



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

Society of Broadcast Engineers

December 2003

Music at 78 RPM – Part II

By Kevin Ruppert

Music Becomes Electronic!

Last time, we covered acoustically recorded 78-RPM records. Now, we are going to explore the era when 78s finally were being recorded and reproduced using electronic devices.

In last month's article, I told how I went about transferring several 78s to digital media. As we noted in the article, these were originally acoustic recordings, made without microphones, mixers, or electronics of any kind. The transfer to ¼ track tape did, of course, require using modern microphones. For those of you interested in these types of things, the mics I used were a Sony C-48 large diaphragm condenser and Shure 300 ribbon mic. Thanks again to Kevin Peckham for the use of the mics.

Way Beyond Polkas!

While collecting marches, I also started to collect two other disparate types of music. Big band and combo jazz have always been some of my favorites. (I was definitely done with polkas!) I made an interesting find at one of the used bookstores in Madison - an album of 78s of the Benny Goodman Sextet, which was in excellent condition. This group included two of my favorite jazz performers from this era, Charlie Christian and Lionel Hampton. The recordings were made in 1939 and 1940, although I have reason to believe that the album I owned was re-released in 1950 which may account for the relatively good condition of the discs. Now, I know that you can get this stuff on CD, digitally remastered and sounding "better than the original recordings," but I wanted to "remaster" them myself. Besides, the 6 record album was only \$4.50 and I'd have the fun of actually playing the discs, with surface noise and all!

(continued on page 4)

Next Meeting:

**Wednesday,
December 17, 2003**

**Chapter 24
Holiday Party**

**Happy Hour
6 PM - 7 PM**

**Dutch Treat Dinner
at 7:00PM**

**Timber Lodge
Steak House
6613 Mineral Point Road**

**(Mineral Point Road &
Grand Canyon Drive)**

In This Issue:

Minutes	page 2
Amateur Radio News	page 3
FCC Reorganization	page 8
Ham Radio Workshop	page 9
FCC Rulemakings	page 10

CHANGE TO CHAPTER 24 BYLAWS

By Vicki W. Kipp

A change to Article VI–Section 4 of the Chapter 24 bylaws was approved in a vote of all Chapter 24 members present at the SBE meeting on Thursday, November 18, 2003. There were plenty of members in attendance to meet the requirement of at least 6 people present to have a quorum.

For the bylaws to be amended, at least two-thirds of the Chapter 24 members present at the meeting must approve of the suggested change. The amendment was approved by a vote of eleven to one.

Article VI–Section 4 had stated: "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."

Article VI–Section 4 now 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."

By changing Article VI–Section 4, we adopted a consistent policy that

(continued on page 6)

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November Business Meeting Minutes

Chapter 24 of the Society of Broadcast Engineers met on Tuesday, November 19, 2003 at the WKOW-TV, Madison, Wisconsin for the chapter's monthly meeting. There were 16 members in attendance, 13 of whom were certified and 4 guests.

The meeting was called to order at 7:02 PM by Chapter Chair Vicki Kipp. The minutes of the September and October meetings as published in the November newsletter were approved. Newsletter editor Mike Norton announced the deadline for articles for the December issue will be midnight, Friday, December 5th. The folding party will be held Wednesday, December 10th at 5:30 PM at WKOW-TV. Treasurer Stan Sarch reported that the chapter was in the black.

Sustaining Membership chair Fred Sperry had submitted his report of three recent renewals (Belden Wire & Cable, Heartland Video, and Norlight Telecommunications) and one new membership (Wave Communications). Special Events Coordinator Lonnie Cooks had nothing new to report.

Program Committee Chair Steve Paugh reported that the next meeting on Wednesday, December 17th will be the chapter's holiday party at the Timber Lodge Steakhouse. The January meeting will be a presentation by Sound Devices. Possible future meeting programs are a tour of the new Charter headend and the truck interface at the Monana Terrace.

Certification Chair Jim Hermanson reported that the certification fees are being raised \$5.00 starting January 1st, 2004. The next local certification exams will be offered February 6-16, with the application deadline of December 31st.

Frequency Coordinator Tom Smith reported on game day coordination requests from ABC Football last week and ESPN for a couple of weeks ago. Also reported was coordination for a previously unlicensed link from Fall River to the station's transmitter site. New FCC rules for coordination of 91.5GHz and above. The 2 GHz microwave plan for the top 30 markets is for 7 narrow channels and either 5 wide channels or 7 narrow channels for markets below 30. The Department of Defense is looking to install 2 GHz uplinks. The FCC is looking to create temperature interference standards for the 13 GHz band.

National Liaison Leonard Charles reported that a frequency coordination software package is in development. Boston will be hosting next year's national SBE meeting- the final dates are still to be determined. The national membership drive will soon be starting.

Under new business, Chapter Chair Kipp motioned to modify Article 5, Section 4 of the Chapter 24 By-Laws. The proposed change addresses the chapter's policy on releasing Chapter 24 membership database information. The change was approved by a count of 11 for and 1 against.

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November Business Meeting Minutes (continued)

Article 5, Section 4. 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. No Chapter membership database information may be released to any party.~~

Under professional announcements, Leonard Charles was congratulated for his recent appearances on WISC News' "On Your Side: The Future of High Definition Television" series and his hosting a web chat.

Also, a photo of some Chapter 24 members inside the Orban truck at the September SBE meeting was published in the Orban ad on page 36 in the October issue of Radio magazine.

The meeting adjourned at 7:13 PM. The program this month was a presentation by Doug Hinahara of MassTech Group on File Based Media Management for Broadcast Operations.

Submitted by Jim Magee, Secretary



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AMATEUR RADIO NEWS

By Tom Weeden, WJ9H

- Hoping to avoid the scrutiny which may be coming to tall broadcast towers, the American Radio Relay League (ARRL) has asked the FCC to exempt amateur radio antennas and support structures less than 400 feet tall from routine environmental processing relative to their impact on migratory birds. In reply comments filed December 1, the League said there is no scientific evidence that antenna structures below that height contribute significantly to migratory bird mortality. An FCC Notice of Inquiry, WT Docket 03-187, released in August seeking information on the effects of communications towers on migratory birds, drew more than 250 comments. The League told the FCC that the migratory bird issue often arises at municipal land use hearings and in the drafting of ordinances regulating antenna structures.

"At public hearings before city, town and county authorities, those who are opposed to communications antennas for aesthetic reasons typically raise issues such as migratory bird mortality as one of several arguments against permitting antennas or limiting their placement," the ARRL comments said. "ARRL's research into the scientific literature reveals that communications towers below 400 feet are almost universally considered not to be contributors to bird mortality."

The ARRL pointed to US Fish and Wildlife Service guidelines released in 2000 that concede that "tower height alone may not necessarily be a critical issue that results in mortality" and that bird kills documented at tall TV towers might be due to the effects of tower lighting rather than height. Based on the record, the League concluded, "unlit amateur radio antennas cannot be considered candidates for regulation under any circumstances."

- The FCC has amended its Part 15 rules to make another 255 MHz of spectrum available in the 5.470-5.725 GHz band for unlicensed National Information Infrastructure (U-NII) devices, including Radio Local Area Network (RLAN) devices. In a Report and Order (R&O) in ET Docket 03-122 released November 18, the FCC said it was taking the action to alleviate crowding in existing allocations and to align U-NII bands in the US with bands elsewhere in the world. Amateur radio has a secondary allocation from 5.650 to 5.925 GHz.

- The North Carolina Special Events Group will operate special event station W4B from December 12 to 17 to commemorate the 100th anniversary of the Wright Brothers' first flight at Kitty Hawk, North Carolina. Operation will be on 14.260 MHz continuously as propagation permits, while a second station will operate alternate modes. The North Carolina Special Events group is a nonprofit amateur radio organization that promotes historical and other events to increase public awareness of ham radio.

(Excerpts from the American Radio Relay League's "The ARRL Letter")



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Music at 78 RPM – Part II (continued from page 1)

A Record Changing Experience

These being “electronic” 78’s, recorded some time in the late 30’s, I was not going to use the Victrola to play them because they just would not sound right that way. My plan was to reproduce them electronically, then clean up and digitize the 78’s so I could enjoy them over and over without any wear on the original records.

Luckily, I had two choices for playing these vintage discs electronically. One of the players is a fairly modern Garrard turntable, the other a 1940’s vintage Philco changer that I bought at a flea market.

The first thing a 78 collector has to know is that he is going to have a different stylus for playing these records. Simply put, the grooves on a 78 are larger than the microgroove records that most of us are familiar with. You can use modern pickup cartridges, but the stylus needs to be 3 mil diameter instead of the 1 mil type used on LP’s. If you try to play the 78’s with a 1 mil stylus, you will hear too much of the surface noise and not enough of the music. If you think about it, it makes sense. The grooves are wider, so the smaller point can’t couple to all of the undulations of the walls of the groove. Instead, it just sort of “sloshes around” and picks up the worn out bottom of the groove where there is mainly noise.

A Chance to Get Needed

There has recently been renewed interest in record players. You see them in trendy catalog and department stores. The stores know that they can sell these machines to people in their middle age who own a lot of vinyl but for one reason or another have gotten rid of their turntable and now regret that they cannot play the records.

If you do buy one of these reproduction machines and are interested in listening to 78’s, make sure you get the right kind. Many of these machines feature the speed 78-RPM, but do not have the 3-mil stylus needed to play the 78’s. If you do purchase one of these record players, make sure that you find one that has the “flip needle” type of cartridge that has a stylus to properly play the 78’s.

There are many good mail order houses on the Internet that sell 3 mil styli for the cartridge of your choice. Mine was a Pickering stereo mag cartridge that was in the tone arm of the Garrard turntable. I ordered the replacement 3 mil stylus and tried it out.

The vintage Philco record changer that was in my “audio junk yard” has dual point styli that pivot - one way for 3 mil, and the other way for 1 mil. This probably seemed like a great idea to the guys who designed it at the time. Too bad that it never really worked very well, because the microgroove LP’s were always being played with backwards pressure on the stylus, just like back-cueing a record. (DJ’s will know what I’m talking about.)

This old but still capable record changer has a ceramic mono cartridge. I recently replaced the stylus in it with a new (actually, unused) one from a company in Canada that specializes in replacements for old, hard to find needles. If you like the thrill of the hunt, you’ll love looking through Internet page after Internet page of pictures of needles, trying to find the one that matches yours!

The Digital Filter

The next thing that I needed was digital noise reduction software for my computer. I took a recommendation

from fellow engineer Leonard Charles on which software would do the job and not cost too much. I purchased and downloaded a program called “Wave Corrector” from a British software company called Ganymede Test and Measurement. I started with an earlier version, but version 2.5 is available for instant download at www.wavecor.co.uk/.

The Wave Corrector software uses an algorithm that digitally finds pops and clicks to filter them. Some programs then cut the click or pop out, leaving a gap in the audio. This program tries to fill in the gap with an approximation of the waveform that was at one time under the click to make the finished sound as authentic as possible. It seems to work pretty well. As with most digital filtering, however, if you use too many passes through the system, or turn up the processing too high, the finished audio sometimes has that “swishy” digital artifact sound, the same effect you might notice with a bad mp3 file.

Similar digital filters are available from other software publishers, including Sonic Foundry who have it in their Sound Forge program. I opted for Wave Corrector for its low cost and ease of use.

Now, I needed to decide which turntable would be used for the transfer to digital media. Well, once again, I decided to try both.

The Equalizer

There has been a lot written on the importance of proper equalization for vinyl record playback. You can buy preamps and other boxes with buttons and knobs on them to precisely set the equalization of the record that you are

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Music at 78 RPM – Part II (continued)

playing. One seller's site includes data on each record company's equalization including where the bass and treble turnover points are. There is little doubt that you will enjoy your 78s (or any other records) a great deal more with the proper EQ. Getting there might be a little more of a challenge.

Many Standards to Choose From

Early records were made without equalization. For one thing, despite attempts in the acoustic recording era, it is nearly impossible to change EQ mechanically. When electronic recording came into being, EQ was not only possible, but also highly desired to improve the fidelity as well as the signal to noise ratio of the recordings.

The main problem is that each record company chose a slightly different EQ curve for their records. It was not until the early 1950s when the RIAA (Record Industry Association of America) EQ curve became the industry-wide standard for records made in the United States.

EQ on a Shoestring

The expensive solution EQ preamps and boxes have a switch position for each record brand, as well as knobs to "tweak in" the sound according to your ear. Once again, continuing my attempt to experiment without spending very much money, I found a less expensive way to provide some EQ to my transfers of the Goodman Sextet. A Radio Shack parametric equalizer provided the playback curve.

The Goodman album is on the Columbia label. Previous experience showed me that Columbia records of the time pretty much followed the RIAA curve even though it was not yet the industry standard. I was able to find a

chart of the RIAA playback curve on the Internet. I set the sliders on the parametric to the RIAA curve as close as I could and decided that I would adjustments later as needed by ear.

Totally Tubular

I need to back up to the discussion of the ceramic cartridge chosen for the transfers. Most ceramic cartridges have much higher output levels than their more modern magnetic counterparts. The cartridge in my player has a nominal output of 3.0 Volts peak to peak. Most magnetic cartridges typically have outputs in the millivolt range. Why the large difference in signal level? The answer is historic and also monetary.

Back in the tube era, preamplifiers were an expensive luxury that would require an additional electronic stage in the record player. You have to consider that this was before integrated circuits or even transistors. Point to point wiring was the state of the art at the time. The folks on the production line had to solder wires to the base of the tube, which had to be punched into and mounted on the chassis. A vacuum tube (or at least a section of a tube) had to be set aside just to provide a part of the preamp, in addition to passive components in the circuit and load on the power supply. You'd have to look to professional gear or high end high fidelity components to find this level of sophistication in audio gear due to the cost. So, short cuts were taken to reduce costs in home gear.

The extreme examples of this are portable record players that used one tube. The type 117N7-GT was a popular combination rectifier and beam power amplifier that could be used in a one-tube phonograph. As those of you who understand the tube numbering scheme

will know, this tube has a 117 Volt filament, which means that it does not require a filament transformer or series step-down circuit to light the filament. The amplifier section provides enough output (1.2 Watts) to power a small speaker in a portable phonograph. Keep in mind that this is not "hi-fi" with 6% total harmonic distortion and not very much power, but it was good enough for the average home electronics consumer.

Signal Overload

When I first started to try to make my transfers with the ceramic cartridge, I was using a preamp that I had used successfully for listening to vinyl LP's with mag cartridges. The high (3 Volt) output was severely clipping the preamp. I tried a series of different homemade pads to bring the level closer to what the preamp wanted to see, but never found a set up that sounded right to me. I have not checked into this yet, but suspect that the loading on the cartridge was never correct with the preamp and my homemade pad. Then, I finally realized that I needn't use a preamp at all! What I really had was a "line level" cartridge that could go directly into a recorder or PC sound card. What was missing was the EQ. Hence, the parametric providing the RIAA curve.

This actually worked pretty well. The Goodman discs sounded really nice with the right curve. There was a noticeable reduction in noise, as well as a nice, solid bottom end to the recordings.

Subtle Cymbals

Okay, now I was ready to transfer the Sextet 78s to digital media. The

(continued on page 6)

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Music at 78 RPM – Part II (conclusion)

process with Wave Corrector is simple. You use your computer's sound card and standard Windows sound recorder to create a Wave file. Then, you run the noise reduction program of Wave Corrector to clean it up. Wave Corrector has plenty of tools and hooks for you to use to manually adjust the correction process on each click or pop, but I went with the automatic process and did no further adjustments.

The results were truly amazing! While playing back one of the Goodman tracks - "Rose Room", I could hear something that I had not heard before. There was this subtle "shooo-dit-di-shoo-dit-di shoo..." behind the instruments that I had not heard while listening to the track before processing. I had to listen to the corrected track again before I realized that this was the high-hat cymbals coming from the drum set that was previously buried in the surface noise so that you could not really hear it. I think that I was hearing something really close to what the Columbia engineers wanted me to hear.

Nice and Warm

After transferring the Benny Goodman Sextet album to CD and mini disc with the Philco vintage record player, I decided to repeat the same transfers with the modern magnetic cartridge. This time, I used the preamp that I had tried before with the ceramic cartridge. The graphic equalizer was not needed because the EQ was built into the preamp. (I trusted that the manufacturer had built the proper EQ into the preamp.)

What I discovered was interesting. I actually preferred the sound of the vintage ceramic cartridge with the jury-rigged EQ over the modern stereo mag cartridge and modern preamp. Could it be due to the fact that the vintage records were made for the vintage pickup? That the modern system just could not do justice to the Goodman 78s?

This might be similar to the discussion of different microphones.

Some artists prefer the warm sound of vintage ribbon mics to their precision, "accurate" counterparts. My vintage pickup sounded better to me playing the vintage material that I started with. If I was listening to polkas, I might not have been able to hear the difference.

Moving on to the Classics

Next, I decided to attack the classics. My used record store yielded a copy of the Tchaikovsky "Romeo and Juliet" suite. An album of three 78s (six sides) for just \$1.98! Once again, a little background into what home entertainment was like in the era of 78s.

The records came in two sizes, 10 inch and 12 inch diameter. The 10 inch discs could hold about 3 ½ minutes maximum per side. This was fine for popular music, as 3 minutes is enough for a pop song. Most jazz was okay on a 10 inch 78, as in the case of my Benny Goodman Sextet album, even if it meant each musician had to limit his "turn" (solo) to fit on the disc. For polkas, three minutes is certainly enough! After all, who could polka any longer than that without a break or a heart attack!

Where does this leave the serious classical music collector? The answer is with the 12 inch 78, which provided a little better medium for long form recordings (but not much better!). I have classical 12 inch 78s that have just over 4 ½ minutes per side. That means that a 20 minute suite had to be recorded on 5 sides of 12 inch 78s. It must have been quite a trick for musicians and engineers to find convenient places for the orchestra to pause while the disc is changed. (Do you suppose that the conductor kept his arms up in the air holding the orchestra from playing until he got the signal to go ahead from the engineer?) I suspect that this is where the term "record album" comes in, as a set of records literally came in an album to hold them together as a group.

This is where you need a record changer if you want to hear a

continuous (or nearly continuous) performance. That, however, is another whole article!

While listening to the Romeo and Juliet (and changing each record by hand), I wondered what the piece would sound like edited together. If I used Wave Corrector, I could remove the surface noise and splice together the sound from the six sides of the album. How different would it sound from a modern recording made *all at the same time*?

This will take some experimentation! Stay tuned. There will be more to come!

The following web site was used for research in the article: The Benny Goodman Website, www.duke.edu/~app1/bgoodman.html

CHANGE TO CHAPTER 24 BYLAWS (continued from page 1)

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.

The Chapter 24 Newsletter and the MSNSBE List serve continue to provide an effective way to communicate with members of Chapter 24.

Jim Magee, the Secretary of Chapter 24, serves as the keeper of the bylaws. The Chapter 24 bylaws can be found at www.sbe24.org/bylaws or can be accessed from a link on the Chapter 24 home page.

SPECTRUM POLICY TASK FORCE ISSUES REPORT

By Tom Smith

The Spectrum Policy Task Force issued a report on November 13th on steps the Commission has taken to reform spectrum policy in the last 12 to 18 months. The Task Force was created by Chairman Michael Powell in June 2002 and it issued a report in November 2002 outlining a number of recommendations. The principal recommendations included:

- Transition of the current command and control model of spectrum regulation to that of market-oriented exclusive rights, and greater use of unlicensed devices and common use of bands among users;

- Increase ways of increasing access to spectrum for users of both unlicensed devices and licensed spectrum;

- Create new methods of determining interference protection.

The Task Force did not post a report on the Commissions Website, but instead had a copy of the slide presentation they presented to the Commission. In the presentation, the Task force stated the focus should be maintained on the FCC's strategic goals for spectrum, which is to encourage the highest and best use of spectrum in order to allow for the rapid deployment and growth of new services, ensure the efficient and effective use of spectrum, and facilitate the creating of new spectrum based technologies, both in the United States and Internationally.

Spectrum policy was to connect to the FCC's goals concerning Broadband and Competition, Homeland Security and DTV, Media and Localism. To reach these goals, the Task Force seeks to increase the awareness of new spectrum initiatives, seek input from

the public and government, and collaborate with technical, economic, and legal experts from academia, government, and industry.

The Task Force listed ongoing FCC proceedings including the use of Secondary Markets in Spectrum which would allow leasing of spectrum by licenses to other service providers in a wide array of wireless services:

- The allocation of spectrum for unlicensed use including the Ultra-wideband systems in the 3.1-10.6 GHz spectrum area;

- A notice of inquiry in the bands below 900 MHz and in the 3 GHz bands;

- New rules for unlicensed use in the 5 GHz band that were adopted a day before this report, and new rules issued in October for the 90 GHz band.

In April of 2003, there was a notice of proposed rulemaking issued to allow for unlicensed use in the 2.5 GHz MDS/ITFS band.

Proposed changes in interference standards were described, including a notice of inquiry on receiver interference standards in March of 2003, the use of the Interference Temperature Metric with a notice issued at the same time as this report, and a workshop on Cognitive Radio Technologies as well as a notice of rulemaking on advanced antenna technologies in September 2003.

The Commission also has issued a notice of inquiry in December 2002 and a notice of proposed rulemaking in October 2003 concerning access to spectrum in rural areas.

Actions concerning specific bands include; final rules in May 2003 for use

of the 4.9 GHz band for Public safety, 70-90 GHz broadband use rules adopted in October 2003, Proposed rules for broadband in the 2.5 GHz MDS/ITFS band in March 2003. New rules adopted in March 2003 for the 800 MHz Public Safety Band and a DTV Periodic review in January 2003.

The Task Force plans on more action on spectrum issues, including streamlining and harmonization of service rules and spectrum audits and auctions.

The Task Force acknowledged a number of papers issued, as well as other events and speeches that were made in the past year. They also unveiled as part of their website a page that allows the public to find and track various rulemakings and actions that affect spectrum issues.

From FCC Releases (www.fcc.gov)

Sustaining Members Just A Click Away

By Vicki W. Kipp

The chapter 24 web site now contains a convenient way to contacting the Sustaining Members of Chapter 24. Webmaster Leonard Charles has added a page of sustaining member contact information to our website at www.sbe24.org/sustain.

You can access this page from a link on the SBE 24 home page. With the new sustaining member web page, you will have the phone numbers, postal and e-mail addresses, and web sites of our sustaining members as your fingertips. In fact, the sustaining member page html code includes e-mail links so that your e-mail client will open up if you click on a sustaining member's e-mail address.

Please take advantage of this convenient new feature to contact our sustaining members when you need broadcast service or supplies.



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WIRELESS BUREAU REORGANIZED

By Tom Smith

The FCC has reorganized the Wireless Bureau in order to “more effectively support the FCC’s strategic goals – Broadband, Competition, Spectrum, Homeland Security, and Modernizing the FCC.”

The FCC has reorganized the bureau into the following six divisions:

Auctions and Spectrum Access Division

This division is to promote transparent, efficient, and effective access to spectrum. This includes development of new policy, procedures, and administrative initiatives and legal analysis, as well as implementing the FCC’s Competitive bidding authority (auctions).

Broadband Division

This division is to facilitate the deployment of wireless broadband services and will handle policy, regulation and licensing of these services.

Mobility Division

This division handles mobile radio issues such as the promotion of competition and innovation in this service, as well as the efficient use of the mobile radio spectrum.

Public Safety and Critical Infrastructure Division

The consolidation of Homeland Security and public safety issues are combined into this one division. This includes E911 and interoperability issues between public service users.

Spectrum and Competition Policy Division

This division’s tasks include implementation of the Spectrum Policy Task Force recommendations, use of secondary markets, wireless/wireline convergence, wireless consumer policy, facility and tower siting, and guidance in future policy for new technology.

Spectrum Management Resources and Technologies Division

This is the Wireless Bureau’s IT Division and will handle information technology, licensing, and auction support and outreach functions.

These six divisions replace a system that divided the functions of the Wireless Bureau into five divisions. Under the old system, the divisions were; The Auction and Industry Analysis Division, Commercial Wireless Division, Public Safety and Private Wireless Division, Policy Division, and Data Management Division.

The way this bureau operates and is organized affects all spectrum users, as they handle the licensing of all services other than broadcast station licenses. One of their functions is to license broadcast auxiliary licenses.

This action was taken on November 13, 2003 and released on November 24th.

From FCC Releases (www.fcc.gov)

SBE Short Circuits – December 2003

By John L. Poray, CAE
SBE Executive Director

FCC ISSUES 3RD R&O ON 2 GHZ MSS TRANSITION

On November 10, the FCC released an order regarding the Mobile Satellite Services’ move to the 2 GHz band. (FCC’s Executive Summary is provided below. For the full 57-page order, go to www.fcc.gov.)

...2. As described in further detail, below, we are retaining in substantial part the BAS and FS relocation procedures that new MSS entrants in the 2 GHz band will follow and that were originally adopted in the Commission’s MSS Second Report and Order. The modifications we make herein respond to comments filed in response to the Further Notice of Proposed Rulemaking in the AWS proceeding 5 and the Notice of Proposed Rulemaking in the MSS-ATC proceeding.6 In both of those

actions, the Commission sought comment on how the introduction of new services into the 2 GHz MSS band would affect the existing BAS and FS relocation procedures. We also address petitions for reconsideration filed in response to the MSS Second Report and Order. Specifically, we make the following decisions herein:

For relocation of BAS in the 1990-2025 MHz band by new MSS entrants, we:

- Require the relocation of BAS incumbents in all television markets to the final (Phase II) plan at 2025-2110 MHz. This will eliminate the necessity of relocating BAS licensees to an interim (Phase I) channel plan as part of the previously adopted two-phase approach to relocation.

- Retain the requirement that all BAS operations in markets 1-30 must be

relocated prior to the initiation of new MSS in the band.

- Amend the rules to specify that the time period for calculating a one-year mandatory BAS negotiation period for markets 1-30 and the ten-year sunset period commence upon publication of this Report and Order in the Federal Register.

- Require the relocation of all fixed BAS stations on channels 1 and 2 nationwide prior to the initiation of new MSS in the band.

- Decline to require the reimbursement of relocation expenses for BAS facilities for which initial applications were filed at the Commission after adoption of the MSS Second Report and Order.

- Modify our final (Phase II) BAS channel plan to provide for seven

(continued on next page)

CHARLES TO SERVE ON MSTV ENGINEERING COMMITTEE

By Vicki W. Kipp

The Association for Maximum Service Television (MSTV) has invited Chapter 24 member Leonard Charles to serve on the MSTV Engineering Committee. The Engineering Committee is the essential foundation of MSTV, leading MSTV's regulatory actions and influencing government policies.

Since 1956, the MSTV has worked towards the goal that the American public receives a high-quality, interference-free over-the-air local television signal. MSTV leads the industry in seeking solutions for broadcast technology and spectrum policy issues. MSTV protects

broadcasters from detrimental government policies and regulations on industry technology standards. Also, MSTV plays a major role in the integration of new technologies into the broadcast industry. MSTV has been extremely involved in policy setting for DTV. Working closely with the ATSC, MSTV acts as a liaison between the broadcast and consumer electronics industries. MSTV uses their mobile testing laboratory around the country to measure signal strength levels and potential interference.

We all benefit from having a dedicated broadcasting colleague act as a voice for us at MSTV. Please join me in congratulating Chuck on his new role on the MSTV Engineering Committee!

SBE Short Circuits (continued)

channels of 12 megahertz each, and a 500 kilohertz data return link (DRL) band at both ends of the seven channels.

- Permit BAS licensees to operate indefinitely on their existing 17-megahertz wide channels in the 2025-2110 MHz band on a secondary basis, if they so choose.

- Clarify that an assignment or transfer of control does not disqualify a BAS incumbent from relocation eligibility.

NOMINATIONS FOR SBE FELLOW SOUGHT

The SBE Fellowship Committee is now accepting nominations of qualified members to be considered for recognition as SBE Fellows.

The Fellow designation is the most distinguished recognition presented to members by the Society. Members of SBE may earn the Fellowship rank through several paths of achievement including conspicuous service, valuable contributions to the advancement of broadcast engineering or its allied professions, or by disseminating their knowledge and promoting its application

in practice. The names of nominees are brought to the Board of Directors for consideration and election. Only 62 members have been recognized with the Fellow honor in the Society's nearly 40 year history.

Perhaps there is a member in your chapter who has distinguished him or herself in the field of broadcast engineering. Consider sending a nomination to the Fellowship Committee.

Candidates for election to Fellow must be proposed in writing by a voting member. The nomination must include an appropriate and complete history of the nominee and the endorsement of at least five other voting members. Nominations are confidential. Candidates should not be aware that they have been nominated. Nominations for the year 2004 must be received no later than March 31 for consideration. Recipients will be notified by the SBE Secretary and will receive their award at the SBE National Awards Dinner next October in Boston, during the SBE 2004 National Meeting.

To submit a nomination, send to: Martin Sandberg, CPBE, Chairman, SBE Fellowship Committee, 9807 Edgecove Drive, Dallas, Texas, 75238-1535 or to sandytex@swbell.net.

TWO-DAY AMATEUR RADIO LICENSE WORKSHOP

The Space Place Amateur Radio Technician License Workshop will be held Saturday and Sunday, February 21 and 22, 2004. This weekend workshop is a proven and effective way to get started in ham radio. The Technician license exam will be given at the end of the second day of study.

Registration is available via the web at www.sal.wisc.edu/spaceplace/spaceplace/index.html. There is no charge for this workshop. However, you are required to obtain the book entitled "Now You're Talking" (5th edition, \$20). Earlier editions do not contain up-to-date materials and will not properly prepare you for the license exams.

You can purchase "Now You're Talking" from the ARRL, www.arrl.org/catalog or call 888-277-5289; or Amateur Electronic Supply in Milwaukee, phone 800-558-0411 or use their web site: www.aesham.com. You'll find that this book is truly a good investment, as its reference and operational material will continue to be useful to you long after you have acquired your ham radio license. The book is also available on loan from the Four Lakes Amateur Radio Club library.

Send any questions or other correspondence to n9uw@sal.wisc.edu, or

Space Place Amateur License
Workshop
1605 S. Park St.
Madison, WI 53715

Thank to Steve Paugh and Steve Zimmerman for arranging the November meeting and program. Thanks also to Steve Zimmerman for the tour of the local DBS receive site and LPTV facilities.



FCC Rulemakings

Compiled by Tom Smith

PROPOSED

MM Docket 02-230 Digital Broadcast Content Protection

The first thing about this further notice of rulemaking is a name change. The FCC change the word copy to content to reflect that the proposed rules are not to limit or prevent consumers from making copies of digital broadcast television content. This notice discussed a number of issues, as well as published the proposed rules for a broadcast flag for digital broadcast television.

The Commission, broadcasters, and program suppliers realize that anything that they could mandate could be hacked as well, so the final rules only requires an ATSC flag which is in the DTV standards. The main objective is to prevent multiple copies or transmission over the Internet from the average user. The flag would allow for a viewer to copy once to a VCR or similar device, but not to a computer hard drive, if the computer has a demod card installed.

Content from a demodulator device that can process the flag may only pass the content to an analog output, a 8 VSB, 16 VSB, 64 QAM, or 256 Qam Modulated output, or a digital output that meets the requirements for content protection. Video in a computer and in digital outputs of a demodulator device that does not meet the content protection requirements must be reduced to 720 by 480 resolution, but can be line doubled. Recordings made of content without a flag must add content protection.

There are also rules concerning cable and satellite providers use of the broadcast flag. Because the flag is not an encryption key and the DTV signal is not encrypted, existing ATSC and digital cable boxes will continue to function with the broadcast flag. All new DTV devices must meet these standards by July 1, 2005.

There was a long discussion in the Notice as to the Commission's authority in making these requirements. Some commentators stated that requiring this technology in computers and other devices that are not normally meant for reception of radio transmissions was beyond the FCC's authority.

This notice is difficult to read, as it is written in mostly legal jargon and with a lot of terms that are not used in describing everyday technical subjects.

This notice was adopted and released on November 4, 2003 and published in the FEDERAL REGISTER on December 3rd. The FCC also issued a Notice of Proposed Rulemaking in the FEDERAL REGISTER on December 3rd concern the use of the broadcast flag and encryption in the redistribution of content by a cable, MMDS, or satellite provider.

ET Docket No. 03-237 Establishment of an Interference Temperature Metric to Quantify and Manage Interference and to Expand Available Unlicensed Operation In Certain Fixed, Mobile, and Satellite Frequency Bands

This notice is both a Notice of Inquiry and a Notice of Proposed Rulemaking. In the inquiry part of this notice the FCC asks for comment on a proposed

change in the method of computing interference. They wish to convert from a system of that relies on the limiting of transmitter power to prevent interference (desired to undesired signal ratios) to one that is based on the natural electrical noise floor and well as any noise increase due to transmitted signals. They are seeking ways to expand and share spectrum for unlicensed devices which are mostly digital.

The proposed method of figuring interference would be to add the noise-like energy of these devices to the natural background electrical noise in the atmosphere and set a minimum noise floor for figuring interference to the licensed transmitter. A graph in the Notice indicated that this method would either reduce coverage or require more transmit power to get as far as the current interference measurement system allows.

The Commission asks a lot of questions in this Notice of Inquiry and many of the questions are complex and require a basic knowledge of the physics of radio transmission. The Commission proposed a number of complex methods of real-time measurement of this type of interference in order to prevent interference from unlicensed transmitters to licensed services.

In the second part of this notice, there is a Notice of Proposed Rulemaking that affects broadcasters. The Commission is proposing to test these methods for measuring interference in two bands. One band is the Fixed Satellite service uplink band at 6525-6700 MHz, and the other is the broadcast auxiliary service band of 12.75-13.15 GHz and 13.2125-13.25 GHz.

Action on this notice was taken on November 13, 2003 and released on
(continued on next page)

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FCC Rulemakings (continued)

November 28th. Comments are due 75 days after publication in the FEDERAL REGISTER with replies due 30 days later.

FINAL RULEMAKING

ET Docket No. 03-122; RM-10371 Revision of Parts 2 and 15 of the Commission's Rules to Permit Unlicensed National Information Infrastructure (UNII) Devices in the 5 GHz Band.

The FCC has allocated 255 MHz of spectrum in the 5.470-5.725 GHz band for unlicensed use. This is in addition to 300 MHz allocated in the 5 GHz band at 5.150-5.250, 5.250-5.350 and 5.725-5.825 GHz. These units would be used for wireless broadband providers.

The FCC requires systems in the new band and in the 5.250-5.350 GHz band to listen before talking, and have dynamic frequency selection and transmitter power control like cellular and PCS phones. They will be limited to one watt equivalent isotropically radiated power. These limitations are required because the primary users of these bands are radar transmitters and the new service cannot interfere with them. The FCC included a long test procedure to check if the unlicensed units comply with the technical requirements in the rules.

This action was one of the Spectrum Policy Task Force's objectives. This action was adopted on November 12, 2003 and released on November 18th.

From FCC Releases (www.fcc.gov) and the FEDERAL REGISTER (www.access.gpo.gov)



AM AUCTION FILING WINDOW OPENED

By Tom Smith

The FCC will open a filing window from January 26-30, 2004, for AM stations wishing to make major changes in their transmission systems. Because of this filing window, the FCC will not accept minor change applications from January 12th to January 30th.

During the filing window the FCC will accept applications for new AM stations and major modifications to existing stations. Any application filed in this window must protect any minor change application filed before January 12th. Any applications that are mutually exclusive with another application will go to auction. New stations or major modifications to existing stations in the expanded band (1610-1700 kHz) will not be accepted.

This notice was issued on November 6, 2003

From FCC Releases (www.fcc.gov)

Who's That Man

A photo showing the Chapter's first certification recipients has been posted in the archive section of the web site. There is one gentleman as yet unidentified. Please take a look and see if you know who this man is. You can click to the archive section from the front-page menu or use the direct address www.sbe24.org/archive/cert to reach the photo.

If you can identify the unknown person in front row center, please email the webmaster lcharles@wisctv.com and let him know. Thanks.



CHAPTER 24 SUSTAINING MEMBERS

RECENT RENEWAL:

WISC-TV 3

THANKS TO ALL OUR SUSTAINING MEMBERS:

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Wisconsin Public TV



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!



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FIRST CLASS MAIL

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

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DECEMBER MEETING and PROGRAM



**Society of Broadcast Engineers
CHAPTER 24 MADISON, WISCONSIN
Wednesday, December 17, 2003**

SBE HOLIDAY CELEBRATION DINNER

Join us for this month's meeting when we celebrate the Holidays and toast the New Year in a relaxing atmosphere at the Timber Lodge Steak House. We'll gather in the bar area before heading to the dining area.

You can sign-up for the dinner on the Chapter 24 web site, www.sbe24.org, and follow the links to the December Holiday Party sign-up sheet. Dress is casual.

**Happy Hour
6 PM - 7 PM**

**Dutch Treat Dinner
at 7:00PM**

**Timber Lodge Steak House
6613 Mineral Point Road**

**(intersection of Mineral Point Road & Grand Canyon Drive)
Madison, WI**

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

2004 UPCOMING MEETING/PROGRAM DATES:

<u>Day</u>	<u>Date</u>	<u>Program</u>
Thursday	January 15, 2004	Sound Devices
Tuesday	February 17, 2004	T.B.D./Nominations
Wednesday	March 17, 2004	T.B.D./Nominations

Program Committee:

Steve Paugh
277-5139

Fred Sperry
264-9806

Steve Zimmerman
274-1234