



**Chapter 24, Inc.  
Madison, Wisconsin**

**Society of Broadcast Engineers**

**October 2003**

## **A SUMMER OF CONTROVERSY**

*By Tom Smith*

On June 2nd, the FCC adopted a new set of rules concerning broadcast station ownership. These rules were adopted with much controversy, and that controversy continues today. The controversy and emotions concerning these rules started to rise shortly before the comment period ended at the beginning of January of 2003. The Commission received more comments on this rulemaking than it ever had received on any other issue in its history – in the end receiving three-quarter of a million comments. While there were a substantial number of formal comments, the majority were one and two page comments that simply addressed the fact that people were upset with the current consolidation in the industry and the lack of diversity in programming. Over 99% of the comments were against further loosening of the ownership rules.

Because of the large amount of comments, Commissioners Michael Capps and Jonathan Adelstein pushed for public hearings on the proposed rules. They wanted a number of hearings to be held around the country. Chairman Michael Powell scheduled one hearing in Richmond, Virginia on February 27th. At this hearing a number of invited members of the media industry spoke. One hour of the five hour event was scheduled for the public to participate. Capps and Adelstein attended a number of informal hearings sponsored by various Universities and other organizations in the following months.

A week before the hearing, on February 19th, the US Court of Appeals for the District of Columbia ruled that the FCC rules prohibiting the cross-ownership of TV stations and cable systems in the same market were invalid. The Court also invalidated the rules limiting the number of TV stations that a single company could own, stating that the rules were arbitrary. These rulings followed a number of other court rulings that invalidated other parts of the ownership rules. These rulings set the stage for much of the rationale that the

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## **Next Meeting:**

**Wednesday,  
October 15, 2003**

**Broadcasters Clinic &  
National SBE Meeting**

**National Membership  
Meeting at 4:00 PM**

**National SBE Awards  
Banquet at 6:00 PM**

**at the Marriott–  
Madison West**

**1313 John Q.  
Hammons Drive  
Middleton**

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## **Proposed Change to Chapter 24 Bylaws**

**By Vicki W. Kipp**

The Chapter 24 officers and Sustaining Membership Coordinator suggest a change to Article VI–Section 4 of the Chapter’s bylaws. Article VI–Section 4 states:

“The Membership Chairperson shall retain and be responsible for a Chapter membership database, periodically collaborating it with the National SBE Office’s chapter listing, and shall provide mailing labels for newsletter distribution. The Chapter membership database may be used by sustaining members and members in good standing as a

source for making job openings known. No Chapter membership database information may be released to any party without case-by-case approval of all Chapter Elected Officers.”

The issue that we are considering is the last statement: “*No Chapter membership database information may be released to any party without case-by-case approval of all Chapter Elected Officers.*” Under current policy, the Chapter 24 officers must consider and vote on each request for release of member information. We would like to adopt a consistent policy which clearly states that Chapter 24 will not release

member information under any circumstances. We feel that it is important to respond uniformly to each request for the release of Chapter 24 member contact information. We feel that the majority of the members of Chapter 24 members would prefer that Chapter 24 not release their contact information. Of course, members are encouraged to contact vendors directly any time they would like to request product or service information.

Proposed Change:

~~“No Chapter membership database~~  
(continued on page 11)

## CHAPTER 24 OFFICERS

**CHAIR:**  
Vicki Kipp (ECB-TOC)  
W - 264-9631  
vkip@ecb.org

**VICE CHAIR:**  
Tom Smith (WHA-TV)  
W - 263-2174  
smithtc@vilas.uwex.edu

**SECRETARY:**  
Jim Magee (Avid Technology Inc.)  
W - 288-5152  
jim\_magee@avid.com

**TREASURER:**  
Stan Sarch (WISC-TV)  
W - 271-4321  
sscharch@wisctv.com

**Past-Chair**  
Tom Smith (WHA-TV)  
smithtc@vilas.uwex.edu

## COMMITTEE APPOINTEES

**Program Committee:**  
Steve Paugh                   277-5139  
Fred Sperry                   264-9806  
Steve Zimmerman           274-1234

**Membership:**  
Paul Stoffel  
stoffel@vilas.uwex.edu

**Sustaining Membership:**  
Fred Sperry               W - 264-9806  
fsperry@ecb.state.wi.us

**Special Events:**  
Lonnie Cooks               W - 264-9631  
lcooks@ecb.state.wi.us

**Certification and Education:**  
Jim Hermanson             836-8340  
jmh@execpc.com

**Frequency Coordination:**  
Tom Smith                 W - 263-2174  
smithtc@vilas.uwex.edu

**National SBE Chapter Liaison:**  
Leonard Charles  
W - 271-4321   FAX - 271-1709  
lcharles@wisctv.com

## September Business Meeting Minutes

Chapter 24 of the Society of Broadcast Engineers met on Monday, September 15, 2003 at the WMMM-WOLX-WBZU studios in Madison, Wisconsin for the chapter's monthly meeting. There were 19 members in attendance, 17 of whom were certified and 4 guests.

The meeting was called to order at 7:11 P.M. by Chapter Chair Vicki Kipp. The minutes of the previous meeting as published in the September newsletter were approved. Newsletter editor Mike Norton announced the deadline for articles for the October issue will be midnight, Friday, October 3rd. The folding party will be held Wednesday, October 8th at 5:30 P.M. at WKOW-TV.

The treasurer's report stated Chapter 24 is in the black. Sustaining membership chair, Fred Sperry reported that Graybar, CTI, and WMSN were recent renewals. There are currently 23 sustaining members.

Program Committee Chair Steve Paugh reported that the next meeting will be on Wednesday, October 15th and the program will be the Broadcaster's Clinic. The November program will be on Maastech Automation.

Certification Chair Jim Hermansen submitted his report that Dennis Baldrige of Richland Center was certified as a Radio Engineer. The next opportunities for certification exams will be from November 7th to 17th, with the filing deadline of September 26th.

Frequency Coordinator Tom Smith stated local broadcasters had one month left to correct any irregularities on their Broadcast Auxiliary Services licenses before the FCC required any payment on corrections.

National Liaison Leonard Charles reported the election results for SBE officers and Board of Directors. Also the National Office is busy preparing for the Broadcasters Clinic in October, here in Madison.

In New Business, the officers received news that Broadcast.Net was in financial difficulty. Broadcast.net provides Chapter 24 EAS communications, announcements on Chapter 24 SBE event, job listings and national engineering communications. The officers voted unanimously to send a \$100 donation to Broadcast.net.

The next topic discussed was a Privacy Policy for SBE24. Currently as stated by the by-laws, "The Chapter membership database may be used by sustaining members and members in good standing as a source for making job openings known. No Chapter membership database information may be released to any party without case-by-case approval of all Chapter Elected Officers." Due to the confusion that may be caused by enforcement of a privacy policy by officers, it has been decided to make a change in the by-laws. If this change is approved by 2/3 of the members

(continued on next page)

### September Business Meeting Minutes (continued)

present at the meeting following the publishing of the change in the newsletter, the new amendment will stand. The new by-law would state Chapter 24 would not release any member information to sustaining members. Sustaining members have many other ways to get membership information. They can become a National sponsor or when involved in WBA/SBE sponsored events, they receive contact information on all in attendance.

For further information on this by-law change contact Vicki Kipp. A vote on this by-law change will be in October or November. Also Jim Magee has agreed to update the Chapter 24 by-laws during this time, so they are current.

In other new business it was decided to create a web page that listed all the sustaining members on the SBE 24 website. Leonard Charles will design the web page with help from Vicki Kipp and Fred Sperry. There was no old business

Eric Barklow of Woodward Radio, from Appleton was a special guest at the meeting. Members also discussed the Civil Emergency Alert received by local media outlets on September 9th.

The meeting adjourned at 7:29 P.M.

The program this month was a tour of WOLX-WMMM-WBZU Studios by Mike Weber, the Chief Engineer. Afterward, members toured the Orban trucks with commentary about the equipment inside those vehicles by Jay Brentlinger, an Orban representative.

*Submitted by Leslie Franzen, on behalf of Secretary Jim Magee.*



615 Forward Drive  
Madison, WI 53711  
Phone 608-274-1515  
Fax 608-271-5193  
www.nbc15.com  
feedback@nbc15.com

## AMATEUR RADIO NEWS

*By Tom Weeden, WJ9H*

- Comments by an FCC commissioner supporting Broadband over Power Line (BPL) has drawn fire from the American Radio Relay League. The ARRL has strongly objected to Commissioner Kathleen Q. Abernathy's suggestion that BPL technology will contribute to what she described as "broadband Nirvana." Addressing the United Powerline Council's annual conference September 22 in Arlington, Virginia, Abernathy expressed enthusiasm for BPL and recommended a combination of regulatory restraint and the elimination or substantial modification of existing rules as steps along the "path to Enlightenment," as she put it. In a terse response faxed September 25 on behalf of the League's 155,000 members, ARRL Chief Executive Officer David Sumner, K1ZZ, asserted that Abernathy overlooked some significant issues in her Nirvana analogy.

"Nightmare is more like it," Sumner declared. "The technical showings submitted by the ARRL and others in response to the Commission's Notice of Inquiry (NOI) in ET Docket No. 03-104 clearly establish that BPL is a significant source of radio spectrum pollution. It cannot be implemented without causing harmful interference to over-the-air radio services."

As of late September, more than 4600 comments—many from the Amateur Radio community—have been filed in response to the FCC's BPL Notice Of Inquiry. They are available for viewing via the FCC's Electronic Comment Filing System (ECFS) <<http://www.fcc.gov/cgb/ecfs/>>.

- Rohn Industries filed a voluntary petition for Chapter 11 bankruptcy September 16 in the US Bankruptcy Court for the Southern District of Indiana. The best-known manufacturer of tower and tower hardware for the Amateur Radio community, the Peoria, Illinois-based company manufactures towers, antenna support structures and "infrastructure equipment" for the telecommunications industry. In business since 1948, the firm also makes security fencing and provides design and construction services.

- The man believed to be the oldest amateur radio operator in the US—Byrl "Tex" Burdick, W5BQU, of El Paso—turned 103 on September 25. First licensed in the fall of 1930, Burdick is on the air every day. "The ARRL Letter" reports that he can be found on or around 21.314 MHz.

*(Excerpts from "The ARRL Letter" and the arrl.org web site)*

Thanks to WKOW-TV for providing copying and folding facilities for the Chapter 24 newsletter!

Thanks to WISC-TV for maintaining the web server for the Chapter 24 Web page!



www.belden.com  
Belden Electronics Division  
2020 Lincoln Road  
Monroe, Wisconsin 53566  
Telephone: 608 329 4660  
Facsimile: 608 329 4667  
don.heinzen@belden.com  
Don Heinzen  
Sales Representative



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**A SUMMER OF CONTROVERSY (continued from page 1)**

Commission used in creating the final ownership rules.

Chairman Powell set the date of June 2nd for the vote on the new ownership rules. As that date approached, the controversy in and out of the FCC increased. Inside the FCC both Commissioners Copsps and Adelstein asked the Chairman to delay action on the rules, which Powell refused to do. They complained that they were not being informed about the proposed rules. Meanwhile, Congress was starting to get nervous about the new rules, as was the general public. Groups from both political parties and organizations as diverse as the ACLU and the NRA were concerned about the rules, as were most consumer groups. During this time, there was little media coverage until consumer groups took note of the lack of coverage. During the last two weeks before the vote, coverage in newspapers and on TV picked up. With most of the media having conflicts of interest in the outcome of the vote, it was understandable that this was a difficult issue to cover.

On June 2nd, the Commission voted to approve the rules. The vote was along party lines with Republicans, Chairman Michael Powell and Commissioners Kathleen Abernathy and Kevin Martin voting for the new rules and Democrats Michael Copsps and Jonathan Adelstein voting against it. The two Democrats also issued lengthy dissents to the action. Two days after the vote, on June 4th, the Commissioners appeared at a hearing before the Senate Commerce Committee headed by John McCain. In statements at the hearing, the three Republicans statements, similar themes were made, and both Powell and Martin compared TV in 1960 to the cable universe of today. The examples of increased diversity in television from

cable were cable channels mostly owned by the broadcast networks. Copsps and Adelstein noted the potential for less competition and the fact that comments were over 99% against this action. They also stated that this rulemaking was mostly done in a closed fashion. In his opening statement, McCain stated he would favor the introduction of laws that would clarify that the Commission could re-impose ownership restrictions in its ownership reviews.

At the same time a number of Senators from both parties stated their opposition to the new rules, including former majority leader Trent Lott. The opposition from various interest groups increased as well as news coverage. The conservative New York Times columnist William Safire did a number of columns before the vote on media deregulation. After the vote he has done at least four columns decrying the way this action was taken and the lobbying that occurred as well as the potential increase in consolidation.

On June 13th, the Senate started action on the bill to reauthorize the FCC. The bill passed Committee on June 26th. There were a number of proposed laws in the Reauthorization Bill that would affect ownership rules. The laws, if enacted, would phase out the UHF discount, change the ownership rule review from every two years to every four, and increase the FCC's ability to modify ownership rules. There was no roll back of any of the new ownership rules concerning national coverage, broadcast-newspaper cross ownership or doulopies. A separate bill was introduced that would roll the national TV ownership cap back to 35% from 45%, clarify the FCC's right to re-regulate as well as deregulate, require divestiture of stations where owners exceed the limits in new radio market

definitions, restore cross-ownership limits except in the 60 smallest markets under special conditions, and require the FCC to hold five ownership hearings in geographically diverse locations. There were similar bills in the house. On June 15th, following the action by the Senate Commerce Committee, Commissioner Adelstein asked for a stay of the rules.

On July 2nd, the FCC released the full text of the Report and Order. This document was 257 pages with an appendix of 56 pages, along with statements by the five commissioners for a total of about 375 pages. On July 15th, Commissioners Copsps and Adelstein formally sought a stay in the implementation of the rules until Congress could act on their bills concerning ownership rules. Adelstein also ask for reconsideration of the rules by the Commission due to anomaly in the rules. Adelstein stated that under the new rules, by counting the non-commercial stations in small markets such as North Dakota they would increase the station count in such a way that those markets would appear larger than cities like Detroit. This is because the state public TV network may have several transmitters within a market that covers a large area. Each station, even though it airs the same programming, raises the station count in the market by being counted as a separate voice. Satellite stations for commercial operations would have the same effect on the station count.

On July 16th, the House Appropriations Committee approved a budget amendment that would roll back the 45% national TV coverage rule, with a vote of 40 to 25 and on July 24th, the full house approved the bill 400 to 11. On July 24th, Commissioner Copsps appeared before the Senate Commerce

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**John Salzwedel**

3893 Terrace Circle, DeForest, Wisconsin 53532  
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Web Page: www.tokencreek.com E-Mail: tcp@tokencreek.com



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**Madison**

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Madison, Wisconsin 53719

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## A SUMMER OF CONTROVERSY (continued)

Committee to defend his position. He also announced that he would conduct a series of town meetings in which the public could express their opinions on whether their local stations were serving the public interest and should have their licenses renewed. Meanwhile Chairman Powell was making the rounds on the cable talk shows defending his position and many of the Commissioners were also making speeches to explain their positions. Chairman Powell wrote a piece in the New York Times Op-ed Page, as well as doing newspaper interviews to state his position in favor of the new rules. After the 400 to 11 House vote, articles started appearing that Powell's star was fading and his days at the Commission may be numbered.

The Federal Register printed the new rules in the August 4th issue, with the rules to take effect 30 days later on September 4th. The Commission started action on creation of rules for digital TV transmission on low-power TV, translator and booster stations on August 6th. On August 20th, Powell announced a "Localism in Broadcasting" initiative. This initiative is centered around the speeding up of the licensing of low-power FM stations, the creation of a Localism Task Force to study how FCC rules affect localism, hold public hearings on localism and advise Congress on how to speed up the licensing of thousands of low-power FM stations, and release a Notice of Inquiry on localism. Commissioner Copps stated "This proposal is a day late and a dollar short" and it highlighted the shortcomings of dismantling of the ownership rules. Other critics were also unmoved by the proposals. A week later, the FCC announced a settlement period for pending mutually exclusive applications for low-power FM stations.

On the day before the new rules were to go into effect, the US Court of Appeals for the Third Circuit in Philadelphia stayed the new ownership rules. The court ruled that allowing the rules to take effect could cause damage that could not be undone, if the rules were rescinded later. The action was requested by the Prometheus Radio Project along with the Media Access Project and the National Council of Churches. The FCC lost an appeal to move the case to a friendlier court in Washington, DC.

The Senate took its turn on September 9th and voted 55 to 40 to roll back the national ownership rules from 45% to 35%. President Bush has said that he would veto the bill, and even with votes of the four Democratic Presidential Candidates that missed the vote, there is not a two-thirds majority to override the veto on the Senate.

On September 21st, Michael Powell talked with a New York Times reporter and stated that the controversy about the ownership rules had tired him and his family out, but he was still looking to the future and not ready to quit. He complained that much of the attacks concerning the new rules were directed against him and that some interest groups were using the issue to gain fund raising support. There was an indication of bitterness in his comments.

On the next day, the Commission had its first big test on ownership by approving the merger of Univision, a Spanish language TV Network with 32 TV stations, and Hispanic Broadcasting Corporation with 68 Spanish language radio stations. The Vote was 3 to 2 along party lines with Powell, Abernathy and Martin voting for the merger and Copps and Adelstein voting against.

The three Republicans issued a 3 page joint statement, with Copps and Adelstein each issuing separate 3 page statements as well as a 20 page joint statement.

What is the state of the ownership rules at this time? They are in limbo, due to the Federal Court action, until either the Courts or Congress takes further action. Action by Congress may not occur this year as Congress is near adjournment for the year, and both the House and Senate bills must go to Conference Committee. It may be years before this is settled, and it will not be because of action by the FCC. The FCC froze the acceptance of transfer applications on June 2nd until the new forms were ready in mid August. The FCC again froze the acceptance of transfer applications, when the Court stayed the rules. A few days later, the FCC lifted the freeze and now will accept applications under the pre-June 2nd rules. For now and in the near future, nothing in effect has changed and may not for a long time.

*From FCC and Congressional Releases with additional information from The New York Time, Washington Post, TV Technology, BE Radio, and Broadcast Engineering Web Sites.*

*Disclaimer: The author did file comments on the ownership inquiry, and parts of those comments were acknowledged in the Report and Order.*

### Certification Information Available

New certification information brochures and applications are available from Jim Hermanson, the Chapter 24 Certification Chair.

If you are considering taking an SBE certification exam, would like more information, or have questions about the process, you are encouraged to contact Jim. He can be reached by sending an email message to [jmh@execpc.com](mailto:jmh@execpc.com).



**Mark Bartolotta**  
 Regional Sales Manager  
 Heartland Video Systems, Inc.  
 1311 Pilgrim Road  
 Plymouth, WI 53073  
 Tel 800.332.7088  
 920.893.4204  
 Direct: 920.893.9594 ext 13  
 Cell: 920.912.1064  
 Fax: 920.893.3106  
 EMAIL: [mbart@hvs-inc.com](mailto:mbart@hvs-inc.com)  
**DIGITAL SOLUTIONS**  
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Thank to Fred Sperry for arranging the September meeting and program. Thanks to Leslie Franzen for taking meeting minutes. Thanks to Mike Weber from Entercom for the facility tour.

## Renewed Interest in Transatlantic Telegraph Cable

By Vicki W. Kipp

Have you noticed the topic of the laying of the transatlantic telegraph cable keeps coming up? After sinking into obscurity after the transatlantic telephone cable was run in 1956, the undersea telegraph cable is once again a trendy topic. I was curious why people are talking about the cable now, after all this time. I think that the 150<sup>th</sup> anniversary of underwater telegraph communications has spawned curiosity about the cable.

Beginning with an exhibit at the Smithsonian Institute's National Museum of American History in Washington, D.C., the transatlantic cable has enjoyed a bit of celebrity. To celebrate the 150 years of communication under the sea since the Brett brothers successfully joined England and France by laying an underwater telegraph cable in 1851, the Smithsonian hosted an 18-month exhibit. Opening on March 23, 2001, "The Underwater Web: Cabling the Seas" was created by guest Curator Bernard S. Finn. The exhibit was sponsored by TyCom, an American company that manufactures components for and builds global fiber optic cable networks. Although the Smithsonian exhibit has ended, you can still view the display at <http://www.sil.si.edu/Exhibitions/Underwater-Web/>.

Author and engineer Steve Lampen from Belden Cable shared the history of the transatlantic cable with broadcast engineers when he presented "Broadcast Engineering on the Lite Side" at the 2002 WBA/SBE Broadcaster's Clinic. Lampen provided an overview of the installation of the transatlantic cable in his November 2002 and January 2003 "Wired for Sound" columns in

*Radio World* magazine.

Esteemed business writer John Steele Gordon published a non-fiction account of the great cable in May 2002 called *A Thread Across the Ocean: The Heroic Story of the Transatlantic Cable*. Much slimmer than the novel reviewed next, this narrative gives you the straight facts along with some stories of interest. Most of the initiative to lay the cable came from the U.S.'s desire to end America's isolation, but much of the funding came from England. *A Thread Across the Ocean* contains clear illustrations of equipment, people, and cable route maps. This book is available for checkout as a hardcover book or book-on-cassette from the South Central Library System at <http://www.linkcat.info/>.

In 2003, novelist John Griesemer released a fictional account of the laying of the transatlantic telegraph cable called *Signal & Noise*. This ambitious book covers the project from the launching of the *Great Eastern* steam ship in 1857 through the successful installation of a transatlantic cable in 1866. This 593-page epic saga was described as the "beach read of the summer" in a *Wisconsin State Journal* review. I'm not sure what the reviewer uses as criteria for a "beach read", but personally I expect a "beach read" to be a light, entertaining, page-turner of a book.

While I found *Signal & Noise* interesting when it discussed the technical problems associated with the cable, the book was bogged down with too much non-technical drama for my taste. The characters were fraught with serious personal problems. This book is fictional, but it included real-life folks such as Isambard Kingdom Brunel, Dr. Edward Orange Wildman Whitehouse, Professor William Thomson, and Cyrus

Field. *Signal & Noise* contains a historic plot involving President Abraham Lincoln and the Civil War. Although the Civil war occurred from 1860 - 1865, right in the middle of the laying of the transatlantic Cable, reading about both historical events in one book demanded a wide focus. I found the mix of history and fiction confusing because it was challenging to distinguish the factual information from the fictional plots.

I credit the author, John Griesemer, for the creativity he demonstrated in inventing the many dramatic issues in this novel. He appears to have researched the people, times, and places in his novel exhaustively. The story is rich with vivid, believable descriptions. The value of this book is in the way that Griesemer describes the characters in such detail that they become three-dimensional. Reading this book, I almost felt like I knew Brunel, Whitehouse, Thomson, and Field, or at least could imagine these real people as they were represented. I did not experience this same sense of getting inside the character's thoughts when I read a non-fiction account of the transatlantic cable project. *Signal & Noise* is available for checkout from the South Central Library System.

If you're interested in learning more about the laying of the transatlantic cable, please browse the related articles about the people and timeline of the development of the transatlantic cable. Don't be shy about bringing up the timely topic of the transatlantic cable in conversation—if you're talking with engineering-types, that is!

(More details about the Transatlantic Telegraph Cable can be found in the Transatlantic Timeline and Transatlantic Cable Contributors, found on the following pages.)



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John Reuter  
Director of Technology  
[johnr@alphavideo.com](mailto:johnr@alphavideo.com)

7711 Computer Ave.  
Edina, MN 55435-5494

p 952.896.9898  
f 952.896.9899  
c 612.889.6540

## Transatlantic Timeline

**1840**

Gutta-percha, a natural plastic derived from trees native to Malaya, was discovered. Gutta-percha is produced when the milky, gray sap of the Gutta tree is boiled. Chemically similar to rubber, gutta-percha is an inelastic latex polymer that is hard yet moderately flexible at room temperature. Gutta-percha is a reliable insulator in water because it doesn't deteriorate when immersed in water for long periods. A disadvantage of gutta-percha is that it has poor capacitance. The Gutta-percha insulation between the conductive wire and the conductive water causes capacitance, slowing and distorting the telegraph signal.

**1845**

Brothers John and Jacob Brett proposed laying underwater cable across English Channel and across the ocean.

**1850**

John and Jacob Brett laid a 22-mile underwater cable from England to France. It worked for one day until a fisherman's anchor caught the cable. Thinking the copper core could be gold, the fisherman hauled it up and cut out a piece of cable. The cable could not be repaired.

Most European countries were connected via landline telegraph cable.

**1851 (September 25)**

Second cable the Brett brothers laid between England and France lasted because they used a heavier, sturdier cable.

R.S. Newall attempted to lay an underwater telegraph cable to connect England and Ireland, but failed because the frail cable broke.

**1852**

R.S. Newall successfully connected England and Ireland with an underwater cable, but it was severed by a ship anchor within three days. Cable splicing wasn't possible at that time so that cable could not be repaired.

**1853**

(May 23) Charles Tilston Bright ran a cable from Portpatrick, Scotland, to

Donaghadee, Ireland. Finally, there was a sustained undersea telegraph connection between England and Ireland.

Cyrus Fields proposed laying a transatlantic cable, raises capital, obtains materials and engineers, and begins a thirteen-year quest.

**1854**

English & Irish Magnetic Telegraph Company (E&IM) laid a second cable from Portpatrick, Scotland to Whitehead, Ireland. This is significant because it marks a change from individuals funding to corporate funding for cable installation.

**1855**

Cyrus Field initiates an expedition to install land line telegraph between Cape Ray, New Foundland and St. John, New Foundland for later use in connecting the transatlantic cable to the U.S. The remote port of St. John, New Foundland was chosen as the Western connection for the transatlantic cable because it is 1,200 miles closer to Europe than New York is. New Foundland was later connected to New York by telegraph cable.

**1857**

First attempt to lay transatlantic cable: No ship existed that could carry the 2,500 miles of transatlantic cable which weighed 5000 pounds. Two sail boats, the British *HMS Agamemnon* and the American *USS Niagara*, each carried a 1,250 miles of cable. The *HMS Agamemnon* began laying the cable at Valentia Bay, Ireland. The *USS Niagara* would accompany the *HMS Agamemnon* to the center of the ocean. There, the cable laid from Ireland to mid-ocean would be spliced together with the cable on the *USS Niagara*, and *USS Niagara* would lay the remaining cable to New Foundland. A device called a paying out machine was installed on deck to release the cable in a regulated fashion while controlling the release speed and preventing tangles. Unfortunately, the cable laid from the Valentia Bay, Ireland to middle of ocean by the British ship snapped due to a braking error on the paying out machine and was lost on the ocean floor just 200

miles into the journey.

**1857(December)**

The massive *Great Eastern* steam ship with capacity to hold enough coal to travel to anywhere was launched in the River Thames, London.

**1858 (June 10)**

Second attempt to lay transatlantic cable: As a result of damage from a severe storm, the *Agamemnon's* cable snaps.

**1858 (July 17)**

Third attempt to lay transatlantic cable: Cable was laid successfully from Ireland to Newfoundland. With improved cable paying out machinery such as an automatically-adjusting brake, the two ships started in the mid-ocean, spliced their two cables together, and laid to Ireland and Newfoundland simultaneously. Europe and America had instant communicates with each other. Queen Victoria and President Buchanan exchange messages over the cable. The cable failed within four weeks of installation when telegraph operators used too high of voltage, causing the insulation to deteriorate. The operators used high-voltage telegraph equipment meant for land-line telegraph cable instead of the low-voltage equipment designed for underwater telegraph cable. This incident settled the argument between Dr. Whitehorse and Professor Thompson about whether high-voltage or low-voltage signals should be used for the transatlantic cable.

**1861**

U.S. had telegraph strung from the East Coast to California.

**1865**

Fourth attempt to lay transatlantic cable: This voyage was comprised entirely of British personnel except for Cyrus Field. This was the first cable voyage using the *Great Eastern*. This ship was advantageous because it could be maneuvered in response to cable tension. Because it was steam powered the massive ship could carry the entire cable, and the cable was unlikely to become tangled in the

(continued on page 8)

## Transatlantic Timeline (continued from page 7)

paddles, which were located in the middle of the ship. The seven year delay, perhaps a side effect of the Civil War, since the last cable expedition brought many material improvements such that the new cable was much larger, stronger, and better insulated than previous cables. When the ship was within 1,200 miles of America, the cable snapped at a section where brittle insulation had broken off. Three unsuccessful attempts were made to bring up and splice the cable. Following the third attempt, the *Great Eastern* didn't have enough cable remaining to complete the mission. The Captain took a precise sextant reading of where the broken cable lay on the ocean floor so that it could be brought up, spliced, and laid for the remainder of the distance to New Foundland later. The fourth attempt ended.

### 1866 (July 27)

Fifth attempt to lay transatlantic cable: First successful installation of a transatlantic cable from Europe via Ireland to America via Newfoundland. With the *Great Eastern*, a new cable was run from England to New Foundland in just two weeks. Repeating the ceremony of the opening of the 1858 cable, the first official telegram was an exchange of salutations between Queen Victoria and President Andrew Johnson.

### 1866 (August)

The *Great Eastern* hauled up the 1,200 miles of cable laid in 1856 to repair it and splice a new cable to the end so that there were two parallel working transatlantic telegraph cables.

### 1872

Underwater cables reach India,

Australia, China, and Japan.

### 1956

First transatlantic telephone cable laid.

### Late 1960s

Gutta-percha cable laid in 1866 ceases to work, after nearly a century of use.

### 1968

Satellites compete with transatlantic telephone cable for business.

### 1988

First transatlantic fiber-optic cable laid across the Atlantic by AT&T, Standard Communications Laboratories (a subsidiary of STC), and the French firm Submarcom. They partnered to lay TAT-8, the eighth transatlantic telephone line.

## Transatlantic Cable Contributors

### Isambard Kingdom Brunel

The civil engineer who designed and built the *Great Eastern* steam ship was nick-named "the little Giant" because he was short in stature, but not in intensity or ability. In a chance meeting, Brunel suggested to Cyrus Field that the *Great Eastern* would be perfect for laying the transatlantic cable. Prior to using the *Great Eastern* steam ship to lay cable, sailboats were used.

### Cyrus Field

American businessman who conceived the plan, raised funds for, raised public support for, and led the laying of the transatlantic cable.

### Dr. Edward Orange Wildman Whitehouse

Dr. Whitehouse, a medical doctor who liked to experiment with electricity, was the British "electrician-projector" of the Atlantic Telegraph Company. He got this position by claiming that it was possible to send a signal across the transatlantic cable, while most research suggested a signal transmission over this length of cable was impractical or even impossible. Whitehouse advised

that a thin wire be used for the transatlantic telegraph cable, that the signal power be greatly increased, and that signals be measured with a magneto-electrometer. Dr. Whitehouse suggested creating signals with a five-foot induction cable, and sending signals through the transatlantic cable at a 2kV electrical power level. Whitehouse invented, held patents to, and sold the generators and induction coils, which he recommended for the cable. Whitehouse's Theories directly contradicted those of the other British electrical advisor, Professor William Thompson.

### Professor William Thompson

Thomson was a great applied physicist. In recognition of his research, Queen Victoria knighted him with the title Lord Kelvin of Largs. In his later career, Thompson did work in Thermodynamics, which led to the Kelvin scale on the thermometer being named after him.

Thomson disagreed with Dr. Whitehouse's high voltage transatlantic telegraph theory. Thompson discovered the "Law of Squares": the longer a cable was, the more its signals

slow down, collide, are altered, and become meaningless by the time they reach a receiver. Signal transmission speed decreases in proportion to the square of a cable's length. Thomson believed that using a thicker wire, a low-voltage transmission, and sensitive receivers would compensate for the Law of Squares. Due to resistance, the telegraph signal weakened as it traveled along the 3000 mile transatlantic cable. Thomson's low-voltage signal minimized distortion. A mirrored galvanometer was used to read low-voltage telegraph signals. Invented in 1802, the galvanometer is a current-detecting instrument. Although the galvanometer needle is difficult to read for very small currents, it worked well as a telegraph receiver once a mirrored-galvanometer was created. The mirrored-galvanometer substituted a beam of light for the needle, placed a shaft through the light beam center, and attached a small tin foil mirror to the shaft. The mirror reflects the light beam onto a scaled galvanometer screen three feet away. The tiny deflection of the mirror causes a larger light movement on the scale. Telegraph operators sat in a dark room watching for tiny rays of light and converting those Morse code flashes to messages.

## SBE Short Circuits – October 2003

By John L. Poray, CAE  
SBE Executive Director

### BENEDICT ELECTED SBE PRESIDENT

Votes were tabulated September 11 for the 2003 election of officers and the Board of Directors of the Society of Broadcast Engineers. Elected president of the Society is Raymond C. Benedict, CPBE. Benedict is Director of Spectrum Management for Viacom, Inc. in Washington, D.C.

Other officers elected for one year terms include: Vice President – Samuel E. Garfield, CPBE CBNT, Vice President, Dilicast, LLC/Technical Broadcast Consultants, Raleigh, NC. Secretary – Ralph Hogan, CPBE CBNT, Assistant General Manager-Engineering Services: Northwest Public Radio and Television and Washington Higher Education Telecommunications System, Pullman, WA. Treasurer – Robert J. Russell, CSTE CBNT, Operations & Engineering Manager, KYMA-TV, Yuma, AZ.

Elected to two-year terms on the national Board of Directors were: Andrea Cummis, CBT, Senior Vice President, Engineering & Operations, Oxygen Media, New York, NY; Dane E. Ericksen, P.E., CSRTE, Senior Engineer, Hammett & Edison Inc., Consulting Engineers, San Francisco, CA; Clay Freinwald, CPBE, Senior Facilities Engineer, Entercom, Seattle, WA; David Hultsman, CSRE, Broadcast Channel Manager, Continental Electronics Corp., Birmingham, AL; Mark S. Olkowski, CPBE, Engineering Manager, Infinity Broadcasting, New York, NY and Henry B. Ruhwiedel, CPBE, Chief Engineer, WYIN TV, Gary, IN/Chicago, IL.

Those newly elected are joining six

returning members of the Board who will begin the second year of their two-year terms. They include: Ted D. Hand, CPBE, Director of Engineering, WTKR-TV, Norfolk, VA; Mark D. Humphrey, CPBE, Chief Engineer, WPLY-FM/Radio One, Media, PA; Keith M. Kintner, CPBE CBNT, Urbana, IL; Vincent A. Lopez, CEV CBNT, Systems Technician, WSYT/WNYS-TV, Syracuse, NY; Thomas R. Ray, III, CSRE, Corporate Director of Engineering, Buckley Broadcasting/WOR Radio, New York, NY and Barry D. Thomas, CPBE, CBNT, Vice President of Engineering, Westwood One, Inc., New York, NY.

Outgoing president, Troy D. Pennington, CSRE CBNT, Chief Engineer, Cumulus Broadcasting in Mobile, AL, will continue to serve on the Board of Directors as Immediate Past President.

The newly elected Officers and Directors will assume their offices on Wednesday, October 15 during the SBE Annual Membership Meeting in Madison, WI. The meeting is part of the SBE National Meeting, held in conjunction with the Broadcasters Clinic presented by SBE Chapter 24 and the Wisconsin Broadcasters Association.

### FEE WAIVER DENIED, LICENSEES URGED TO UPDATE ULS ASAP

SBE's emergency request for a blanket fee waiver with the FCC was denied on September 3. The waiver, which would have been applicable to all Part 74 licensees, would have waived the requirement of tendering filing fees for certain Part 74 Modification applications filed on FCC Form 601.

It is necessary for all Part 74 licensees to review and modify their Part 74 licenses to include any missing

information, including fixed receive sites, immediately. To do so, FCC Form 601 must be filed and the normal application fee of \$120.00 must be tendered with each modification application. The FCC stated they would accept individual requests for waivers from licensees, as has been their policy. SBE suggests that Licensees request a fee waiver and refund at the time of application and payment. Licensees may also want to consult with their own legal counsel.

The stay on the effective date of the new Part 74 prior coordination rules for fixed BAS facilities expires October 16, 2003. SBE has filed a request for an additional 6 month stay before the new Part 74 prior coordination procedures for fixed BAS facilities go into effect. For more information on this issue, visit the SBE web site at [www.sbe.org](http://www.sbe.org) or members can refer to the October issue of the SBE Signal.

### MADISON HOSTS SBE NATIONAL MEETING

The SBE National Meeting will be held at the Madison Marriott West Hotel in Madison, Wisconsin on October 14-15. SBE Chapter 24 and the Wisconsin Broadcasters Association are our local hosts. The National Meeting is being held in conjunction with the Broadcasters Clinic, an annual three-day educational and trade show event for broadcast engineers.

National Meeting Scheduled Meetings and Events include:

#### October 14

Certification Committee Meeting – 1:00 pm to 4:00 pm

Frequency Coordination Committee Meeting – 1:00 pm to 4:00 pm (Fairfield Inn)

(continued on page 11)

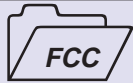


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## FCC Rulemakings

Compiled by Tom Smith

### FINAL RULEMAKING

**CS Docket No. 97-80; PP Docket No. 00-67**

**Implementation of Section 304 of the Telecommunications Act of 1996; Commercial Availability of Navigation Devices; Compatibility Between Cable Systems and Consumer Electronics Equipment, Second Report and Order and Second Further Notice of Proposed Rulemaking**

The FCC has adopted rules that will allow TV set and set-top box manufacturers to make equipment that is plug and play to digital cable. The FCC will require all sets that are equipped to receive digital cable transmissions must also be able to receiver digital over-the-air broadcast signals. The rules are for one-way reception of services for TV sets and set-top boxes only. Cable companies will still supply two-way and interactive units.

All high definition set-top boxes supplied by cable operators must have 1394 firewire connections after April 1, 2004 and digital visual interface (DVI) or high definition multimedia interface (HDMI) after July 1, 2005. All cable companies must operate their digital systems in conformity to specific technical standards. The sets will have a slot for a security card for the receiver to get premium programming services. The slot will have to meet the DFAST license standard. Sets that are labeled "Digital Cable Ready" must meet certain technical standards, have DVI or HDMI interfaces using high-bandwidth digital content protection (HDCP). The standards for content protection will be set in the near future. Manufacturers must include information in the instruction manual on the need to obtain a security card from their cable company to receive digital services.

In addressing other copyright considerations and their effect on the viewer, the FCC prohibited the use of

selectable output controls by multichannel video programming distributors (MVPD) and down-resolution (reducing hi-definition video to standard definition) for all broadcast programming by MVPDs. The FCC limited copy protection encoding over cable to no restrictions for copying broadcast programming, copy once for basic and extended basic cable services, and never copy for pay-per-view and video-on demand. The Commission will introduce further rules pertaining to copy protection in conjunction with broadcast copy protection rules.

This action was adopted on September 10, 2003. The FCC issued a Consumer fact sheet on "Cable Plug and Play" on its web site along with the press release.

*From FCC Releases (www.fcc.gov)*

### FCC TEAMS UP WITH MICHIGAN

By Tom Smith

The FCC has signed an agreement with State of Michigan for a study on the impact of communication towers on migratory birds. The State of Michigan is planning on installing 180 towers for the statewide Michigan Public Safety Communications System. Michigan will study the problem of birds colliding with towers under an Avian Collision study conducted by the US Fish and Wildlife Service. The study will mainly look at towers in the 350 to 500 foot level.

Last August the FCC issued an inquiry into the problem of birds flying into towers, and was looking for a formal study into the issue. This study should meet some of their objectives. The study will last for two and half years. The agreement was signed and the release was issued on September 17, 2003.

*From FCC Releases (www.fcc.gov)*

### A REMINDER

By Tom Smith

This is a reminder to all Chief Engineers that if they have not checked the Universal License System Database to see if their Broadcast Auxiliary License Information is correct, they should do so before October 15th. On October 16th, the new broadcast Auxiliary rules will take effect and you will have to file an application to correct the data and pay a fee. Many stations have incorrect data due to the many broadcast license transfers in the past few years.

Many stations have problems such as auxiliary licenses which still indicate that the licensee is a past owner, and the information was not change when the station changed hands. Another common problem is the lack of coordinates for a receiver site for an STL or for remote pick-up units. Applications for a broadcast auxiliary license did not request that information in past years, but now the ULS requires the data. The ULS can cancel licenses when data is missing. The SBE has asked for a fee waiver for doing corrections to license data after October 16th, but was denied. Much of the missing information is the FCC fault due to poor filing methods and databases in the past, and they now expect us to pay for these errors.

Another source for unofficially checking the FCC database is [www.fccinfo.com](http://www.fccinfo.com), which is a private database search engine for broadcast and broadcast auxiliary license information.

### UPCOMING EVENTS


#### Iowa DTV Symposium

**Date:** October 28, 29, and 30

**Location:** Hotel Fort Des Moines, Des Moines, IA

**Contact:** Karen Schaeffer, [karen.schaeffer@iptv.org](mailto:karen.schaeffer@iptv.org) or call (515) 242-4139

**Registration:** Register online at <http://www.iowadtv.iptv.org>



## LOCAL LEGALS

*Compiled By Tom Smith*

**PROPOSED**

Sister Grace Inc. seeks permission to construct FM translators in the following locations on the listed frequencies: Mayville, WI, 100.9 MHz and 101.9 MHz; Waupun, WI 104.3 MHz; Wisconsin Dells, WI, 92.9 MHz; Janesville, WI, 102.1 MHz and 106.5 MHz; Beaver Dam, WI, 103.1 MHz; Verona, WI, 92.7 MHz; Watertown, WI 96.9 MHz; McFarland, WI 98.9 MHz; Beloit, WI, 92.3 MHz; and Fort Atkinson, WI, 95.9 MHz.

Sister Grace Inc. also made applications for translators in 18 other Wisconsin cities, 7 other Upper Michigan cities and Rockford, IL. These applications were announced on September 17 and 19, 2003.

*From FCC Daily Notices (www.fcc.gov)*

### Proposed Change to Chapter 24 Bylaws (continued from page 1)

information may be released to any party without case-by-case approval of all Chapter Elected Officers."

"No Chapter membership database information may be released to any party."

A vote of all Chapter 24 members present is scheduled to be taken at the SBE meeting on Thursday, November 18, 2003 at 7 PM at the WKOW-TV Studio. We must have a quorum present to vote. A Chapter 24 quorum –ten percent of the registered membership– is 6.1 people. If at least two-thirds of the Chapter 24 members present at the meeting approve of the suggested change, the bylaws will be amended to include the new statement.

Jim Magee will serve as the keeper of the bylaws. The Chapter 24 bylaws will be added to the www.sbe24.org web site for increased accessibility.

## CHAPTER 24 SUSTAINING MEMBERS

**RECENT RENEWALS:**

**Belden Wire and Cable  
Norlight Telecommunications**

**THANKS TO ALL OUR SUSTAINING MEMBERS:**

**Alpha Video  
Broadcast Richardson CTI  
Clark Wire and Cable  
Fujinon Inc.  
Graybar  
Harris Corporation  
Heartland Video Systems  
maney-logic  
Roscor Wisconsin  
Ross Video  
Scharch Electronics  
Sony Broadcast  
Sound Devices, LLC  
Swiderski Electronics  
Token Creek Productions  
WISC-TV 3  
WKOW-TV 27  
WMSN-TV 47  
WMTV-TV 15  
Wisconsin Public TV**

### Short Circuits (continued from page 9)

Board of Directors Meeting – 6:00 pm to 10:00 pm

**October 15**

Fellows Breakfast – 8:00 am to 9:00 am (by invitation)

Frequency Coordinators Meeting – 11:30 am to 12:30 pm

Annual Membership Meeting – 4:00 pm to 5:00 pm

National Awards Reception – 5:00 pm to 6:00 pm

National Awards Dinner – 6:00 pm to 9:00 pm

SBE will present the Broadcast Engineer of the Year and Educator of

the Year awards during the dinner, along with the prestigious Fellow Award. The dinner will also feature a keynote presentation by Gary Kline, Corporate Director of Engineering for Cumulus Broadcasting.


Tickets for the SBE National Awards Dinner are \$12 and can be ordered by calling or e-mailing Linda at the National Office at (317) 846-9000 or lbaun@sbe.org.

To register for the Broadcasters Clinic, contact the Wisconsin Broadcasters Association at (608) 255-2600. You can also visit the Chapter 24 web site at www.sbe24.org.

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[www.wpt.org](http://www.wpt.org)



**Society of Broadcast Engineers, Inc.**  
 9247 North Meridian St.  
 Suite 305  
 Indianapolis, IN 46260

Office (317) 846-9000  
 Fax (317) 846-9120

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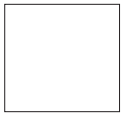
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 2029 Greenway Cross #11  
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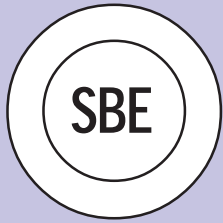


FIRST CLASS MAIL

Newsletter edited on Pagemaker 7.0 by: Mike Norton  
 Contributors this month: Leslie Franzen, Vicki W. Kipp, Tom Smith, and Tom Weeden.  
 Thanks to Leonard Charles for his work on the Chapter 24 WWW page.

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# OCTOBER MEETING and PROGRAM



## Society of Broadcast Engineers CHAPTER 24 MADISON, WISCONSIN Wednesday, October 15, 2003

### Broadcast Clinic and National SBE Meeting

This month's meeting will be held in conjunction with the Broadcasters clinic, which is being held at the Marriott – West in Middleton, Wisconsin. The dates for the Broadcast Clinic are Tuesday, October 14 through Thursday, October 16. You can register for the Clinic by calling (608) 255-2600 or log on to <http://www.wi-broadcasters.org>.

#### 4 PM- National SBE Membership Meeting

The SBE membership meeting is open to all SBE members and Guests

#### 5 PM- National SBE Awards Reception (ticket required\*)

#### 6 PM- National SBE Awards Banquet (ticket required\*)

\* to order Awards Reception/ Banquet tickets, call the National SBE office at (317) 846-9000

All events to be held at:  
Marriott - Madison West  
1313 John Q. Hammons Drive  
Middleton, WI

Visitors and guests are welcome at all of our SBE meetings!

#### 2003 UPCOMING MEETING/PROGRAM DATES:

<u>Day</u>	<u>Date</u>	<u>Program</u>
Tuesday	November 18, 2003	Maastech Automation
Wednesday	December 17, 2003	Chapter 24 Holiday Party

Program Committee:

Steve Paugh  
277-5139

Fred Sperry  
264-9806

Steve Zimmerman  
274-1234