



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

Society of Broadcast Engineers

May 2004

Next Meeting:

**Tuesday,
May 18, 2004**

**In Game Services
and
WMTV Tower**

**Dutch Treat Dinner
at 5:30 PM**

**Babe's Bar and Grill
5614 Schroeder Road**

**Meeting and Program
at 7:00 PM**

**WMTV-TV Studio
615 Forward Drive**

Power Over Ethernet

By Steve Paugh

By now we should all be pretty comfortable dealing with networks in the broadcast plant. We have seen networks move from the front office to the back office. We have seen LAN speeds progress from 10 Mb/s to 100 Mb/s to Gigabit rates. Now comes the next step in network evolution—power over Ethernet.

LAN enabled devices have transitioned from the familiar CPU NIC cards to LAN enabled embedded devices. Some examples of LAN enabled embedded devices are data acquisition modules and web cameras. Using highly integrated circuitry, all of the functionality of a computer and NIC card can be put into a signal integrated circuit. You only need to add a peripheral device to this single IC solution to produce a LAN enabled device. What this means is that you can create a network friendly camera, control system or anything your imagination can conceive. All you need is a “power cube” to power it and a LAN connection.

Suppose you could power your nifty little device over the LAN cable eliminating the power cube. The IEEE (Institute of Electrical and Electronic Engineers) has a new specification to allow just that. IEEE standard 802.3af (802 is a registered trademark) describes a method to carry data and power over the Ethernet network. The key to making this work is backward compatibility with the existing installed base of Ethernet connectivity.

Linear Technology (on the web at linear.com) has produced a chip set to simplify the designer’s task of implementing power over Ethernet. I will not describe how to design such an interface, but rather describe the reasoning behind it.

The first rule of power over Ethernet is not to apply power to a device that is not expecting to see power at its input terminals. To do this we use a
(continued on page 8)

In This Issue:

Minutes	page 2
Amateur Radio News	page 3
FCC Rulemakings	page 9
WBA/SBE Workshop	page 10
Local Legals	page 11

Election Results

**Submitted by Steve Paugh,
Elections Chair**

The Chapter 24 election ballots were certified and counted on May 5th, 2004. There are 56-voting members in Chapter 24. We received 17 ballots and all ballots were certified as valid. Twelve ballots were collected at the April 15th, 2004 chapter meeting and 5 ballots were received prior to the ballot counting. Congratulations to our newly elected officers.

- Chairperson – Vicki Kipp
- Vice Chair – Tom Smith
- Secretary – Jim Magee
- Treasurer – Leslie Franzen

The nomination committee members were Steve Paugh, Jim Hermanson, and Leonard Charles.

END OF NEXTWAVE SAGA?

By Tom Smith

On April 20th, the FCC announced an agreement with Nextwave Communications, Inc. regarding Nextwave’s PCS licenses which have been in dispute since 1996. These licenses have been tied up in court since Nextwave filed for bankruptcy in 1998. At that time the FCC declared Nextwave in default of its auction payments, having paid only \$.5 billion; the FCC then reaucted the spectrum for \$17 billion. The original Nextwave bid was over \$4.8 billion for the spectrum. Nextwave sought protection in Bankruptcy Court and the Court ruled in their favor. Nextwave sold some of the spectrum to Cingular for \$714 million after the Court ruling.

The new agreement calls for Nextwave to return 90% of
(continued on page 7)

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:

Leslie Franzen (WMTV-TV)
W - 274-1515
ljfranzen@nbc15.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

April Business Meeting Minutes

Chapter 24 of the Society of Broadcast Engineers met on Thursday, April 15, 2004 at the Dane County 911 Center, Madison, Wisconsin for the chapter's monthly meeting. There were 11 members in attendance, 9 of whom were certified and 2 guests.

The meeting was called to order at 7:01 PM by Chapter Chair Vicki Kipp. The minutes of the March meeting as published in the April newsletter were approved. Newsletter editor Mike Norton announced the deadline for articles for the May issue will be Friday, May 7th at midnight. The folding party will be held Wednesday, May 12th at 5:30 PM at WKOW-TV. There was no Treasurer's report.

Certification Chair Jim Hermanson congratulated Dennis Baldrige on his recent CBNT certification. This was Dennis' second certification in the past year. Jim also reported that Windows versions of practice exams for 8 levels of certification are now available from the National office for \$27 plus \$3 shipping.

Frequency Coordinator Tom Smith reported that he has started to receive Prior Coordination Notice on coordination outside of our area. He advised that stations could start to receive letters and email from ComSearch and other outfits for 950 MHz, 7 GHz, and 13 GHz.

National Liaison Leonard Charles submitted his report which included a reminder that those who have not sent in their membership renewals are in the grace period before being dropped as a SBE member. National SBE is deep into NAB preparations. The SBE Membership meeting at NAB is Tuesday, April 20th at 5 PM. A 40th Anniversary Commemorative souvenir will be given to the first 100 members through the door.

Program Committee Chair Steve Paugh reported that the May meeting will be a presentation by In Game Systems on Tuesday, May 18th, location to be determined. In Games Systems do all of the large venue loud speaker/hi-fi systems. Steve also noted that with the July meeting being Taste of NAB on July 29th, the August meeting on the 11th would be less than 2 weeks later.

Under new business, elections ballots were cast.

Leonard Charles had reported that the Broadcast Clinic programming committee is looking for program ideas for the 2004 Broadcasters Clinic schedule for October 12-14.

Leonard also reported that the WBA/SBE Summer Engineering Workshop is June 16th at the Paper Valley Hotel in Appleton. Everyone should be receiving a flyer soon with the full details. The morning session will be titled "2GHz Spectrum Relocation" and will include a discussion by manufacturers about existing and new equipment and a panel of Wisconsin Frequency Coordinators. The afternoon session will be Terry Baun speaking on: a) "PCN (Prior Coordination Notice) for the Do It Yourselfer", b) "RF Exposure Update", and c) "FCC Mock Inspections update."

(continued on page 11)

AMATEUR RADIO NEWS

By Tom Weeden, WJ9H

- The first phase of a long-awaited broadband over power line (BPL) study the National Telecommunications and Information Administration (NTIA) released in April suggests it's possible to accommodate BPL technology while managing the interference risk. Now part of the US Department of Commerce, the NTIA manages spectrum allocated to federal government users and advises the White House on telecommunications issues. In a cover letter to FCC Chairman Michael K. Powell, Acting NTIA Administrator Michael D. Gallagher pledged that the NTIA would "work with the Commission to establish a firm technical foundation for responsible deployment of BPL to protect critical federal communications systems." But, Gallagher said, while BPL systems may present a valuable economic opportunity, "technical rules governing their deployment must address potential harmful interference to critical systems." Released April 27, NTIA Report 04-413 analyzes 10 million BPL system measurements and "provides a roadmap" to deploying BPL systems while managing interference, Gallagher's letter said.

Among items that the American Radio Relay League noted from the NTIA study: "Underestimation of the actual peak field strength is the leading contributor to high interference risks. Part 15 measurement guidelines do not address unique physical and electromagnetic characteristics of BPL radiated emissions." Also: "BPL networks reportedly can be successfully implemented under existing field strength limits. Accordingly, NTIA does not recommend that the FCC relax Part 15 field strength limits for BPL systems."

The NTIA study appeared the same day the ARRL appealed to President George W. Bush to withdraw his support for BPL and focus his administration's attention on "more suitable technologies" such as wireless broadband access. In an April 26 speech in Minneapolis, Bush advocated changing technical standards to encourage BPL deployment in the US. ARRL President Jim Haynie, W5JBP, told Bush in a fax that while the League supports universal and affordable broadband access, BPL is the wrong direction to take.

- The FCC says minor amendments to various Amateur Radio (Part 97) rules will become effective June 1. The regulatory changes, which the FCC made on its own motion rather than in reaction to any petitions, appeared May 5 in the Federal Register. "This document makes minor amendments to various rule sections to clarify or eliminate duplicative language or conform them with other rule sections," the FCC said.

The most extensive and substantive Amateur Radio rule change involves §97.307(d), which defines spurious emissions. The updated language imposes a slightly higher standard on newer transmitters or amplifiers of any power level. Starting June 1, the rule will provide that:

- The mean power of any spurious emission from HF transmitters or external RF power amplifiers installed after January 1, 2003, must be at least 43 dB below the mean power of the fundamental emission.
- The mean power of any spurious emission from HF transmitters or external RF power amplifiers installed on or before January 1, 2003, must not exceed 50 mW and must be at least 40 dB below the mean power of the fundamental emission. If the mean power output of such as transmitter is less than 5 W, the attenuation must be at least 30 dB.

Still exempt from the provisions of §97.307(d) are transmitters built before April 15, 1977, or those first marketed before January 1, 1978.

The FCC continues to seek comments on the various Amateur Radio proposals put forth in WT Docket 04-140. Comments are due by Tuesday, June 15, and reply comments by Wednesday, June 30. Among other changes, the FCC has recommended adopting the ARRL's "Novice rearming" plan.

(Excerpts from the American Radio Relay League's www.arrl.org web site)



John Reuter
Director of Technology
johnr@alphavideo.com
7711 Computer Ave.
Edina, MN 55435-5494
p 952.896.9898
f 952.896.9899
c 612.889.6540



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
DIGITAL SOLUTIONS
Broadcast/Professional



MADISON
CBS
WISC-TV
3

Madison Video Repair Still Going Strong

By Vicki W. Kipp

Long after most electronics repair shops have closed their doors, Madison Video Repair on Madison's South side still manages to earn a living.

From 1976 – 1980, Lynne Smith worked in the Madison office for Avonix, a Milwaukee based video sales company. Challenged by inflation and a recession, Avonix decided to close its Madison branch. Smith and a technician co-worker negotiated a deal with Avonix to open their own business, Madison Video Repair, in the existing Avonix building. Avonix maintained a salesperson in Madison and eventually re-opened a Madison office. Avonix was eventually sold to Video Images/MCSI.

The very same week that Madison Video Repair opened for business, a consumer home video rental store called The Video Station came to town. The Video Station rented and sold videotapes and VCRs. Sony introduced consumer Betamax in 1976. When home video rental was pioneered in the early 1980s, it was common for customers to rent both a video and a VCR from the video store. The owner of the Video Station contacted Madison

Video Repair because he needed someone to repair his rental equipment. Madison Video got off to a great start because they had their existing clients plus a big new account: The Video Station.

After five years in business, the workload at Madison Video Repair was growing so fast that Smith was having difficulty keeping up. Her husband, Frank Smith, quit his job as a carpenter at the University of Wisconsin to become Lynne's business partner at Madison Video Repair. Frank and Lynne liked the idea of being their own boss. The Smiths bought out the technician's share of the business, and have enjoyed being in business together for 23 years now.

When Madison Video Repair (Figure 1, 2) opened in 1981, they fixed ½-inch format video reel-to-reel machines and Betamax VCRs. The ½-inch reel-to-reel videotape machines—which followed the EIAJ standard—were manufactured by several Japanese companies beginning in 1969. Manufacture of ½-inch format gear ended soon after ¾-inch cassettes were introduced. After a few years, Madison Videos' clients began bringing in VHS VCRs and 8-mm video cameras. Next,

there was CCTV and later digital surveillance installations and repairs. Now, they repair DVCPRO, DV format equipment, LCD projectors, and DVD players.

Although the technicians would like to repair every piece of broken equipment that is



Figure 2. Owners Frank and Lynne Smith greet customers.

brought in to Madison Video Repair, this isn't always financially feasible. Frank Smith notes, "We've never had a decent technician that can accept that a broken item is not worth fixing. They can't just walk away from a broken item. That's not the way that they think." Lynne adds, "Not only do the technicians want to fix the broken item, but they want to understand how it is engineered. Meanwhile, I have figure out how to pay the rent. I may have to encourage them to install the replacement component and move along."

An independent commercial video repair shop such as Madison Video Repair is a rarity. The next closest independent video repair shop is in Chicago. Most repair shops are part of a sales company and almost all of these only service the products that they sell. Their primary goal is sales, not repair work. Madison Video Repair, on the other hand, exists to repair video equipment whenever possible to the extent that repairs are cost effective for the client and supported by the product manufacturer. Some manufacturers find it is not workable for them to do component level repair and redirect clients to Madison Video Repair for service.

Madison Video Repair considers it an advantage to be an independent

(continued on next page)



Figure 1. Madison Video Repair has been at their Greenway Cross shop for decades.

wave
COMMUNICATIONS INC.
Antenna & Tower Service Since 1968
4587 Hwy. TT
Sun Prairie, Wisconsin 53590
www.wave-com.com

Russ Prieve
Erection Manager/
Project Manager
Mobile: (608) 575-2888
rwpriev@aol.com

PCS
Cellular
Erection
Two Way
Microwave
Phone 608-837-9050
Fax 608-825-9050

JESSE MIX
CBT
ACCOUNT EXECUTIVE - SATELLITE & VIDEO SERVICES
EMPLOYEE-OWNER SINCE 1997
jam@norlight.com

NORLIGHT TELECOMMUNICATIONS
3617 OAKTON ST., SKOKIE, IL 60076
847-568-7195 888-255-8755
FAX/847-674-7485 PAGER/708-988-1934

Token Creek
MOBILE TELEVISION
incorporated
John Salzwedel

3893 Terrace Circle, DeForest, Wisconsin 53532
Office: (608) 238-7575 Fax: (608) 238-4955 Cell: (608) 235-9632
Web Page: www.tokencreek.com E-Mail: tcp@tokencreek.com

Madison Video Repair Still Going Strong (continued)

shop not tied to just one manufacturer. Manufacturers repair facilities that constantly repair the same equipment can get in a rut. Since Madison Video Repair sees a diverse selection of equipment and problems, they are open-minded when troubleshooting the cause of a problem.

STAFF

Madison Video Repair offers a wide range of services with a staff of eight people. They have an easier time recruiting people to be equipment installers than they do recruiting people to be video repair technicians. Frank Smith does most security installations himself. Installers run in to many challenges on the job because they run into many obstacles while installing cable and equipment. Knowledge of building construction is an important asset for installers.

When hiring electronic technicians, Madison Video Repair seeks people with electronic knowledge, who have mechanical skills, and have the hand coordination to work on very small mechanical assemblies. One of their maintenance technicians does jewelry repair on the side. Computer skills are valuable for repair technicians because some equipment needs to be connected to a computer in order to perform testing and alignment.

Finding an electronic technician who is able to repair video equipment to the component level is difficult. Most technical schools don't train students in component level electronics repair. When Madison Video finds people with the desired skill set, many of these applicants lose interest in the position once they learn that they would be working with video equipment instead of computers. Having an existing technician train less experienced new

hires is not a workable solution for Madison Video Repair. Madison Video Repair's customers demand fast and accurate service and techs do not have time to teach a new tech and still meet the customer demands.

Frank and Lynne gratefully acknowledge their staff's role in the success of Madison Video Repair. "Having good people work here is why we're still in business after 23 years," credits Lynne. "We're not a real structured shop. We know what we have to do. The staff is pretty independent. We trust their equipment evaluations," says Frank. Lynne concludes, "Nobody is paid on commission. Honesty and quality are essential. Our technicians know that they can't shotgun an estimate; they have to be accurate."

DISPOSABLE ELECTRONICS

Servicing new consumer electronics items is much more difficult than it was with older analog electronics. Besides which, retail costs for consumer electronics have dropped to the point where it isn't feasible to repair them. Although consumer equipment repair only makes up about 5% of their business, Madison Video Repair still services consumer VCRs, DVD players, and camcorders.

Given the choice of spending \$75 to buy a new VCR or DVD player or spending almost as much to repair it, most consumers will choose to buy a replacement item that will have a long life ahead of it and may have new features that the broken electronic item lacked. Lynne Smith notes that the failure rate on newer consumer electronics is lower than what we've been accustomed to in the past.

There are a few customers who are

sentimental about their older consumer electronics devices who still bring their aged VCRs in for repair. Madison Video Repair can fix older consumer devices as long as the manufacturer still supports that product by selling replacement parts. If the customer insists on repairing an unsupported device, Madison Video Repair can try to get generic parts for that device

With VCRs, there is a logical threshold, which can be used to determine if it makes sense to repair a device. Most VCRs manufactured since 1996 are direct drive. A direct drive VCR uses a motor and circuits to drive the gears instead of using rubber belts and idlers to move gears. Motor-driven VCRs are very reliable. Belt- and idler-driven VCRs inevitably require periodic maintenance because the rubber parts stretch and wear out.

With camcorders, it is easier to justify the cost of repair versus the cost of buying a replacement. Lynne Smith notes that many Madison consumers bought Sony camcorders. She explains that Sony offers phenomenal support for their equipment. Madison Video Repair can still get replacement parts for Sony 8-mm cameras. 8-mm cameras are generally worth repairing if the repair cost stays below the roughly \$400 cost of a new 8-mm camcorder. Unfortunately, some manufacturers charge so much for replacement parts for 8-mm cameras that it becomes cost-prohibitive to fix them. Madison Video Repair still receives a few 8-mm cameras each week to repair.

Consumer DVD players are difficult to repair in a cost-effective manner. Madison Video Repair has done a little business repairing JVC and Panasonic DVD players. The DVD player has gotten so inexpensive that it is difficult

(continued on page 6)

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

SCHARCH ELECTRONICS COMPANY	
AT&T * AVAYA * Lucent Technologies	
Business Communications Service since 1983	
1105 Middleton St., Madison, WI 53717 Tel: 608 831-2266 or 800 831-2266 Fax: 608 831-7581 or 800 831-4542 www.Scharch.net	
Stan Scharch Stan@Scharch.net	

	5727 Tokay Boulevard Madison, Wisconsin 53719
WKOW Madison	(608) 274-1234 Fax: (608) 274-9514

Madison Video Repair Still Going Strong (continued)

to rationalize the expense of repair unless it is still under warranty.

Consumer electronics repair makes up 5% of their business, industrial repair is 20% of their business, and *DVCPRO*-broadcast equipment repair comprises the remaining 75% of business for Madison Video Repair.

INDUSTRIAL

Madison Video Repair sells, installs, and services time-lapse security video recorders, duplication recorders, editors, and cameras to hospitals and stores. Hospitals and many universities use high-end S-VHS recorders. In particular, Madison Video Repair gets a lot of camera repair business from community access television stations that loan out video cameras to community members.

Repairing DV videotape machines can be an expensive proposition. When a component or board in a DV machine fails, it usually ends up being a \$300 repair. Even if the cause of failure in a DV deck is simple to repair, Madison Video Repair may have to buy \$300 worth of break-out cables to even be able to work on it. They need to have the opportunity to work on ten or fifteen of that brand of deck before they can break even on the cost of buying break-out cables.

Madison Video Repair repairs overhead LCD projectors from Sharp, Panasonic, and JVC. Often, the projector LCD panel needs to be replaced. If a repair can be performed under the three-year parts and labor warranty that most projectors come with, then it makes sense to do so. However, if a projector malfunctions outside of its warranty period, often it isn't cost-effective to repair that projector. The projector parts are so expensive that it is usually more logical to replace the projector.

SECURITY INSTALLATION

Security equipment sales and installation for businesses make up a healthy chunk of business for Madison Video Repair. The Smiths note that they face a lot more competition in the

security business than they do in the repair business. "The competition ranges from your trunk slammers to your viable security professionals who invest in a shop, overhead, and insurance," summarizes Lynne Smith.

Some of their biggest projects have been installing security cameras in casinos. For example, a typical casino installation would include 300- 1200 cameras. Madison Video Repair has installed security cameras in the Pottawatomie, Mole Lake, Majestic Pines, Ho-Chunk, Rainbow, and De Jope Casinos.

If the client provides an AutoCAD drawing of their facility, Madison Video Repair can create an AutoCAD drawing of where equipment will be installed.

BROADCAST

Madison Video Repair repairs many Panasonic *DVCPRO*, JVC, and Sony *DVCAM* videotape machines. When the DV format was introduced in 1995, no one foresaw the extent to which capacitors would need to be replaced on the DV machines. Now, replacing capacitors on DV machines is a major part of the shop workload. In recent years, the failure of surface mounted electrolytic capacitors due to deterioration from age and heat has become increasingly common. New miniature capacitors don't last nearly as long as traditional full-size capacitors. In the late 1980s, manufacturers switched to miniaturized capacitors with smaller and thinner housings, wire leads, insulation, and seals to contain the electrolyte fluids. These smaller capacitors often experience internal failure after six to eight years. Capacitor failure can allow electrolyte to leak out, corroding the printed circuit board (PCB) below the capacitor. Although some corroded PCBs

can be cleaned and repaired, some leaks are bad enough where it becomes cheaper to replace the entire board rather than repair it. The cost of refurbishing an aging board with a total recap[acitorization] as preventative maintenance is usually less than the cost of board replacement after a capacitor has leaked.

Broadcasters often prefer to outsource capacitor replacement on their DV gear since there are typically 7 to 100 capacitors on a (PCB) to be replaced. Although some engineers prefer to replace dried out or defective capacitors selectively, Madison Video Repair prefers to replace all of the capacitors simultaneously. (Figure 3) Frank Smith acknowledges that it is possible to repair a failed VT by only replacing two capacitors, but that same VT will be much more likely to require additional caps very soon. Replacing all of the capacitors practically guarantees that the VT won't require additional service for a while.

Based on their great track record with repairs, Madison Video Repair gives a 6-month warranty on their repairs. If a repaired item requires service within 6 months of the repair, Madison Video Repair will pay for shipping and fix the item at no cost. "This warranty is unheard of in the industry," explains Lynne Smith, "We're very confident. We can only do that because our technicians are good. They put a lot of effort into looking at the boards."

(continued on next page)



Figure 3. When Madison Video Repair replaces capacitors on DV gear, they provide clients with a photo of the capacitors replaced.

Madison Video Repair Still Going Strong (conclusion)

Madison Video Repair occasionally repairs video monitors, but finds that industrial monitors don't often fail and that most companies don't want to pay to ship old monitors out for repair. Although Madison Video Repair has done consumer television repair in the past, they now redirect this business to a local independent TV repair shop specializing in consumer TV sets.

TURNAROUND

Madison Video Repair evaluates equipment within 24 hours of receiving it. They strive to respond to any technical questions or part requests within two days. Delivering on their pledge to work on a machine the day that they receive it has required Madison Video Repair to devote resources to scheduling logistics.

Spending the money to keep an inventory of commonly needed parts in stock and having a good relationship with a part supplier helps Madison Video Repair to meet their fast turn around pledge. Since the store is committed to getting jobs done quickly, they don't have many machines waiting for repair when staff finishes their existing jobs. "It's a juggling act," acknowledges Lynne, "There are times when we don't have anything in the shop and the next day we have fifteen machines that all need to be fixed promptly."

The repair industry is changing. In the past, manufacturers typically had numerous different service centers scattered across the country. Now, almost all have consolidated those service centers into just a few on the coasts and Midwest. The manufacturers have just as hard a time finding qualified repair technicians as smaller shops and broadcast stations do.

PARTS

Madison Video Repair gets few requests to sell parts to clients who do their own maintenance, but can usually supply parts if requested. Madison Video Repair encourages clients to order parts directly from the manufacturer to get the best rates, but will supply parts as a customer courtesy if the client prefers to order from Madison Video Repair. Madison Video Repair offers financing terms that some clients prefer over the manufacturer's terms.

ADAPTATION

It is only through adaptation, from Beta to S-VHS to 8-mm to DV formats, that Madison Video Repair has been able to stay in business these past 23 years. When asked what the future holds for the video repair business, Lynne Smith responded, "You just never know. I think that if it needs to be fixed, and we're still alive and healthy, we'll fix it. But I don't have a clue what format it's going to be."

Video Formats

<u>Introduced</u>	<u>Format</u>
1956 ...2"	Quadruplex
1969 ... 1/2"	EIAJ Reel-to-Reel videotape
1969 ... 3/4"	Umatic
1971 ... 1"	B
1972 ... 1"	C
1976 ...	Sony Consumer Betamax
1977 ...	Matsushita Consumer VHS
1985 ...	Betacam
1987 ...	MII
1987 ...	Digital D1
1988 ...	S-VHS
1988 ...	Digital D2
1989 ...	Hi8 & Video 8
1989 ...	Betacam SP
1990 ...	Digital D3
1992 ...	CD-ROM
1992 ...	DCT
1993 ...	Digital D5
1993 ... 1"	High Density HDVS/ HDD 1000
1994 ...	Digital Betacam
1995 ...	DV Digital Video
1997 ...	DVD-Video (DVD Book B)
1998 ...	DIVX (Support ended on 6/30/2001)

SBE 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.

NEXTWAVE SAGA (continued from page 1)

their spectrum which is left after the Cingular sale. The spectrum return and the cash recovery to the FCC totals \$4 billion, of which Nextwave pays the FCC \$1.6 billion cash from the down payment and proceeds from the Cingular sale. The FCC will also require Nextwave to pay additional cash if any of the spectrum it retains is sold at a dramatic increase in value. The agreement also restricts further claims by Nextwave, ensures timely payments from Nextwave, and avoids the use of debt instruments by Nextwave that could result in further default.

From FCC Releases (www.fcc.gov)



Christine Chinchilla
Broadcast Sales Specialist

40W267 Keslinger Road
PO Box 393
LaFox, IL 60147-0393
USA

Phone: (800) 882-3872
Ext. 2738
Fax: (630) 208-2662
E-Mail: chrisc@rell.com

www.broadcast-richardson.com



7847 BIG SKY DRIVE
MADISON, WISCONSIN 53719
(608)833-0047 • FAX(608)833-5055



1355 ARMOUR BOULEVARD
MUNDELEIN, IL 60060-4401
(800) CABLE-IT • (847) 949-9944
FAX: (847) 949-9595
E-MAIL: SALES@CLARKWC.COM
WWW.CLARKWC.COM

Power Over Ethernet (continued from page 1)

challenge and response technique. We ask the device "can you receive power? There are only two answers – yes, or no response at all. A LAN power enabled device will reply with a yes, legacy equipment will provide no reply at all, in fact, legacy equipment will not even know that a question has been asked. How can we ask a question without disrupting legacy devices?

The data voltages present on a standard LAN connection are in the range of 5 to 10 volts peak-to-peak. All Ethernet power enabled devices (PD) are defined to present an impedance of 25K-ohms to the power sourcing equipment (PSE). Legacy devices have much lower character

impedance due to the transformer present on all NIC devices.

The PSE device probes the port with a voltage of 2.7 to 10.1 volts and calculates the device impedance from the current drawn. If the device proves to be PD, an optional second probe voltage of 15 to 20 volts is used to determine how much power the PD requires. During this second test, a power classification resistor is switched into the PD circuitry. The current drawn will tell the PSE how much current the device needs. If sufficient power is available in the PSE, the full operating voltage of 48 volts DC is applied to the PD. The PSE can deny power to a device if it determines that the new device will exceed the total power

available from the PSE. The PSE will also sense when the PD has been disconnected, removing the power to prevent damage if a legacy device is then connected to the port.

How much power can a PSE port supply? There are currently 5 classes of power capability defined by the power classification resistor test, ranging from 4 to 13 watts. This is enough power to supply most LAN enabled devices. This would be an ideal solution for powering remote control panels. With the proliferation of broadcast devices using virtual private network topologies, it is my hope that we will soon be dealing with many IP enabled control devices that will be using power over Ethernet technology.

SBE Short Circuits – May 2004

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

NEW CERTIFICATION SOFTWARE

New SBE-designed certification sample test software is now available. The new software is Microsoft Windows-based and will replace the current DOS-based software. There is a new sample test available for Broadcast Technologist, Audio Engineer, Video Engineer and Broadcast Networking Technologist. New sample tests are also available for Broadcast Engineer and Senior Broadcast Engineer in both radio and television.

Sample tests include 50 to 100 questions and indicate when an incorrect answer has been given as well as resources to learn more about a subject. The cost for each SBE CERT preview practice test is \$27 plus \$3 shipping. Contact the National Office to order a copy.

SPECIAL CERTIFICATION PRESENTATIONS COMING

The SBE Certification Committee is encouraging each chapter to hold a Certification Night (or Day) as part of an upcoming chapter meeting. The objective is to encourage more

members and others to become certified by removing any the perceived mysteries they may have. Though membership in SBE is always encouraged, you don't have to be a member of SBE to become certified.

A special Power Point presentation has been developed that explains the SBE Certification Program in an informative and comprehensive way. The Committee hopes that each chapter will schedule their special Certification Night between June 1 and December 31 of this year. A packet which contains the Power Point presentation, other helpful information, and Certification applications is available to each chapter. Local Chapter Certification chairmen may contact the Certification Department at the National Office to request a packet.

EDUCATION COMMITTEE FORMED

SBE President Ray Benedict has announced the establishment of a new committee to address educational needs of members and others involved in the technical side of broadcasting. Benedict appointed former member of the Board, Fred Baumgartner, CPBE, CBNT to chair the new Education Committee. Baumgartner is Senior Systems Applications Engineer for

Leitch Corporation and has held engineering positions at a number of television and radio stations during his career. He also is a Trustee of the Ennes Educational Foundation Trust.

The Committee held its first meeting on April 18 during the NAB convention in Las Vegas. If you are interested in serving on the Education Committee, please contact Fred at kg0ki@arrl.net (kg zero ki).

CANDIDATE SLATE FOR NATIONAL BOARD TO BE ANNOUNCED IN JUNE SIGNAL

The SBE Nominations Committee will announce its slate of candidates for national officers and directors in the June issue of the SBE Signal. Nominations directly from members will be accepted through July 23, 2004 and will be added to the slate of candidates. Ballots will be mailed to voting members by August 6. Ballots must be returned to the National Office by September 9 and will be tabulated that night.

For more information about becoming a candidate, contact, Ted Hand, CPBE, Nominations Committee Chairman at ted.hand@wtkr.com or Executive Director, John Poray, CAE at the National Office.



FCC Rulemakings

Compiled by Tom Smith

PROPOSED

**MM Docket No. 99-325
Digital Audio Broadcasting
Systems and Their Impact on the
Terrestrial Radio Broadcast
Service**

The FCC has adopted a Further Notice of Proposed Rulemaking and Notice of Inquiry on Digital Radio. The Further Notice of Proposed Rulemaking asks for input on how many of the rules for radio broadcasting should be applied with digital transmission of radio broadcast audio. The Notice of Inquiry asks for input on the creation of copy protection of music that is broadcast in the digital domain by radio broadcasters.

The issues that the Commission asked for input on in the Further Notice of Rulemaking starts with the question of whether the FCC needs to provide an incentive for the eventual transition to all-digital transmission, or if there are marketplace incentives to facilitate the transition to an all digital system. The FCC then tackled service rules. These are rules that could allow for datacasting or multicasting of more than one program. If the FCC were to allow for other services to be carried beside the single regular broadcast stream, should there be a required amount of programming in the highest fidelity mode. If datacasting or any other subscription service such as paid programming is allowed, what should the rules be, and should they be similar to the current rules for Subsidiary Communication Authorization for FM subcarriers, or like the rules for DTV where any paid service would be subject to a 5% fee on gross revenue from the service going to the FCC.

The FCC also asked if programming rules should be different for digital transmissions, including if station IDs should be the same, and if public service and political broadcasting rules should be the same for all program streams if multicasting was allowed. Current program rules on local programming

origination, time of operation, network carriage, payola, notation of financial consideration, use of recordings, and contest practices were described, and it was asked if changes were needed. Questions on the handling of EAS in the digital domain and with multicasting was discussed— with the FCC stating their conclusion is that EAS should be required on all programming. They wanted comments on cost to broadcasters and what equipment development would be needed.

The big issue for AM stations was operation at night with the IBOC digital systems and its effects on 2nd adjacent stations. The FCC released a separate press release on the rulemaking for possible nighttime AM IBOC operation. For FM stations, a number of technical rules on determining and measuring power levels and bandwidth were raised, as well as some interference issues including Channel 6 problems. Comment on dual FM antennas was sought, as well as the use of translators and boosters to solve coverage problems.

The FCC asked for input on any possible rule changes that could allow for non-commercial stations to provide fee based services with any excess data capacity. Low-power FM conversion, formal adoption of technical standards, Patent fees, and equipment authorization and license forms were discussed as part of the rulemaking.

The Notice of Inquiry dealt with copy protection of digital audio. The record industry raised concerns about the potential for receivers to be programmed to automatically record lists of songs that the listener selected. Other copy protection issues that the record industry raised have been the same as those concerning Internet file sharing. The FCC has no proposals for rules limiting recording of digital radio, but wishes to know if they should start rulemaking before too many receivers are in place and it would be difficult to implement later.

This notice was adopted on April 15, 2004 and released on April 20,

2004. Comments are due on June 16, 2004, and replies on July 16, 2004.

**WT Docket No. 02-55
Improving Public Safety
Communications in the 800 MHz
Band
Consolidating the 900 MHz
Industrial / Land Transportation
and Business Pool Channels**

**ET Docket No. 95-18
Amendment of Section 2.106 of the
Commission's Rules to Allocate
Spectrum at 2 Ghz for use by the
Mobile-Satellite Service**

**ET Docket No. 00-258
Amendment of Part 2 of the
Commission's Rules to Allocate
Spectrum Below 3 GHz for Mobile
and Fixed Services to Support the
Introduction of New advanced
Wireless Services, including Third
Generation Wireless Services**

**IB Docket No. 01-185
Flexibility for the Delivery of
Communications by Mobile
Satellite Providers in the 2 GHz
Band, and the 1.6 / 2.4 GHz Bands.**

A consensus plan has finally been presented for the relocation of broadcasters from the 1990-2025 MHz portion of the 2 GHz Broadcast Auxiliary Band. The National Association of Broadcasters (NAB), the Association of Maximum Service Television, Inc. (MSTV) and Nextel Communications, Inc. have reached an agreement on the transition of broadcasters to the smaller 2 GHz BAS band.

Nextel has requested that the FCC allocate part of the 1990-2025 MHz band to Nextel so that both Nextel and the public safety users in the 800 MHz band could reorganize the band in such a way to allow for a decrease in interference. Currently the various users of the 800 MHz band are spread into a number of small groups. The new plan would allow for consolidation of the frequency groups. Public Safety would also gain spectrum that Nextel would give up for the right to move some its service to the 2 GHz band.

For the right to move to the 2 GHz

(continued on page 10)

FCC Rulemakings (continued from page 9)

band, Nextel would pick up the entire cost of the relocation of the BAS users to the new smaller band. Currently the Satellite services that would use the 1990-2025 MHz band would have to pay for the transition and the way the current plan is written, most broadcasters would have to foot the bill and then wait for up to ten years to maybe get repaid.

In the new plan, broadcasters would make the transition in two steps with the first step occurring within the first 18 months, and would include all the markets that Nextel plans to immediately roll out service in and the markets adjacent to those first deployed. The second step would have the rest of the markets continue to operate on the seven original 2 GHz channels until Nextel begins service in those markets and they need to relocate. That should happen in two and a half years. Nextel, the MST, and the NAB, working with the SBE will work out the schedule to make this transition.

The satellite services will still be required to pay a pro-rated portion of the broadcasters costs at a later date

and those payments will go to the Federal Government. The cost of relocation could run as high as \$.85 billion. The plan seems to say that Nextel will pay both their share and the satellite companies share of the broadcasters costs for use of the spectrum, and the government gets paid for part of Nextel's share of the spectrum from the pro-rated portion of BAS transition costs from the satellite service providers.

According to articles posted on the Washington Post website this may not be a done deal. There are objections from Verizon, Cingular and the Cellular Telecommunications & Internet Association that they would like to bid for this spectrum at FCC auction. They have claimed the spectrum is worth \$7 billion. The total that the government could get from Nextel is \$1.5 billion. There has been some opposition from members of Congress because of the lack of an auction.

The plan was filed with the FCC on May 3, 2004. To find a copy of the plan, go to the MSTV website and there is a link to the document on the FCC website.

ET Docket No. 01-75 Revisions to Broadcast Auxiliary Service Rules in Part 74 and Conforming Technical Rules for Broadcast Auxiliary Service, Cable Television Relay Service and Fixed Services in Parts 74, 78, and 101 of the Commission's Rules.

On April 21, 2004 the FCC once again ruled against a petition by the Society of Broadcast Engineers Inc. for a second stay of the rules for coordination of fixed aural and video stations. The Commission stated that the SBE's objections concerning remaining problems with the ULS database were not a major concern for coordination purposes and that broadcasters were given enough time to correct errors. The FCC ruled that it will allow applications to corrected information on data concerning receive sites to be considered as applications for minor modifications and will not require coordination.

This notice was released on May 4, 2004.

(From FCC web site www.fcc.gov)

WBA/SBE SUMMER ENGINEERING WORKSHOP

This year the WBA/SBE Summer Engineering Workshop will be held at the Radisson Paper Valley Hotel in Appleton on Wednesday June 16th. Here is the schedule for the day:

8:30am	<i>On Site Registration, Coffee/Rolls provided by WBA</i>
9:00am-Noon	<i>2 Ghz Re-allocation (Overview, Options, What to Do)</i> WI SBE Frequency Coordinators, Kent Aschenbrenner-WTMJ-TV, Art Williams-WBAY TV
Noon-1:30pm	<i>Lunch</i>
1:30pm-4:00pm	<i>"PCN (Prior Coordination Notice) For the Do It Yourselfer"</i> <i>"RF Exposure Factor"</i> <i>"FCC Mock Inspection"</i> By Terrence M. Baun, CPBE Criterion Broadcast Services
4:00pm-6:30pm	<i>WBA EXHIBIT RECEPTION</i>
6:30pm-7:30pm	<i>Dinner</i>
7:30pm-8:30pm	<i>"Political Analysis 2004" By Charlie Cook</i>

\$35.00 for the day and evening, \$50.00 for two days (second day includes Management seminars and the evening Hall of Fame Banquet)

Call the WBA to register at 608-255-2600. To reserve a room at the Paper Valley Hotel, call 800-242-3499. Tell them you are with the Wisconsin Broadcasters Association.

The schedule of EAS Required Weekly Tests (RWT) and Required Monthly Tests (RMT) times to be sent on Wisconsin Public Radio is listed on the web. It can be found at: www.wpr.org/eas



ROSS
Switchers, Keyers,
& Terminal Gear

Scott Snedden
Regional Sales Manager
ssnedden@rossvideo.com

Tel: (630)562-2063 Fax: (630)562-2241
423 Summit Avenue, West Chicago, IL, USA 60185

www.rossvideo.com



Tom Sibenaller
Sales Representative

ROSCOR

Roscor Wisconsin
W6428 Schilling Road
Onalaska, WI 54650
phone: 608-784-6702
fax: 608-785-0505
e-mail: tsibenaller@rosacor.com



LOCAL LEGALS

Compiled by Tom Smith

PROPOSED

FM Translators have been applied for by the following groups. 103.1 MHz for Beaver Dam, WI by Sister Grace, Inc. and 107.9 MHz for Madison by the Board of Regents of the University of Wisconsin System. Those applications were announced on May 3, 2004. An application for a translator on 104.9 MHz by Edgewater Broadcasting, Inc. was announced on April 26, 2004.

GRANTED

FM Translator applications have been granted for 101.7 MHz in Ripon, WI for Evangelical Ministries, Inc. and for 107.9 MHz in Plymouth, WI for Sister Grace, Inc. Announced on May 3, 2004.

Sale of a translator on 92.1 MHz from Ripon Baptist Church, Inc. to VCY America, Inc. was granted. Action was announced on April 26, 2004.

**WAK (AM) 1510 KHz,
Waukesha, WI**

The FCC approved the sale of WAK (AM) from Walt-West Broadcasting to Good Karma Broadcasting. The action was announced on April 14, 2004.

From FCC web site (www.fcc.gov)

Thanks to Fred Sperry for arranging the April meeting and program. Thanks also to Rich McVicar for the tour of the Dane County 911 Center.



821 University Ave. Phone 608.263.2121
Madison WI 53706 Fax 608.263.9763
www.wpt.org

**Amber Alert System
Test Planned**

By Leonard Charles

The Wisconsin Amber Plan calls for an annual test during the week of May 25th, which is National Missing Children's Day. The actual CAE, Child Abduction Emergency Code, will be used for this test. Broadcasters and cable systems may either make note of the reception of this test and then abort it without re-broadcasting it, or they may elect to broadcast the test as a public awareness tool.

The audio portion of the test will state that it is a test. However, the visual "crawl message" will indicate that a Child Abduction Emergency exists. Therefore, TV stations and cable operations that carry the test should ensure that the visual background behind the crawl message says, "This is a test." This will ensure that the hearing-impaired, or just someone with the TV sound turned down, will not mistake the test for an actual alert. Watch for a notice from the WBA and on the SBE email list servers for the exact date and time the test will be run.

**April Business Meeting
Minutes (continued)**

There was a discussion about the concerns of Broadband Over Power Lines.

The meeting adjourned at 7:17 PM

The program was a tour of the Dane County 911 Center by Operations Manager Rich McVicar. Special thanks to Fred Sperry for setting up this month's program.

Submitted by Jim Magee, Secretary

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!

**CHAPTER 24
SUSTAINING
MEMBERS**

RECENT RENEWAL:

WMTV-TV 15

**THANKS TO ALL OUR
SUSTAINING MEMBERS:**

- Alpha Video**
- Belden Wire and Cable**
- Broadcast Richardson CTI**
- Clark Wire and Cable**
- Graybar**
- Harris Corporation**
- Heartland Video Systems**
- maney-logic**
- Norlight Telecommunications**
- 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**
- Wave Communications**
- Wisconsin Public TV**



PAT KELLER
SALES REPRESENTATIVE
COMM/DATA

1301 W. BADGER ROAD
MADISON, WI 53713
608-255-0005 OR 800-825-1505
FAX 608-255-3656



CUSTOMER SERVICE 800-955-1330
CUSTOMER SERVICE FAX 414-778-1495
EMAIL patrick.keller@gbc.com



SONY Sean O'Reilly

Broadcast Account Manager

Sony Broadcast & Production Systems
1200 North Arlington Heights Road MD-11
Itasca, Illinois 60143
Telephone (630) 773-7640
Fax (630) 773-6124
Mobile (630) 697-5458
E-mail sean.o'reilly@am.sony.com

Product Operations Support (800) 883-6817
Emergency Tech. Support (408) 435-8910
Parts Orders (800) 538-7550



SBE NATIONAL



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



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



<http://www.sbe.org>

SOUND DEVICES

www.sounddevices.com
 Portable Audio Products for
 Radio, Television, Film, and Music Production

Sound Devices, LLC
 300 Wengel Drive
 Reedsburg, WI 53959 USA
 (608) 524-0625



WMTV
 MADISON

615 Forward Drive
Madison, WI 53711
608-274-1515
www.nbc15.com

Richard J. Swiderski
 Director of Sales Operations
 Customer

600 West Thorndale Avenue
 Itasca, Illinois 60143-1395
 Fax 830.737.0805
 Video 700.737.5200
 Web www.2462.com
 E-mail rjswiderski@swid.com

630.787.8888 ext. 212



SWIDERSKI
 Electronics Inc.
 Sales Service-Rental-Engineering-Integration

HARRIS CORPORATION

HARRIS

Broadcast Communications Division
 1913 Fairoak Road
 Naperville, IL USA 60565

TOM HARLE
 District Sales Manager-Radio

phone 1-630-420-8899
 cell phone 1-630-235-8126
 fax 1-630-420-9171
tharle@harris.com
www.harris.com



<http://www.CTIinfo.com>
 email - cti@CTIinfo.com
 Phone - 608-831-4636
 Fax - 608-836-1840

VCR Controllers
 Character Generators
 Satellite Antenna Controllers
 Broadcast / Cable Television Consulting



RS-422 Remote Control

VTR2.0

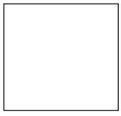
REW FFWD STOP STBY REC PLAY

Terminal Block for switches and format

maney-logic 277-6001



SBE Chapter 24 Newsletter
P.O. Box 46291
Madison, WI 53744-6291



FIRST CLASS MAIL

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

© 2004 by SBE Chapter 24, Inc. Views expressed herein do not necessarily reflect the official positions of the Society, its officers, or its members. SBE Chapter 24, Inc. regrets, but is not liable for, any omissions or errors. The Chapter 24 Newsletter is published twelve times per year. Other SBE Chapters are permitted to use excerpts if attributed to the original author, sources, and SBE Chapter 24.

MAY MEETING and PROGRAM



Society of Broadcast Engineers CHAPTER 24 MADISON, WISCONSIN Tuesday, May 18, 2004

In Game Services and WMTV Tower

This month we will meet with audio-visual consultant Danny Abelson, whose company *In Game Services* specializes in providing college and professional sports markets with high-end entertainment industry installations. One of his recent projects was an installation for the Lambeau Field renovation.

We will have a short business meeting, as we have to wrap up the presentation portion by 8:15 pm so the studio can be setup for the evening newscast. We also want to get outside and check out the new tower currently under construction before we lose the light.

Dutch Treat Dinner
at 5:30 PM
Babe's Bar & Grill
5614 Schroeder Road

Meeting and Program
at 7:00PM
WMTV-TV Studio
615 Forward Drive

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>
Tuesday	June 15, 2004	Summer Picnic
Thursday	July 29, 2004	Taste of NAB
Wednesday	August 11, 2004	T. B. D.

Program Committee:

Steve Paugh
277-5139

Fred Sperry
264-9806

Steve Zimmerman
274-1234