



**BROADBAND NETWORKS
PART 23 - SIGNAL LEAKAGE SOURCES**

By Neal McLain

This is Part 23 in a series of articles about broadband networks. Starting with this article, we take up a new subject: signal leakage. In this article, we'll discuss leakage sources: the various network defects that cause leaks.

INTRODUCTION

Theoretically, a broadband network is a "closed" network: the entire network is contained inside a continuous grounded sheath in which the only openings are carefully-shielded impedance-matched input and output ports.

In fact, as we have noted previously in this series, broadband networks are subject to signal "leakage." A leak is a break in the continuity of the sheath which allows RF signals to pass.

Leakage manifests itself in two ways:

- **"Ingress"**: leakage from the outside airspace into the network. As we discussed in Part 13 of this series (August 1997), ingress disrupts the operation of the network.

- **"Egress"**: leakage from the network into the outside airspace. This form of leakage can cause severe disruptions to communications services using the airspace.

Leaks can result from many different factors. In this article, we'll discuss several of these factors.

(continued on page 4)

EAS and DTV

By Leonard Charles

Along with program interruptions for emergency broadcasts comes one disadvantage to be endured: a broadcaster's entire audience is subject to loss of programming whether the emergency affects all of them or not. Make no mistake, this trade off is well worth the inconvenience because the goal of saving lives is paramount.

Over time, however, continual exposure to the alerting mechanism in tests and non-relevant actual alerts begins to cause an undesirable effect. The public begins to become de-

sensitized to the tones that are meant to grab their attention at the very moment their lives may be at risk. In the days of EBS this was known as the tune-out factor.

In television, when irrelevant interruptions break into prime programming, tune-out is not as likely due to the uniqueness of the program being viewed. Rather the public begins to develop a frustration with the very system designed to help save their lives. Once again, up until now, this trade off has been well worth it because the goal is ultimate: saving lives.

Next Meeting:

**Tuesday,
August 25, 1998**

**National Weather
Service Tour**

**Meet at WNWC
studio at 6pm
to carpool**

**Meeting and Program
at NWS - Sullivan, WI
at 7pm**

**(see flyer inside for
more information)**

In This Issue:

Minutes page 2
Amateur Radio News page 3
Local Legals page 5
FCC Rulemakings page 6
SBE Short Circuits page 8

The future, however, can change this situation. The digital structure of the EAS message and the digital data stream of DTV can combine to ensure that only relevant life-threatening alert messages interrupt the public that are or will be affected by the events they describe. The SBE EAS Committee has begun to promote its vision of the digital future as it applies to EAS, DTV, and Digital Cable. The E-Chip (Emergency Chip) concept is one where the EAS emergency information is imbedded in the data stream of digital television and digital cable. The actual decoding of that data happens in the

(continued on page 9)

CHAPTER 24 OFFICERS

CHAIR:

Fred Sperry (Wis. Public TV)
W - 264-9806 FAX - 264-9646
fsperry@ecb.state.wi.us

VICE-CHAIR:

Kevin Ruppert (WISC-TV)
W - 271-4321
kruppert@wisctv.com

SECRETARY:

Lloyd Berg (WHPN-TV)
W - 270-5700
lloydberg@earthlink.net

TREASURER:

Stan Scharch (WISC-TV)
W - 271-4321
sscharch@wisctv.com

COMMITTEE APPOINTEES

Program Committee:

Mark Croom	271-1025
Denise Maney	277-8001
Kerry Maki	833-0047
Steve Zimmerman	274-1234

Membership and Past-Chair:

Paul Stoffel
stoffel@vilas.uwex.edu

Sustaining Membership: Fred Sperry

Special Events: Kevin Ruppert

Certification and Education:

Jim Hermanson 836-8340
jmh@execpc.com
Tim Trendt (UW-Platteville)

Frequency Coordination:

Tom Smith W - 263-2174
smithtc@vilas.uwex.edu

SBE National Board Member & Chapter Liaison:

Leonard Charles
W - 271-4321 FAX - 271-1709
lcharles@wisctv.com

July Business Meeting Minutes

Chapter 24 of the Society of Broadcast engineers met on Thursday, July 23, 1998 at Mendota County Park, on Highway M in Middleton, Wisconsin.

This meeting was our annual Family Picnic. There were 15 Chapter 24 members present, 5 broadcaster guests and probably 30 family members present.

The meeting was called to order by Vice Chair Kevin Ruppert at 7:05 PM. Minutes of the June 1998 meeting were read and approved as written in the July newsletter.

New Business was limited to the discussion of a possible Madison SBE trip to visit the PBS/Harris DTV express truck in Waukesha during the week of September 21 - 25.

Jim Hermanson announced that Madison's (and likely Wisconsin's) first DTV station, WKOW-DT, operating on Channel 26, went on the air on July 8, 1998.

Everyone congratulated Denise Maney for setting up this very enjoyable event!

The Business Meeting was adjourned at 7:15 PM. A fine picnic and fellowship ensued. (additional entertainment was provided by the tame ducks and geese in the park.) A good time was had by all!

Submitted by Lloyd Berg, Secretary

Chapter 24 planning a special outing to see the Harris/PBS DTV Express

By Kevin Ruppert

Harris Corporation and PBS have teamed up to introduce you to Digital Television. They have built a "VERY LARGE TRUCK" with the latest and greatest digital broadcasting technology.

Chapter 24 will be able to get in to see the van on Tuesday, September 22, from 5pm to 7pm. The DTV Express will be at the Country Inn in Pewaukee (near Waukesha).

Visitors to the truck will be transported into three different environments: a living room of tomorrow, a classroom of the future and a digital television station.

Harris will provide our group with a tour, food and drink. More information about the DTV Express can be found on the Internet at www.dtvexpress.org.

If you are interested in seeing the van, or if you are able to car pool to Waukesha, please call Kevin Ruppert at 277-5151. We want to find out how many people are interested in this opportunity.

SBE National Awards Announced

By Fred Sperry

The SBE National office recently announced the recipients of the awards for the 1997 Annual Awards Program. I am pleased to announce that Chapter 24 and its members have once again been recognized.

Chapter 24 member Leonard Charles received the award for *Broadcast Engineer of the Year*. This is the second time Leonard has received this award having won it back in 1995. Chapter 24 received the award for *Best Chapter Frequency Coordination Effort* thanks to the work of our Frequency Coordinator Tom Smith.

These awards will be presented at the Society's Annual Awards Banquet on Wednesday October 28th in conjunction with SBE Chapter 16's Electronic Media Expo and SBE National Meeting in Bellevue, Washington.

Congratulations to both Leonard and Tom, and to the membership at large for helping to make Chapter 24 so successful.

SBE Listserver Info

Chapter 24 members are invited to join the chapter's listserver. The e-mail address: majordomo@broadcast.net
 Body of e-mail message: subscribe msnbsbe (The "subject" line can be left blank.) To post to the list, send e-mail to: msnbsbe@broadcast.net

Also, join the Wisconsin SBE Chapters' listserver. To subscribe, send e-mail to: majordomo@broadcast.net
 Body of e-mail message: subscribe sbe-wi To post to the list, send e-mail to: sbe-wi@broadcast.net



AMATEUR RADIO NEWS

By Tom Weeden, WJ9H

- The American Radio Relay League (ARRL) Board of Directors has agreed to propose simplification of the amateur radio licensing structure. After lengthy debate in its July meeting, a plan was drafted to propose reducing the number of classes of license from six to four. The Technician Plus and Novice licenses would be eliminated and those existing licensees would be grandfathered to the equivalent of General class. The names of the license classes, Morse code proficiency and written exam requirements would change under the plan. The board urged ARRL members to comment on the proposal before submission to the FCC for possible rulemaking. Details are available at the ARRL's web site (www.arrl.org).

- The International Telecommunications Union (ITU) will hold the next World Radiocommunications Conference in the spring of 2000. One of the expected issues to be discussed is spectrum allocation for the low-earth-orbiting satellite industry. Another is "fixed wireless access" or wireless local loop, where user telephone equipment is connected to the public switched telephone network by radio instead of wire. Both needs may target amateur allocations. The ITU may also consider new spurious and out-of-band emission limits for all radio services.

- Effective September 14, the amateur radio vanity call sign application fee will drop to \$13 for the ten-year license term. The current fee is \$50. The FCC says it does not plan to refund the difference between the current fee and the new fee for applicants who submit applications before the new fee schedule goes into effect.

(Excerpts from August 1998 "QST" and "Badger State Smoke Signals")

FCC ISSUES TOWER SITING GUIDELINES

By Tom Smith

The FCC has issued a set of guidelines for the siting of towers for use by the wireless communications industry. This set of guidelines was agreed upon by the FCC Local and State Advisory Committee, made up of local and state government officials, and representatives from the cellular, PCS and mobile radio industries.

These guidelines set methods for local zoning and land use planning, and for the use of moratoriums during

the time that tower siting plans are worked out. There are also guidelines for informal dispute resolution including the use of two third party volunteers to aid the process. One volunteer would come from government and one from the wireless industry. While not bound by the recommendations of the volunteers, the intent is that the recommendations of the volunteers would help avoid legal actions.


From the FCC Web Site (www.fcc.gov)

 **HARRIS** HARRIS CORPORATION
BROADCAST DIVISION
 District Sales Office:
 1913 Fairoak Road
 Naperville, IL 60605

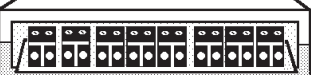
Tom Harle
 DISTRICT SALES MANAGER
 RADIO

TEL: 630-420-8899
 FAX: 630-420-9171

e-mail: tharle@harris.com
 Sales: 800-622-0022

RS-422 Remote Control  **277-8001**

REW FFWD STOP STBY REC PLAY

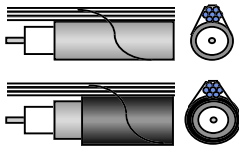
Terminal Block for switches and lamps 

maney-logic

Broadband Networks Part Twenty-Three (continued)

AERIAL PLANT: WEATHER-INDUCED DAMAGE

As we have noted in previous articles, trunk and feeder cables employ solid aluminum sheaths. In the aerial portions of the distribution system, the cable is lashed to steel strand to provide mechanical support. Typical installations can utilize either bare or jacketed cable:



Note that, in either case, aluminum-sheathed cable is supported by steel strand.

And therein lies a problem: steel and aluminum have different coefficients of thermal expansion. As temperature varies with respect to time, both steel and aluminum expand and contract. But aluminum expands and contracts approximately twice as much as steel.⁽¹⁾

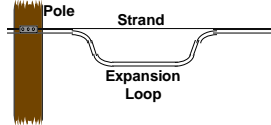
Let's take an example: a 1000-foot span of trunk cable supported by a 1000-foot span of strand. Let's assume this span was installed on a warm summer day, at 80°F. Six months later, on a cold winter night when the temperature has dropped to 0°F, both the steel strand and the aluminum cable have contracted. Following is a comparison of the approximate lengths:

MATERIAL	80° F	0° F
Steel	1000.0'	999.5'
Aluminum	1000.0'	999.0'

So the cable is now about six inches shorter than the strand.

This situation obviously could cause

severe damage to the cable. In order to prevent such damage, we install "expansion loops" in the cable at intervals, typically at every pole:

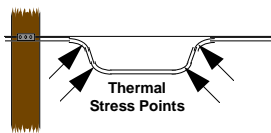


If the expansion loops have been installed properly, they absorb the excess expansion and contraction.

This technique generally works well. However, three problems, each of which can cause egress, sometimes arise with the passage of time:

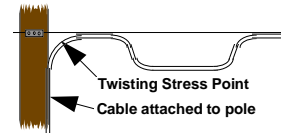
• Temperature-induced cracks.

As the aluminum cable expands and contracts in response to temperature changes, the expansion loops flex up and down to absorb the changes in the length of the adjacent sections of cable. Eventually, cracks may occur at the points where the sheath is subject to bending:



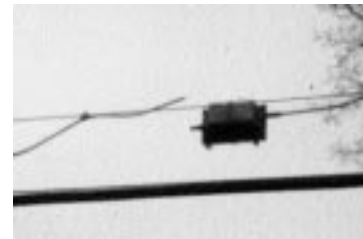
Even a small crack can act like a slot radiator, resulting in egress at critical frequencies.

• **Wind-induced cracks.** The entire span of cable between adjacent poles is subject to wind forces that cause it to sway from side to side. Depending on the length of the span, the ambient temperature, and tension in the strand, the degree of sway can vary from less than an inch to several inches. If the degree of sway is high, the sheath is subjected to twisting forces at points of attachment. Eventually, cracks may occur at the points where the sheath is subject to twisting:



Again, these cracks can act like slot radiators, resulting in egress at critical frequencies.

• **Suckouts.** For a variety of reasons, the expansion loops may not be able to expand sufficiently to accommodate the thermal contraction of extreme cold. This situation causes what cable TV technicians call a "suckout": the cable contracts to the point where it's literally pulled out of adjacent tap or amplifier housings:



Of course, a suckout causes a complete failure of the distribution system. But until it's repaired, it can cause high levels of egress.

UNDERGROUND PLANT: "DIG-INS"


Underground plant is subject to "dig-ins": accidental damage caused by nearby excavation activity.

Although the popular image of a dig-in is the severe damage caused by a backhoe or other large construction equipment, even relatively minor activities such as planting a bush or installing a rural mailbox can damage buried cables.

Excavations fall into two categories:


(continued on next page)

Chapter 24
World Wide Web Site
<http://www.sbe24.org>




Steve Paugh is the editor for the HTML Version of this Newsletter, available monthly on the SBE Chapter 24 web page.

Thomas Sibenaller
Sales Representative



Roscor Wisconsin
2610 Van Loon Road
La Crosse, WI 54601
Phone: 608-784-6702
FAX: 608-785-0505
e-mail: sales@rosacor.com



Becky Hilborn
Broadcast Sales Specialist

40W267 Keslinger Road
LaFox, IL 60147 USA

Phone: (800) 348-5580
(630) 208-2372
FAX: (630) 208-2450
email: becky@rell.com
WWW: <http://www.rell.com>

Your Tube and Broadcast Component Source.

Broadband Networks Part Twenty-Three (continued)

- **Temporary.** A temporary excavation is intended to be backfilled at a later time. A dig-in caused by a temporary excavation usually results in a complete break in the cable, resulting in loss of service. Assuming the damaged cable is repaired before the excavation is backfilled, egress is usually limited to a period of a few hours.

A more insidious form of dig-in occurs when only the sheath is damaged, but the cable is not completely cut. In this situation, service may not be interrupted, so the damage may go unnoticed until after the excavation is backfilled. However, signal egress still exists; even though the cable may be several inches below grade, RF can often be detected at the surface.

- **Permanent.** A permanent change in grade level may result in complete destruction of underground facilities. With proper coordination among the parties involved, new facilities can be installed before the old facilities are removed from service, thus avoiding signal egress.

Unfortunately, excavators don't always coordinate their work with the owners of underground facilities in spite of state laws requiring such coordination. Here is an example of a cable television trunk cable, formerly protected by PVC conduit, extensively damaged by roadway construction:



Even the above-ground structures associated with underground plant can be sources of egress if damaged. This pedestal once stood beside a county highway before it was partially decapitated by a weed cutter:



CRAFT ISSUES

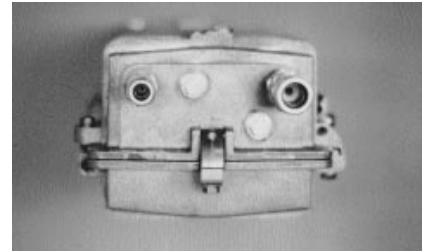
Improper installation and improper maintenance by technical personnel are common sources of egress. Two examples:

- **Improper connector installation.** The connectors used to attach trunk and feeder cables to amplifiers and taps are composed of several parts:



For proper shielding, these connectors must be assembled in the correct sequence, and tightened to specified torque values. Failure to install connectors correctly is a common source of egress.

- **Improper amplifier cover closure.** The cover of an amplifier or a line extender is secured to the chassis by several clamps, as shown in this end view:



When properly closed, the cover and the chassis are mated against two seals: a neoprene rubber weather seal and a metal-braid RF shield. For proper operation of these shields, the cover must be tightened against the chassis in accordance with the manufacturer's specifications governing tightening sequence and torque values. Failure to observe these specifications is a common source of RF egress as well as water ingress.

TAMPERING

Outside plant and inside wiring are subject to unauthorized tampering and vandalism. Examples familiar to every cable television technician:

- **Unauthorized connections.** This situation results from attempts by cable television subscribers to connect additional television sets. The industry abounds with horror stories about unauthorized hookups: poorly-shielded coaxial cable, 300-ohm twinline; even lamp cord. Compounding the problem, the actual connections are sometimes made with splices rather than splitters.

- **Indoor antennas.** Sometimes a subscriber will connect a rabbit-ear antenna to the antenna terminals of the TV set, in parallel with the cable TV connection. This situation effectively turns the rabbit ears into a transmitting antenna. Obviously a source of egress.

(continued on page 6)

L O U T H
A U T O M A T I O N

KURT SCHINI
REGIONAL SALES MANAGER
CENTRAL U.S./CANADA

271 MOUNTAIN WAY, CHANHASSEN, MN 55317
PHONE (612) 401-9658
FAX (612) 401-9659 PAGER (888) 415-2791
e-mail LouthKS@compuserve.com


NIALL
ENTERPRISES

P.O. Box 314
Belmont, Wisconsin 53510
(608) 762-5327 John O'Neill

SCHARCH ELECTRONICS CO.
Small Business Communications
1105 Middleton Street
MADISON, WI 53717-1078
(608) 831-2266 (800) 831-2266

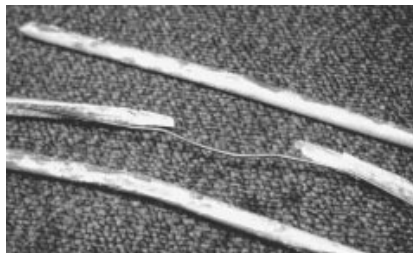
Broadband Networks Part Twenty-Three (conclusion)

- **Vandalism.** Unfortunately, damage is sometimes deliberate: cables are cut during labor disputes; strand-supported amplifiers are used for target practice.

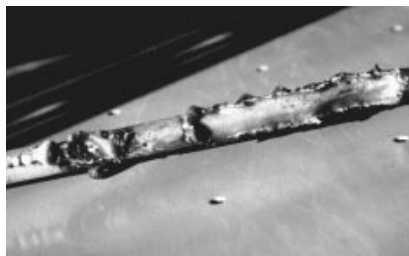
RANDOM EVENTS

Egress sometimes results from random unpredictable events:

- **Animal damage:** In this example, an animal, alleged to be a squirrel sharpening his teeth, caused extensive damage to the aluminum sheath of a feeder cable, completely exposing the center conductor:



- **Fire:** A nearby house fire melted the aluminum sheath, exposing the dielectric:



In this article, we have discussed several factors which cause leakage. Next month, we'll continue the discussion of leakage with a look at FCC-mandated mediation requirements.

 (1) Commonly-accepted values for Coefficient of Thermal Expansion are:
 Steel: 6 x 10 -- 6 in/in/deg F
 Aluminum: 13 x 10 -- 6 in/in/deg F
 Source: Owens Corning. See <<http://www.owens-corning.com/owens/composites/about/glossary/cte.html>>.

BROADCAST AUCTIONS ON AGENDA

By Tom Smith

The FCC was scheduled to take up final actions in it's August 6th meeting that would set rules for selecting broadcast licenses by the use of auctions.

The FCC would like to start to use auctions this fall for the selection of broadcast licenses.

From the FEDERAL REGISTER.

TV CHANNELS OFFICIALLY GONE

By Tom Smith

In it's August 6th meeting, the FCC adopted rules to allocate TV channels 63, 64, 68 and 69 to public service radio. The FCC allocated 12.6 mhz for general use and 2.6 mhz for national interoperability purposes between all public service agencies. The FCC is seeking comment on the allocation of the remaining 8.8 mhz. This rules also address the protection of analog and digital TV stations on these channels during the DTV transition.

From FCC press release. (www.fcc.gov)

FCC LOCAL LEGALS

Compiled by Tom Smith
PROPOSED

WIBU (AM) Poynette, WI 1240 khz

Magnum Communications Inc. seeks permission to purchase WIBU from Radio Hill Broadcasting Inc. Magnum Communications holds a construction permit for a new FM for Portage, WI and owns a AM and 2 FM's in Tomah, WI.

WFAW (AM)/ WSJY (FM) Fort Atkinson, WI, WRDB (AM)/ WNFM (FM)/ WBDL (FM) Reedsburg, WI, WDLB (AM)/ WLJY (FM) Marshfield, WI, WOSQ (FM) Spencer, WI, WKCH (FM) Whitewater, WI, WIXN-AM/ FM Dixon, IL, WOXM (FM) Oron, IL, WIAN (AM)/ WJPD (FM) Ishpeming, MI, WDMJ (AM) Marquette, MI and translators W290AL Baraboo and W277AC Watertown, WI.

Marathon Media (Chris Devine, Chicago, IL) seeks to purchase these stations from Goetz Broadcasting (Nathan L. Goetz, Marshfield) and subsidiaries Sauk Broadcasting Corp, and Farm Belt Radio, Inc. for \$18.8 million. Marathon Media owns 2 AM and 6 FM stations.

From FCC Web site and BROADCASTING & CABLE

The Chapter 24 Newsletter is published monthly. Submissions of interest to the broadcast technical community are always welcome. You can email your articles to:

MNorton@ecb.state.wi.us

or send them to:

SBE Chapter 24
 Newsletter Editor
 5174 Anton Dr. #15
 Madison, WI 53719-4201



Belden Wire & Cable Company
 4218 South Regal Manor Court
 New Berlin, Wisconsin 53151

Phone: 414 827 0270
 Facsimile: 414 827 0374
 Phone Mail: 800 241 7564
 Box 2611
<http://www.belden.com>

Jan Reesman
 Sales Representative



Mark Durenberger
 General Manager

90 South 11th Street
 Minneapolis, MN
 55403

Office (612) 330-2433
 Fax (612) 330-2603
 e-mail

durenberger@teleportmn.com





FCC Rulemakings

Compiled By Tom Smith

FINAL RULEMAKING

MM Docket No. 92-264; FCC 98-138 Horizontal Ownership Limits

This action makes effective on August 13, 1998 an action that the FCC published in the FEDERAL REGISTER on November 15, 1993. This rule affirms ownership limits on cable operators that restricts ownership of cable by any one entity to a reach of 30% of all the homes in the nation. The delay in setting the effective date of this action was due to a number of petitions for reconsideration.

The FCC adopted this action on June 30, 1998 and released it on June 26, 1998. It was published in the FEDERAL REGISTER on July 14, 1998 on pages 37,790-37,792.

PROPOSED RULEMAKINGS

MM Docket No. 92-264; FCC 98-138 Horizontal Ownership Limits

The FCC is seeking comment on a number of issues concerning limits on cable TV system ownership. This action was adopted on the same day as the FCC adopted an effective date for the current ownership rules.

The FCC asks for information on whether the limits should be raised from the current 30% limit of homes passed in the nation to some higher number, and if that number should be based on homes passed or on number of subscribers. Also, the FCC asks if homes in markets served by other video suppliers be counted differently

for owners limits.

Comments are due on August 14, 1998 and replies are due on September 3, 1998. This action was adopted on June 23, 1998 and released on June 26, 1998. It was published in the FEDERAL REGISTER on July 14, 1998.

CS Docket No. 98-82; FCC 98-112 Cable Television Ownership Attribution Rules

This notice seeks comment on how ownership of cable TV systems is computed. To determine ownership standards, the FCC sets limits on percentages of ownership of cable systems and broadcast stations that one can hold before be counting against ownership limits. In most cases the limit is 5% of voting stock and 10% of non-voting stock. This allows banks and mutual funds to own stock or loans in cable and broadcast stocks without fear of the companies, of whose stock they hold, being considered in violation of FCC ownership rules. They are also used to determine cross-ownership between cable, broadcast and wireless cable (MMDS). Cable limits are more restrictive than broadcast. The FCC would like information if the limits should be raised and how they should apply to cross-ownership restrictions.

Comments are due on August 14, 1998 and replies on September 3, 1998. The FCC adopted this action on June 4, 1998 and released it on June 26, 1998. It was published in the FEDERAL REGISTER on July 14, 1998 on pages 37,815-37,820.

MM Docket No. 98-98; FCC 98-130 Call Sign Assignments for Broadcast Stations

The FCC is seeking comment on the adoption of an electronic filing system for the requesting and assigning of call signs for broadcast stations. They also are asking if electronic filing should be mandatory for all stations or if certain stations be exempted, and how electronic filing should be phased in.

Comments are due on August 17, 1998 and replies on August 30, 1998. This notice was published in the FEDERAL REGISTER on July 16, 1998 on pages 38,357-38360.

CS 98-12 Carriage of Transmission of Digital Broadcast Stations

The FCC is seeking comment on the carriage of digital TV signals by cable TV systems. Issues that the FCC seeks input on include compatibility of digital broadcast signals and cable system equipment, must carry including alternatives, carriage on small systems, channel position of digital signals and tier placement, definition of duplication during the transition period and primary video, and the use of antennas and A/B switches for reception of DTV.

Comments are due on September 30, 1998 and replies on October 30, 1998. This action was adopted on July 9, 1998 and released on July 10, 1998. This notice was published in the FEDERAL REGISTER on August 6, 1998 on pages 42,330-42348.

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

	HEWLETT PACKARD
Jon S. Gedymin Video Sales Manager Midwest Region	
Hewlett-Packard Company 250 North Patrick Boulevard, Suite 100 Brookfield, Wisconsin 53045-9945	
800/477-6111 Ext. 2263 Fax 414/569-0966	
Internet jon_gedymin@hp.com	

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

	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	

SBE's Short Circuits -- August 1998

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

**YOUTH PROGRAM BEGINS
AUGUST 1**

SBE's new program targeting high school age students officially begins August 1. High school students interested in the technical aspects of broadcasting are invited to become Youth Members. They will receive a special newsletter three times during the school year containing information on school operated stations, post secondary institutions offering broadcast engineering related courses, scholarship information and age appropriate technical articles. Youth Members will also receive other SBE member benefits including discounts on technical books and seminars and access to the SBE Job Line. Annual dues will be just \$10. For an application, contact the Membership Department at the SBE National Office.

**SBE ANNOUNCES AWARD
WINNERS**

The Society of Broadcast Engineers (SBE) has announced winners of its annual awards program. Leonard Charles, CPBE, has been named *Broadcast Engineer of the Year*, by the Society. He is the information services administrator for Television Wisconsin, Inc. in Madison, Wisconsin. Charles has served on a number of SBE Chapter 24 committees as well as having held the offices of Vice-Chair and Chair.

On the national level, Charles is completing his second two-year term as a member of the SBE Board of Directors. He is the current chairman of the National SBE EAS Committee and has led SBE's effort to help the FCC create a meaningful and effective EAS system.

Richard A. Farquhar, CPBE has been named, *Educator of the Year*, for his efforts as educational director of the Ennes Educational Foundation Trust Education Committee. He has planned and presented a number of Ennes Workshops including those at NAB '97 in Las Vegas, Nevada; Louisville, Kentucky; Syracuse, New York; and Birmingham and Montgomery, Alabama. The one-day workshops focus on current issues facing broadcast engineers and ways to implement new broadcasting technology.

Farquhar has served as the educational director for three years and is a former two-term SBE National President. He is the president of RAF Associates, Inc. in Canal Winchester, Ohio.

Other award winners can be found in the next edition of the *SBE Signals*. Awards will be presented during the 1998 Electronic Media Expo and SBE National Meeting on October 28, 1998 in Bellevue, Washington.

**VOTING MEMBERS RECEIVE
ELECTION BALLOTS IN AUGUST**

All voting members of SBE will receive a ballot for the National Election of Officers and Board Members, during the second week of August. The ballots are mailed First Class to the address of record. To be counted, ballots must be returned by mail (no facsimiles can be accepted) by 5:00 p.m., September 17, using the return envelope supplied.

At 6:00 p.m., the volunteer Board of Tellers will open the envelopes and begin the ballot count. Every year we get a few that arrive after the count is over, so please get them in early. There is one candidate for each of the four officer positions and 11

candidates for six available seats on the Board. Please read the candidate's statements and voting record carefully before making your choices.


**ENNES TRUST NAMES
SCHOLARSHIP WINNERS**

The Ennes Educational Foundation Trust has awarded two broadcast engineering scholarships named in honor of Harold E. Ennes and Robert D. Greenberg.

Receiving the \$3,000 Harold E. Ennes Scholarship is Alex Roman of Goleta, California. Roman is a sophomore and will be transferring from Santa Barbara City College to the University of California. He is currently employed at KVEN/KHAY/KBBY in Ventura, California and also works with stations KHTY and KMGQ. Roman intends to work full time as a radio station engineer.

Awarded the \$3,000 Robert D. Greenberg Scholarship is Skeet Skaalen, of Brookings, South Dakota. Skaalen attends South Dakota State University and is enrolled in the electronics engineering technology program. He is currently employed at KJJQ and KKQQ as chief engineer, and began his career at KCGN FM in Mulbank, SD. Skaalen's future plans include a full-time career in broadcast engineering.

The Harold E. Ennes scholarship fund was originated by SBE Chapter 25 in Indianapolis and later given to the National SBE to administer. The fund memorializes the life of SBE member, Harold E. Ennes who was dedicated to the importance of continuing education and authored numerous broadcast operations and engineering textbooks.



SKY LINE
COMMUNICATIONS, LTD. • MADISON
WI ANTENNA SPECIALISTS • TOWER
ERECTORS
RICHARD H. WOOD
President

1965 West Ridge Rd.
P.O. Box 51
Cottage Grove, WI 53527
608 / 839-4075
FAX: 608 / 839-4985

TOWERS • ANTENNAS
CONSTRUCTION • MAINTENANCE

David Thormodsgaard
Broadcast Sales Engineer
thor@alphavideo.com
(800) 388-0008
(612) 841-3308

7711 Computer Avenue
Edina, MN 55435
(612) 896-9898
FAX (612) 896-9899
www.alphavideo.com




WKOW
Madison

5727 Tokay Boulevard
Madison, Wisconsin 53719

(608) 274-1234
Fax: (608) 274-9514

EAS and DTV (continued)

receiver's emergency chip set instead of in the broadcast plant or cable headend. Once this infrastructure is in place, many advantages to the way emergency information affects the public can be realized.

The receiver or set top cable converter can be programmed so that there will only be a reaction to alerts that are of a pre-determined severity and for the location in which the receiver is being viewed. Further, the method of interruption can be pre-programmed and also vary by the severity of the event. Life threatening events such as warnings, for instance, can be programmed to interrupt all channels whenever the location code of the event matches the location of the receiver. Meanwhile any watches or other messages received for the matching location can be crawled over programming or concentrated to a special emergency channel where they can be stored for later viewing until their time expires and they are deleted from receiver memory. The important point here is that the interruption is controlled at, and happens in the receiver.

The user programmable options for emergency receptions can be numerous. Of course for those who will not understand this receiver programming, or for those who wish to be interrupted for any and all emergency events, the receiver default programming can interrupt all channels for all alerts. At minimum for the

programming impaired, the receiver could be equipped with GPS technology so that its location can be auto programmed as soon as the set is plugged in. A simple look-up table could correlate the GPS data to EAS location codes. All alerts can then at least be filtered by location as the default on these sets.

Perhaps the greatest enhancement of the E-Chip concept to emergency alerting involves the number of alerts delivered to the public. Today, there is reluctance on the part of some broadcast management to carry local alerts due to the impact on programming and non-affected audience. With E-Chip, because the interruptions will be targeted to the actual audience affected by the emergency, broadcaster reluctance to carry all events can be eliminated. Every emergency alert (national, state and local) can be imbedded into the data stream with less fear of interrupting any audience that will not be in harms way.

The E-Chip concept can and should also be incorporated into other forms of digital transmission (ie: pagers, cell phones, PCS, satellite, etc.). All that is needed is an emergency chip set in the receiver. Don't expect to see the E-Chip concept in early DTV receivers or Digital Cable set top converters. At this point it is only a concept and one that would take FCC rules changes to incorporate. But even before that, it needs the entire industry to rally around it as the first step in its evolution. The SBE EAS Committee is already working on that.

CHAPTER 24 SUSTAINING MEMBERS

WELCOME TO OUR NEW SUSTAINING MEMBER:

Belden Wire and Cable

RECENT RENEWALS:

**BCS Wireless
Hewlett-Packard
Norlight Telecommunications
Skyline Communications
Video Images**

THANKS TO ALL OUR SUSTAINING MEMBERS:

**Alpha Video
CTI
Clark Wire and Cable
Comark Communications
Fuji Film
Harris Corporation
Louth Automation
maney-logic
National Tower Service
Niall Enterprises
Panasonic Broadcast
Richardson Electronics
Roscor Wisconsin
Sarch Electronics
Sony Broadcast
Tektronix
Teleport Minnesota
Token Creek Productions
WISC-TV 3
WKOW-TV 27
WMSN-TV 47
WMTV-TV 15**

NATIONAL TOWER SERVICE, LLC

1244 E. Lakeside Dr., Edgerton, WI 53534

Paul Jensen Daryl Snowden Tim Brekke
Owners

Mobile's: 608-235-8559
608-751-8284
608-576-4602

Office: 608-884-8205 Fax: 608-884-6021

Panasonic

Broadcast & Television Systems Company

HERB VAN DRIEL
Direct Sales Manager
Entertainment Systems Division

1707 N Randall Road
E-Zip: 1-C-3 Elgin, IL 61023
WI Tel: 608.355.0662
WI FAX: 608.355.0663
HQ Tel: 847.468.5160
HQ Fax: 847.468.5161

Division of Matsushita Electric Corporation of America



Atlanta 1996

The Official Broadcast
Equipment of the
1996 Olympic Games.

FUJI FILM

MAGNETIC MARKETS DIVISION
PROFESSIONAL PRODUCTS GROUP

Jerry Van Vliet
Account Representative

FUJI PHOTO FILM U.S.A., INC.

1285 Hamilton Parkway
Itasca, IL 60143
630-773-7200 Ext. 7293 • 800-877-0555 Ext. 7293
Fax 630-773-6266 • Fuji Voice Mail 800-736-3600 Ext. 7293

James (Jim) B. Rogers
Western Regional Sales Manager
(619) 748-2151
Fax: (619) 748-1879
Pager: (800) 970-3239
E-mail: jrogers@comarkcom.com
JBR.COM@worldnet.att.net



a THOMCAST Company
12612 Arabian Way • Poway, CA 92064 U.S.A.
http://www.comarkcom.com



CLARK
WIRE & CABLE

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



JAMES F. DOHERTY
Traffic Supervisor
Satellite & Video Services

Norlight
TELECOMMUNICATIONS

275 NORTH CORPORATE DRIVE
BROOKFIELD, WI 53045-5818
414.792.7708 FAX: 414.792.7717
e-mail: jfd@norlight.com



SBE NATIONAL



Society of Broadcast Engineers, Inc.
8445 Keystone Crossing
Suite 140
Indianapolis, IN 46240



Office (317) 253-1640
Fax (317) 253-0418
Job Line (317) 253-0474
<http://www.sbe.org>

Jim Pianowski Tektronix, Inc.
 Central Regional Manager **Video and Networking Division**
 Western Area 515 West Algonquin Road, Ste 100
 Arlington Heights, Illinois 60005
 james.j.pianowski@tek.com
 800 458-7587 ext. 6797 Voice Mail
 847 431-5755 Mobile
 847 381-4738 Home
 847 734-6797 800 452-1368 Pager
 847 364-7582 Fax



SONY Kevin Peckham
 Account Manager
 Broadcast Products Division

Sony Communications Products Company
 1200 North Arlington Heights Road
 Itasca, Illinois 60143
 Telephone (608) 271-3778
 (708) 773-6046

Service Center (708) 773-6037
 Emer. Tech. Assist. (201) 833-9533
 National Parts Center (800) 538-7550



Milwaukee
 Madison
 Chicago
 Indianapolis

Video Images, Inc.
 2137 S. Stoughton Road • Madison, WI 53716
 Phone:(608) 221-8888 • FAX:(608)221-9252
 Internet: <http://www.videoimages.com/>



- Tower Construction
- Maintenance
- HDTV upgrades

John W. Crooks (608) 527-5670
 Vice President

Over 40 years of service to the Broadcasters.


Token Creek
PRODUCTIONS
 MOBILE VIDEO

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



PHONE **608-274-1515**
 FAX **608-271-5193**

615 FORWARD DRIVE
 MADISON, WI 53711 **WORKING FOR YOU!**
www.nbc15.com feedback@nbc15.com



SBE Chapter 24 Newsletter
5174 Anton Drive #15
Madison, WI 53719-4201

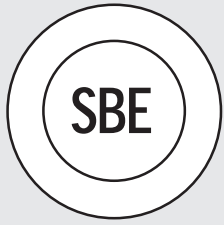


FIRST CLASS MAIL

Newsletter edited on Pagemaker 5.0 by: Mike Norton
 Contributors this month: Lloyd Berg, Leonard Charles, Neal McLain, Tom Smith, Kevin Ruppert, Fred Sperry,
 and Tom Weeden. Thanks to Chris Cain for his work on the Chapter 24 WWW page.

© 1998 by SBE Chapter 24. Views expressed herein do not necessarily reflect the official positions of the Society, its officers, or its members. SBE Chapter 24 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.

AUGUST MEETING and PROGRAM



Society of Broadcast Engineers CHAPTER 24 MADISON, WISCONSIN Tuesday, August 25, 1998

National Weather Service Facility Tour

This month's meeting will be held at the National Weather Service office in the town of Sullivan. There will be no meal as such (dinner on your own or brown bag it in a vanpool with other Chapter 24 members). The meeting will be at 7PM followed immediately by a tour of the facilities.

Due to the small size of the NWS facilities, there will be a maximum of 20 for this activity. If there is great demand, we may be able to schedule a second tour sometime soon for those who can't make it.

We will vanpool from the parking lot at WNWC-AM/FM at 6PM. We'll provide directions to anybody who requests them, after they're confirmed to be among those able to go.

Call Mark Croom at WNWC (271-1025) or email mcroom@broadcast.net with your request ASAP. The first 20 received will be included in this round.

If you have a van and can drive to accommodate fellow members, let us know. We'll ask riders to help reimburse for expenses.

Rusty Kapela from the National Weather Service promises to show some video that will knock your socks off...you'll never think of tornadoes the same ever again (or double your money back)!!

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

Program Committee:

Kerry Maki
833-0047

Denise Maney
277-8001

Steve Zimmerman
274-1234

Mark Croom
271-1025