



**BROADBAND NETWORKS
PART 22 - OUTSIDE PLANT: UNDERGROUND**

By Neal McLain

This is Part 22 in a series of articles about coaxial broadband networks. As we noted last month, outside plant falls into two broad categories: aerial and underground. In this article we'll take a look at underground plant.

Underground plant can be installed by any of three methods:

- Directly buried.
- In conduit-and-manhole systems.
- In other existing structures such as service tunnels or abandoned pipelines.

DIRECT BURIAL

Broadband network cables suitable for direct burial are available from several manufacturers.

Coaxial cables are available in the same trade sizes we discussed in Part 3 of this series: 0.412", 0.500", 0.625", 0.750", 0.875", and 1.000". These cables typically incorporate a plastic jacket for corrosion protection:



The space between the shield and the jacket is impregnated with a sticky, viscous fluid called "flooding compound" which reseals the plastic jacket if it is damaged.

(continued on page 4)

Next Meeting:

**Thursday,
July 23, 1998**

**Annual SBE
Chapter 24 Picnic**

**Mendota County Park
Shelter #1
Highway M in
Middleton**

**4:00 pm until dark,
rain or shine!**

Everyone Welcome!

(see flyer inside for map)

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UPCOMING CHAPTER 24 EVENTS

By Fred Sperry

I would like to take this opportunity to highlight a couple of events Chapter 24 is planning for the second half of 1998.

As you will note in this month's newsletter, the Chapter's annual summer picnic will be held next Thursday, July 23rd at Mendota County Park in Middleton. Last year's picnic was somewhat sparsely attended. Denise Maney puts a lot of work in getting this picnic set-up and organized. Please show your appreciation of her efforts and your support for Chapter 24

by making every effort to attend. As always, new members and guests are welcomed and encouraged to attend.

Plans are currently underway to attempt to reschedule the original June program, which was to be a tour of the National Weather Service office in Sullivan, as the August program. I apologize for any inconvenience the last minute program and date change of the June meeting may have caused.

During the week of September 21st, the Harris/PBS DTV Express truck will be in Waukesha. For those of you not familiar with this set-up, the truck is

basically a DTV station on wheels (more information can be found at the DTV Express home page: www.dtvexpress.org). We may try to set-up a trip to tour this truck as a Chapter 24 special event.

October is of course the annual Broadcast Clinic here in Madison. As we have done the past five years, Chapter 24, along with the Upper Midwest SBE Chapters, will be responsible for the Wednesday evening program during the Clinic. The Chapter 24 officers will be meeting on Monday July 13th to determine this year's

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June Business Meeting Minutes

Chapter 24 of the Society of Broadcast engineers met on Monday, June 15, 1998 at Houlihan's Restaurant at 1262 John Q. Hammonds Dr. in Madison, Wisconsin.

The meeting was called to order by Vice Chair Kevin Ruppert at 6:30 PM. Minutes of the May 1998 meeting were read and approved as written in the June newsletter.

Treasurer, Stan Scharch reported the chapter account currently is in the black.

Denise Maney, Program Committee, reported on plans for the Chapter 24 July Picnic. The previously scheduled June visit to the NOAA weather station in Sullivan, WI, was changed to August.

Leonard Charles, SBE Liaison, reported on the SBE's student recruiting plans. The national office is starting a resume service for members as of July 1, 1998. The Disk version of the SBE Operators Manual is now available from the SBE Bookstore.

Applications for the fall SBE certification exams must be submitted by September 25. The exams will be given on a yet-to-be-determined date between November 13 and 23. Applications are now available for SBE scholarships. Nominations for SBE national officers are open until July 15.

Steve Paugh reported on preliminary preparations for a possible demonstration of DTV for the general public at the upcoming UW Engineering Expo in April of 1999.

General Announcements:

Steve Zimmerman reported that a tower crew was already in the process of reducing the overall height of the WKOW-TV tower from 1200 feet to 300 feet above ground. The Z-104 FM radio broadcast antenna previously located on this tower has been relocated to the nearby WMTV tower.

Herb Jordan reported that he represented Chapter 24 on the monthly, nation wide, SBE Chapter of the air (Chapter 73) conducted via Short Wave Amateur Radio.

The business portion of the meeting was adjourned at 7:00 PM. Attendees then walked across the street to the Marriott-West for the program portion of the meeting. A tour and demonstration of the WKJG/NBC-33 Remote Production Truck led by WKJG's Operations Director, Stephen Buyze, followed.

Submitted by Lloyd Berg, Secretary

DTV RF BOOK AVAILABLE

Prepare for the Future of Broadcast Engineering. Prepare for the 21st century by learning about Digital Television (DTV) and High Definition Television (HDTV). Read the SBE publication Introduction to DTV RF. It is a practical guide intended to assist the Broadcast Engineer in understanding some of the technical issues faced by all television stations in the transition to DTV.

After reading this 100-page book, you will be armed with the basic knowledge you need to prepare for television in the twenty-first century. If you are a radio engineer, you may be surprised to learn that the DTV RF waveform has more in common with the complex speech waveform of a Ham SSB transmitter than it does an NTSC Visual RF envelope. It may be time to add DTV RF to the list of transmitters you can install and maintain.

The book was authored by Douglas W. Garlinger, Director of Engineering for LeSEA Broadcasting Corporation. Doug is a member of the SBE National Certification Committee, a trustee of the Ennes Educational Foundation Trust and the vice president of the National Association of Shortwave Broadcasters.

The price of this publication is \$49. Mail payment to: Society of Broadcast Engineers, 8445 Keystone Crossing, Suite #140, Indianapolis, IN 46240. Fax and phone orders with credit card payment are acceptable. Phone: 317-253-1640 Fax: 317-253-0418.



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AMATEUR RADIO NEWS

By Tom Weeden, WJ9H

A bill that would amend the Communications act of 1934 to prohibit the FCC from reallocating Amateur Radio Service bands without providing replacement spectrum was introduced in late March by Rep. Michael Bilirakis (R-FL). As of this summer, HR.3572 has 20 co-sponsors in the House, evenly split between Democrats and Republicans. Time is running out in this session of Congress for action, but supporters still hope for a chance that it could be taken up before the congressional recess.

In the Senate, an amendment to the "Anti-Slamming Act" which was originally introduced as a separate bill by Sen. Russ Feingold (D-WI), was passed with the bill by a vote of 99-0 in May. The main thrust of the bill was to prevent telecommunications providers from switching a consumer's long distance service without their consent. The amendment would give municipalities limited enforcement powers of FCC rules concerning illegal use of Citizens Band radios. There is a companion bill in the House which does not include any CB radio provisions, but it could be amended to more closely match the Senate bill.

Near Space Sciences will launch a high-altitude balloon from near Hillsboro, WI on Saturday, July 18th. The payload will include a video camera transmitting via amateur television, GPS, a 2-meter repeater and a film camera. The flight will track across southern Wisconsin, and its transmissions should be heard over a several hundred mile radius.

(Excerpts from July 1998 "QST" Magazine and local reports)

Jim Wulliman Named to WBA Hall of Fame

SBE Past President and retired Certification Director and Chairman, Jim Wulliman, will be inducted into the Wisconsin Broadcasters Hall of Fame on July 16. The Wisconsin Broadcasters Association will make the presentation during their annual summer meeting, which will be held in Green Bay.

Jim served for many years as Director of Engineering at WTMJ-TV in Milwaukee. He is a Charter Member of SBE and chaired Chapter 28. He was instrumental in organizing the SBE Certification

Program in the mid-1970's and oversaw its growth for the next 20 years. *(taken from July SHORT CIRCUITS)*

Membership Report

By Paul Stoffel

SBE Chapter 24 welcomes Steven D. Richter, Michael S. Lennen, and James G. Lefevre as new or returning members.

Current membership count is 75, with 40 certified.

Chapter 24 currently mails 135 newsletters.



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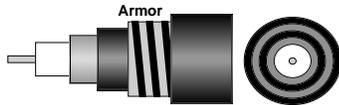
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Broadband Networks Part Twenty-Two (continued)

Many direct-burial cables incorporate steel armor to provide mechanical protection:



Fiber optic cables, protected in similar fashion, are also available in fiber counts varying from one fiber to several hundred.

Direct-burial cables are usually placed in a trench about 24" to 36" deep. Figures 1 and 2 illustrate typical construction methods.

ABOVE-GROUND STRUCTURES

Directly-buried coaxial cables usually terminate above ground in "pedestals." A typical cable television pedestal, housing a line extender and a

tap, looks like this:



facilities. A cluster of two pedestals and a power transformer is a common sight:



Power supplies are usually attached to a wood pole or post:

In warm climates, amplifiers are often placed in "low rise" pedestals which (theoretically) provide more efficient cooling:



(continued on next page)



Figure 1. Trenching for cable television trunk cable, Madison, 1977. This photo shows the installation of trunk cable along the south side of Raymond Road just west of Frisch Road. Note that Raymond had not been paved west of Frisch at the time this photo was taken.

In residential neighborhoods, cable television pedestals are often placed adjacent to electric power and telephone



Figure 2. Direct-burial trench, Fitchburg, 1980. This is a "joint trench" containing facilities owned by three companies: electric power (MGE), telephone (TDS), and cable television (Fitchburg Cable Communications, now Marcus).

Broadband Networks Part Twenty-Two (continued)

Drops to individual buildings are connected to taps located inside pedestals. Figure 3 shows a typical arrangement.

At building walls, the drop cable simply emerges from the ground and connects to the ground block. As we noted back in Part 5 of this series, the ground block is used to ground the incoming drop cable for safety reasons.

The ground block also marks the point of demarcation between the outside plant and the inside wiring. Electrically, this distinction doesn't make much difference, but it's a big issue politically (see TELECOM INDUSTRY NEWS, this *Newsletter*).

CONDUIT-AND-MANHOLE SYSTEMS

A conduit-and-manhole system consists of a series of underground enclosures interconnected with conduits, although many so-called "manholes" are actually quite small — much too small for a man to occupy.

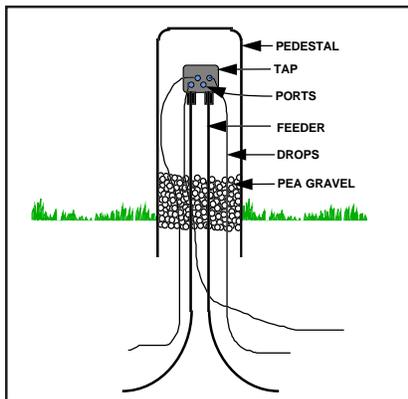


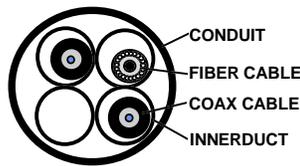
Figure 3. A typical cable television pedestal containing a single tap feeding three drops. Note the layer of "pea" gravel, consisting of small pea-sized stones. This layer serves two purposes:

- It prevents the entry of small animals (mice, snakes) and large insects.
- It frustrates attempts by nearby residents to make unauthorized connections. If the pedestal is locked, the only way to gain entry is to physically remove the pedestal from the ground; however, once the pedestal has been removed, it's impossible to put the pea gravel back into place without breaking the lock.

Smaller enclosures are sometimes called "handholes" or "vaults" (Figure 4).

The enclosures are interconnected with buried conduits, typically 4" PVC (Figure 5).

Cables are usually pulled directly into the conduit, although many network owners prefer to install each cable in a separate "innerduct," a flexible PVC tube pulled into the conduit to provide additional protection:



Coaxial and fiber-optic cables intended for direct burial can be installed in conduit-and-manhole systems. Although such systems are extremely expensive to construct, they afford two significant advantages over direct burial:

- They provide excellent protection against accidental damage.
- Cables can be added, removed, or replaced without digging.

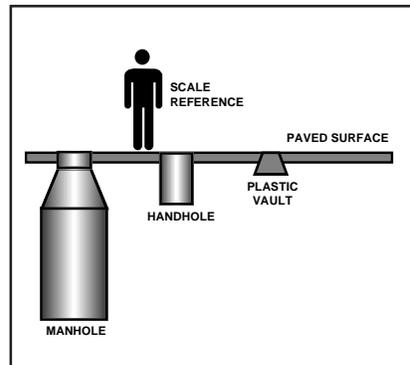
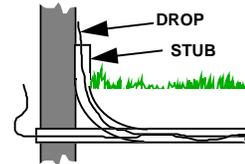


Figure 4. Underground enclosures suitable for broadband network construction. A manhole is constructed of pre-cast concrete with a fitted steel cover. A handhole is simply a piece of concrete culvert standing vertically, fitted with a steel cover. Plastic vaults, fitted with plastic covers, range in size up to about 48" x 48". Plastic vaults covers can support pedestrians; however, steel covers are required in areas subject to vehicular traffic.

For these reasons, conduit-and-manhole systems are used extensively in congested downtown areas where communications facilities must be placed under paved sidewalks or streets.

Drops to individual buildings are also placed in conduits. The conduit is either "stubbed up" at the building wall or run directly into the building basement:



Telephone companies have been constructing conduit-and-manhole systems — with actual man-sized manholes — for years. Under FCC regulations, telephone companies are required to lease conduit and manhole space to other broadband network operators, if doing so is "technically feasible." Like pole-attachment fees, conduit rental rates are regulated by each individual state's public utility regulatory body (such as the Wisconsin Public Service Commission), or by the FCC if the state chooses not to regulate.

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Figure 5. PVC conduit in trench, Madison, 1978.

Broadband Networks Part Twenty-Two (conclusion)

As might be expected, this requirement has been the source of much litigation. Since many broadband-network operators are telephone companies' direct competitors, the telephone companies obviously have an interest in determining that they do not have any spare capacity to lease; i.e., that renting conduit space is not "technically feasible."

OTHER STRUCTURES

Broadband network facilities can be installed in other existing structures. Three examples:

- On most university campuses, buildings are interconnected by underground service tunnels originally constructed to house steam pipes. Over the years, wires and cables of every description, including broadband networks, have been installed in these tunnels.

- In many large cities, old mail- and coal-delivery tunnel systems still exist, and are now utilized for other purposes. The famous flooded tunnel in Chicago contained broadband cables owned by Ameritech and TCI.

- Wiltel, a subsidiary of Williams Pipeline Company, owns a nationwide fiber-optic network. Many of its fiber cables are installed in abandoned petroleum pipelines.

Next month we'll take up a new subject: signal leakage.



FCC Rulemakings

Compiled by Tom Smith

FINAL RULEMAKING

CS Docket 97-80 "Navigation Devices" Rules Creating Consumer Market for Set Top Boxes and Other Equipment Used For Video Programming Systems

The FCC as part of the Telecommunications Act of 1996 adopted rules that would allow the public to purchase set top boxes to receive digital signals from cable and other services such as MMDS and DBS.

As of July 1, 2000, digital program suppliers must separate the security function for the set top box. This would allow the consumer to purchase the set top box that would get non-subscription digital programming and the cable or other supplier would supply a plug-in device for subscription programming. Program suppliers would not be allowed to sell or lease set top boxes after January 1, 2005.

The FCC adopted this action on June 11, 1998

MM Docket No. 98-93; FCC 98-117 1998 Biennial Regulatory Review-Streamlining of Radio Technical Rules

The FCC adopted a number of changes in the rules pertaining to the FM broadcast service. There was also a number of changes to a few AM broadcast rules. Most of these rule changes were made in order to clarify existing rules and were adopted without the FCC issuing a notice of rule making and holding a comment period.

Many of the rules deal with notification of changes of operation to the FCC, and list the address of the Mass Media Bureau or FCC internet addresses.

The FCC adopted this notice on June 11, 1998 and released it on June 15, 1998. It was published in the FEDERAL REGISTER on June 22, 1998 on pages 33,875-33,880 and became effective on July 22, 1998.

PROPOSED RULEMAKINGS

MM Docket No. 98-93; FCC 98-117 1998 Biennial Regulatory Review-Streamlining of Radio Technical Rules

The FCC is seeking comments on a number of rules changes concerning FM broadcast stations. These proposed rule changes include changes in interference standards between stations that affect the ability of stations to move their transmitters, and changes in the way signal contours are computed. A new level of class C station is proposed, and comments on changes in rules concerning class D stations are being sought.

The FCC is proposing to allow all FM stations a minimum of 6 kilometers of relief from the current spacing rules when applying to move their transmitters if there is an overall increase in service area. The FCC also proposes an alternate limited method of computing contour prediction. The alternate method would be used to predict city grade coverage or interference between stations seeking upgrades where spacing may be in question. The new method of contour prediction would allow increasing the distance of the radials for figuring height

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TELECOM INDUSTRY NEWS

By Neal McLain

CABLE TV INSIDE WIRING: A POLITICAL HOT POTATO

Cable television operators have been embroiled in a long-running legal battle over the disposition of "inside wiring" in cases where a property owner wishes to switch to competitive video provider. The issue is still unresolved, but here's an interim report.

BACKGROUND

Battles over inside wiring have been going on for a century. First, the electric power industry fought it, then the telephone industry fought it. In both cases, the industries lost.

The first electric power companies called themselves "lighting companies," and offered "lighting service." The lighting company owned everything inside subscribers' buildings, right up to the carbon-filament light bulbs themselves. These companies offered the service on a take-it-or-leave-it basis; building owners were prohibited from owning any wiring, and could not make any changes to the wiring.

Lighting companies defended this arrangement on safety grounds: electric wiring was just too dangerous for the average building owner to install or maintain.

A string of court cases eventually overturned these requirements and established the precedent which exists today: individual building owners are responsible for installing and maintaining electric wiring. In exchange for giving up the right to own and maintain inside wiring, lighting companies were absolved of any liability

for fire or injury which might result from improper maintenance or installation of inside wiring.

All this was accompanied by the rise of a complicated set of legal and technical enforcement mechanisms. The National Fire Protection Association published a standard code governing the installation of electrical facilities; this code still exists today as the National Electrical Code. Legal enforcement of the code was placed in the hands of state governments; these governments in turn delegated many of the enforcement responsibilities to county and municipal governments. The demarcation between outside plant and inside wiring was defined as the "point of service," usually the electric meter.

Eventually, the situation which exists today evolved: the installation and maintenance of electric power wiring must be performed by licensed electricians, subject to legal oversight by government. Electric power companies protect their interests by a simple expedient: they will not connect electric service to a building until all wiring beyond the point of service has been approved by the local building inspector.

More recently, the telephone industry has gone through a similar transition. As recently as the '60s, telephone companies owned all inside wiring; they even owned the telephone instruments themselves. They defended this arrangement on two grounds: safety (improperly-installed wiring could result in fire or personal injury), and "integrity of the network" (improperly-installed wiring could result in disruption or damage to the telephone network itself).

The FCC overturned this arrangement. Beginning with the "Carterphone" decision of 1968, the Commission forced telephone companies to allow customer-owned equipment to be connected to the telephone network. Through a series of subsequent decisions stretching over decade, it extended this requirement to inside wiring.

But in so doing, the Commission also addressed the legitimate concerns of the industry:

- Fire-prevention and safety issues were left to state governments, and the telephone companies were absolved of liability in case of fire or injury. To assist this effort, the National Fire Protection Association added telephone wiring safety standards to the National Electrical Code.

- Network integrity was addressed by administrative rules and procedures established by the Commission itself. These rules, formally incorporated into the FCC Rules at Part 68, specify the electrical and mechanical specifications of all network interfaces. Telephone companies were given the right to disconnect any subscriber line which fails to meet these requirements.

The Commission also defined the demarcation point between outside plant and inside wiring. It's now formally called the "point of demarcation," or simply "the demarc," usually implemented with a short RJ-11 jumper.

Eventually, the situation which exists today evolved: in most jurisdictions, anyone can legally install and maintain telephone wiring. Telephone companies do not hesitate

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TELECOM INDUSTRY NEWS (CONTINUED)

to invoke their right to disconnect non-conforming lines; indeed, modern telephone switches do this automatically: if an SLC (subscriber line card) detects a problem on the line, it simply disconnects the line until the problem is fixed.

Note that in each of these situations, certain underlying principles were observed:

- In exchange for giving up the right to own and maintain inside wiring, the companies were absolved of liability for fire or personal injury which might result from improper installation.
- Legal and technical mechanisms were put in place to ensure that building owners comply with applicable rules.
- The point of demarcation between outside plant and inside wiring was formally defined.
- The companies were given the legal right to refuse service to any customer who does not comply with the applicable rules.

THE CABLE TELEVISION INDUSTRY

The cable television industry is currently going through a similar transition.

Historically, cable television companies have installed and maintained their own inside wiring, just as the electric power and telephone companies did in earlier years. As a result, many cable operators have continued to claim legal ownership over inside wiring. Indeed, for several years during the '70s and '80s, many cable operators even paid personal property taxes on inside wiring in order to bolster their claims of ownership.

However, in recent years, ownership of most inside wiring has been transferred to building owners. This change has come about for two reasons: FCC regulations, and the growing public acceptance of video services generally.

REASON 1: FCC REGULATIONS

The FCC has established rules which govern the disposition of cable television inside wiring when a subscriber terminates service. These rules are intended to allow an "alternative video provider" to use the wiring if the building owner wishes to switch providers. Alternative video providers include satellite video operators, satellite master-antenna television ("SMATV") operators, so-called "open video system" operators, and competitive cable television operators.

These rules generally require:

- If a subscriber voluntarily terminates service with a cable television system, the cable operator must either physically remove the wiring, offer to sell it to the building owner at material cost (excluding installation labor cost), or abandon it. If the wiring is sold or abandoned, the operator is prohibited from making any subsequent attempt to remove it or to restrict its use.
- The "point of demarcation" is defined to be a point 12 inches outside of the building, without regard to the actual location of the groundblock. This provision ensures that an alternative video provider will be able to connect to the inside wiring.
- The rules work both ways: if a SMATV or DBS operator installs inside wiring, and the building owner subsequently switches to a cable television provider, the cable television operator has the right to use the existing wiring.

Note that these rules do not require the cable operator to convey ownership of the inside wiring as long as it is being used for the operator's cable television service. These rules come into play only when a building owner voluntarily disconnects.

Still, the net result is the same. None of the choices permitted under the rules offer the cable operator any hope of recovering the actual cost of

installing the inside wiring in the first place. Even if the building owner agrees to purchase the wiring, the operator can recover only the cost of the materials, but not the cost of the labor originally required to install it.

Because of these rules, a number of cable companies have simply gone ahead and relinquished ownership of all inside wiring.

REASON 2: PUBLIC ACCEPTANCE OF VIDEO SERVICES

Cable television penetration now hovers at around 70% of households passed by cable, and many households which don't subscribe to cable are connected to alternative video providers. As a result of this growing acceptance of video services, inside wiring now exists in the majority of residential buildings in the United States.

Within the past dozen years, most new buildings have been "pre-wired" for video wiring. Indeed, just about every new residential building constructed these days is "pre-wired for cable" by the same electrical contractor that installs the electric power and telephone wiring. In short, video wiring is now a standard item in new residential construction.

Inside wiring installed by an electrical contractor and paid for by a building owner is indisputably owned by the building owner.

THE ROLE OF THE STATES

Given the de-facto reality that building owners now own most cable television inside wiring, why doesn't the FCC just go ahead and take the obvious final step: declare that all inside wiring now legally belongs to building owners?

Because the FCC doesn't have the authority to do so. Inside wiring is personal property, and property law is the province of state governments. The FCC's inside-wiring disposition rules recognize this fact: they specify how

(continued on next page)

TELECOM INDUSTRY NEWS (CONCLUSION)

the cable operator must dispose of the wiring, but they do not question the operator's original right of ownership.

State governments have been slow to accept responsibility for cable television inside wiring. Doing so means they have to make the same implicit tit-for-tat deal they made with the lighting companies and the telephone companies: when a cable operator gives up its right to own and maintain inside wiring, it expects to be absolved of liability for fire or personal injury which might result from improper installation.

Yet states don't have much choice: they have inherited the responsibility by default. The National Electrical Code includes a section governing the installation of cable television wiring; thus, any state which incorporates the Code into state law has implicitly agreed to enforce it.

THE CABLE OPERATOR'S DILEMMA

Notwithstanding the fact that most cable operators no longer own inside wiring, they are still legally responsible for complying with FCC regulations in two areas:

- Signal quality. FCC regulations specify several signal-quality criteria governing such things as RF carrier level, signal-to-noise ratio, permissible interference levels, and luminance/chrominance delay. These criteria must be maintained right up to the input connector of the subscriber's television set.

- Signal leakage. FCC regulations designed to control signal leakage apply to the entire distribution system without regard to ownership. Thus, the cable operator must monitor inside wiring for

leakage.

These requirements place cable operators in an awkward position: they must maintain the integrity of the signal through the inside wiring, yet they do not own or control the inside wiring.

From the FCC's perspective, cable operators have the same control over non-conforming inside wiring that telephone companies have: if the wiring does not conform, the cable operator has a right to disconnect the service.

On the surface, this looks like an easy solution to the problem. But it isn't that easy. A telephone switch can monitor a copper-pair telephone line and disconnect it automatically if anything goes wrong. But there's no way for a cable operator to know what the signal quality is at the back of a TV set without actually sending a technician to the site.

Signal leakage presents an even trickier problem. Cable operators can monitor inside wiring for signal leakage by using leakage-detection receivers placed outside the building. If necessary, they have a legal right to disconnect any building where leakage is detected.

But actually doing so is a political and public-relations nightmare. Homeowners tend to become paranoid when confronted with the fact that a cable company can detect what's going on inside their homes.

WHERE TO FROM HERE?

In spite of these dilemmas, the direction is clear: inside wiring for video services — whether it's used by a cable television provider or by an alternative video provider — is going to end up being a part of every building just like

electric power and telephone wiring. And the political battles currently in progress will recede into history, just as the lighting companies' and the telephone companies' battles have receded.

Indeed, this is already happening. Even cable television companies which still claim ownership over the wiring they originally installed are taking advantage of the video wiring now being pre-installed in new buildings.

It's just a matter of time.

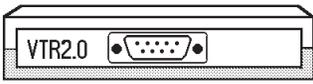
SBE HAMNet/Chapter of the Air

The SBE HAMNet, or Chapter of the Air, was developed for those HAM members who are not in close proximity to a local SBE Chapter. It gives members a monthly chance to get caught up on up-to-date SBE information.

SBE Chapter of the Air takes place on the second Sunday of every month at 0000 GMT and is done by Hal Hostetler, WA7BGX, Net Control. The published frequency is 14,205 mhz. Occasionally, that frequency is busy and you may need to move up (no more than 10 KHz) to find the SBE meeting.

Some of SBE's Board members are regular attendees, so your opportunity for comments, suggestions, ideas and complaints are heard by the top of the organization.

RS-422 Remote Control

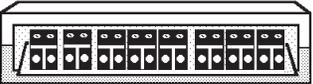


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Steve Paugh is the editor for the HTML Version of this Newsletter, available monthly on the SBE Chapter 24 web page.



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SBE's Short Circuits -- July 1998

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

**RESUME SERVICE
OPENS JULY 1**

The Board of Directors recently approved the creation of a resume service for members. Beginning July 1, SBE members, at no charge, will be able to submit five copies of their resume to the SBE National Office. These will be placed on file, noting individual preferences for job location and type. Prospective employers, for a fee of just \$25 to help cover administrative costs, can request resumes from SBE that meet the qualifications for the position they have available. From that point, the job search and selection process is between the candidate and the employer. Completing a simple fact sheet is required. Just contact Teresa or Scott at the SBE National Office and one will be sent to you. To help get the program started, the \$25 fee to employers will be waived through September 30, 1998.

**GUIDE TO WRITING STATION OPS
RELEASED**

The "SBE Guide to Writing Station Operations Manuals," written by Fred Baumgartner, CPBE is now available from the SBE National Office. Member price is \$69 and non-member price is \$89, plus \$2.00 shipping per book. Indiana orders must add 5% sales tax. A disc containing many of the forms, policies and sample letters is included making it easy to modify them to meet your needs. To order, use the form enclosed with this packet or call the SBE National Office at (317) 253-1640. You may fax your request to SBE at (317) 253-0418. Payment by credit card or check must accompany orders. Send mail orders to: STATION OPS, Society of Broadcast Engineers, 8445 Keystone Crossing, Suite 140, Indianapolis, IN 46240.

**SBE LEADER-SKILLS COURSE A
SUCCESS**

The SBE Leader/Skills Seminar, presented by Dick Cupka, was held last month. Fourteen students from across the country attended. On the closing day, Dick was presented a special plaque commemorating his 30 years of providing leadership skills training to broadcast engineers. In the coming weeks we will announce plans for the 31st program to be held during June 1999.

**BEST MEMBERSHIP DRIVE
RESULTS YET**

The annual SBE Membership Drive, "One New Member," ended May 31 with 74 new members sponsored by current members. This is the most in the four years of the "One New Member" campaign. Names of the prize winners will be drawn July 11, during the SBE Summer Executive Committee Meeting in Indianapolis. SBE Membership at the end of June reached 5,442, the highest total in many years. Thanks to all the members who have worked hard to strengthen the Society by recruiting new members.

**YOUTH PROGRAM BEGINS
AUGUST 1**

SBE's new program targeting high school age students will officially begin August 1, 1998. High school students interested in the technical aspects of broadcasting will be 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.

**DEADLINE APPROACHES FOR
NATIONAL BOARD NOMINEES**

Nominees for SBE national officer and board candidates must be submitted by July 17. Any voting member, by letter to the Secretary not less than 60 days before the election date, may propose and nominate a candidate. Any nominee so proposed by ten members or more shall be entered to the ballot. Nominations should be sent to: Thomas P. Weber, CPBE, Secretary, c/o SBE, 8445 Keystone Crossing, Suite 140, Indianapolis, IN 46240.

**FOR WASHINGTON
INSIDERS**

By Tom Smith

The FCC recently held two open forums in Washington, D.C. to inform the public on how to participate in upcoming FCC spectrum auctions and in Electronic Filing systems. The Auction Forum was held on June 24, 1998 at the Reagan Trade Center and the Electronic Filing Forum was held at the Commission Meeting Room at the FCC offices on June 25, 1998. The notice for the Auction Forum was issued on June 3, 1998 and for the Electronic Filing Forum on June 8, 1998.

For those outside of Washington, the FCC is making available a tape of the Electronic Filing Forum from its copy contractor, and will post copies of the handouts on the FCC web site.

*From FCC press releases
(www.fcc.gov).*



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Upcoming Events (cont'd)

program topic. I know this is short notice, but if you have a program idea for the Clinic, please contact one of the Officers by the 13th. In addition, we have plans to display items relating to Chapter 24 and other Chapter's history at this year's SBE exhibit booth. Please contact Kevin Ruppert at WISC-TV if you have or know of any old pictures or correspondence from the early days of our Chapter.

As you may have heard, the SBE National Office is promoting a Youth Program to stimulate interest in the broadcast engineering profession among high school students. The National is encouraging local chapters to have one meeting and program a year devoted to this youth program where high school students and their parents can be invited and learn more about our profession. In initial discussions with the Chapter 24 Program Committee, we are planning this type of program for November. This program will likely center around a presentation and tour at one of the broadcast facilities in Madison.

This pretty much covers the year ahead for Chapter 24 at this point.

Looking ahead to next year, Chapter 24 has already been asked to help coordinate a public DTV presentation planned for the Spring 1999 UW Engineering EXPO in Madison. Chapter 24 members Craig Bluschke, from the College of Engineering, and Steve Paugh, from WISC-TV, are working to get this project off the ground. You are sure to hear more about this before years end.

I think Chapter 24 and our industry as a whole has an exciting future ahead of us. As always, please forward any suggestions or comments to me either by phone or e-mail.

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FCC Rulemakings (cont'd)

above average terrain from 3 to 16 kilometers from the transmitter to as close as 1 kilometer to as far as 100 kilometers.

In another proposal, the FCC would create a new class of FM station, Class C 0 (zero). The new class C 0 would fall between class C (100kw at 300-600m) and class C 1 (100kw at 150-300m). Class C stations would change to 100 kw at 450-600 meters and the new class C 0 would be 100 kw at 300-450 meters. The changed spacing to the new class C 0 stations would allow for lower class stations to upgrade, or for the creation of some new stations. Class C stations operating at heights of 300-450 meters would have 3 years to upgrade before the FCC would downgrade them.

The FCC also proposed changes to class D stations (10 watt educational stations) that will allow them to make changes and help them to avoid going off the air because of interference problems with higher power stations in the reserved band.

Comments are due on August 21, 1998 and replies on September 21, 1998. This notice was adopted on June 11, 1998 and released on June 15, 1998. This notice was published in the Federal Register on June 22, 1998 on pages 33,892- 33,901 and is also available on the FCC web site.

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

MOBILE VIDEO

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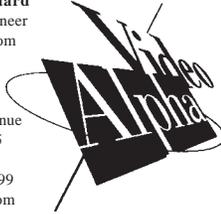
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FIRST CLASS MAIL

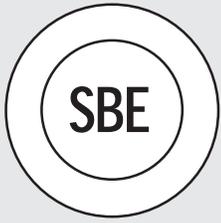
Newsletter edited on Pagemaker 5.0 by: Mike Norton

Contributors this month: Lloyd Berg, Neal McLain, Tom Smith, Fred Sperry, Paul Stoffel, and Tom Weeden.

Thanks to Chris Cain for his work on the Chapter 24 WWW page.

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JULY MEETING and PROGRAM

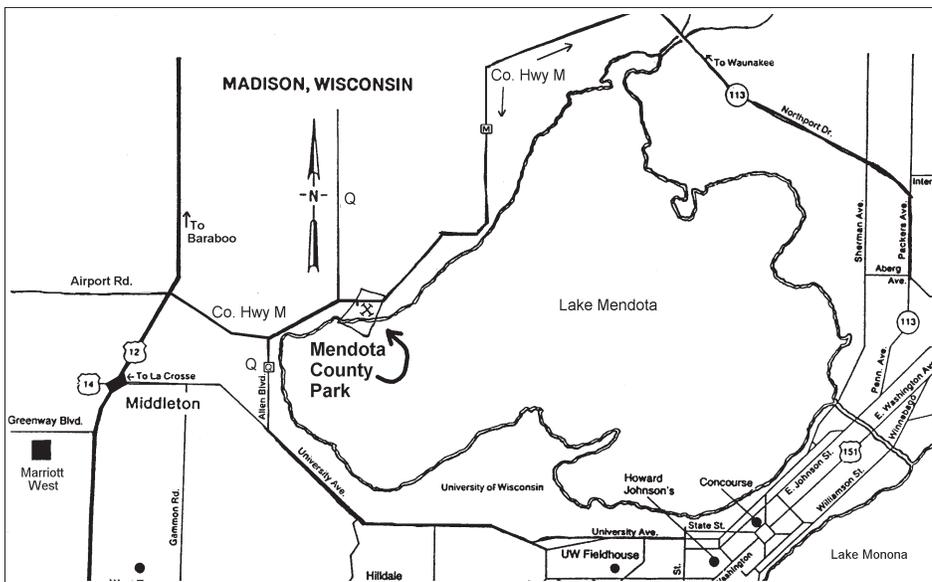


Society of Broadcast Engineers CHAPTER 24 MADISON, WISCONSIN Thursday, July 23, 1998

Annual Chapter 24 Picnic

The Chapter will be providing the meat, buns, and all the fixin's, including extra plates and plasticware. We ask that you bring a dish to share and your own drinks.

Family and friends are invited and welcome! Please RSVP, with number attending, to Denise Maney via phone/fax at 277-8001, or email at sloop26@aol.com, by July 21st.



Mendota County Park is located on County Hwy. M in Middleton.

The festivities will be occurring from 4 pm until dark, rain or shine, by Shelter #1 near the beach. We hope to see you there!

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

1998 UPCOMING MEETING/PROGRAM DATES:

| Day | Date | Program |
|---------|-----------|-----------------|
| Tuesday | August 18 | To Be Announced |

Program Committee:

Kerry Maki
833-0047

Denise Maney
277-8001

Steve Zimmerman
274-1234

Mark Croom
271-1025