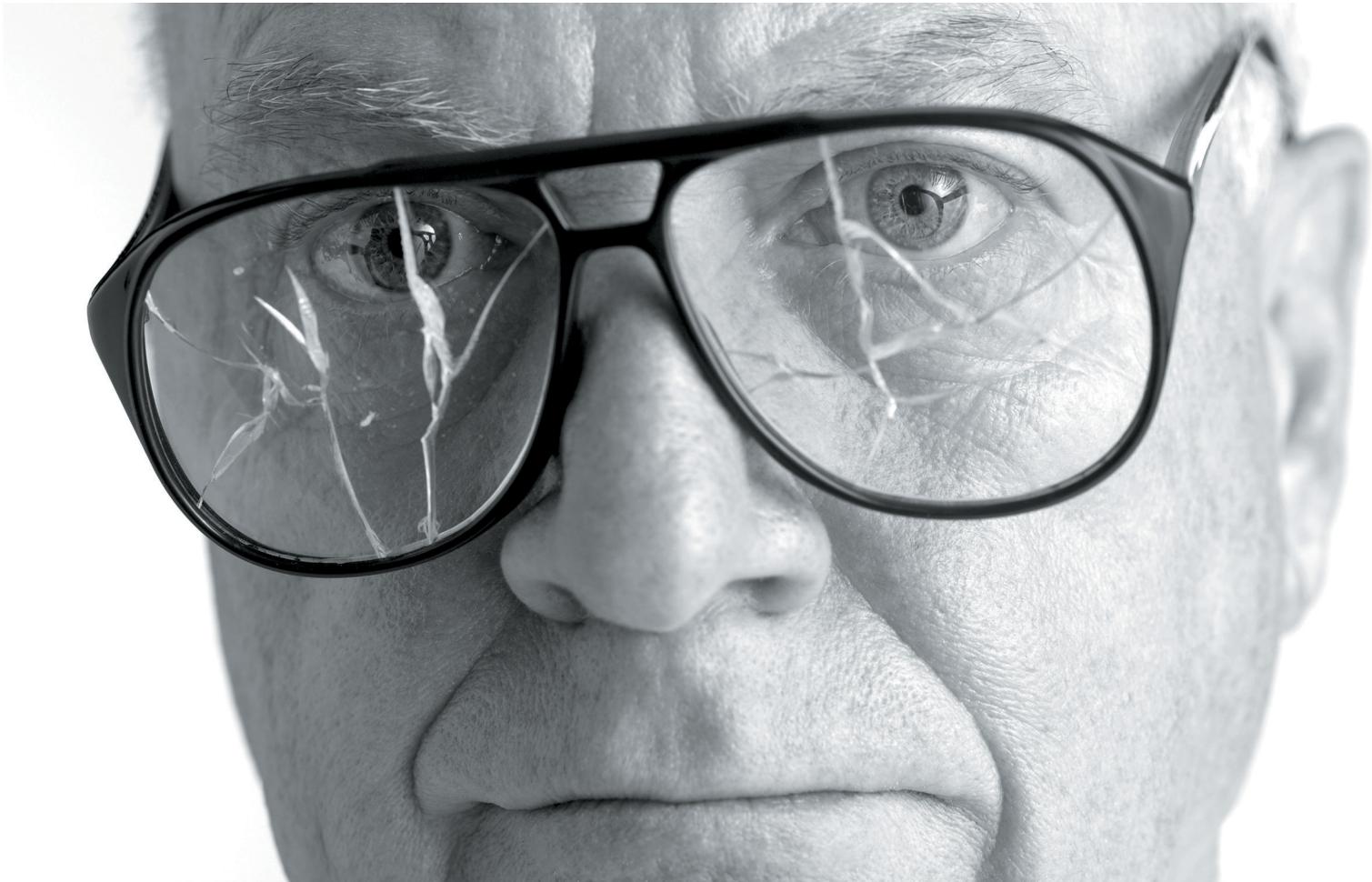
reidbroadcastcom@earthlink.net

Spanish - Dave Baez

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davidbaez@bellsouth.net

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