CATJ

OFFICIAL JOURNAL OF THE COMMUNITY ANTENNA TELEVISION ASSOCIATION

From a Close Bond with Customers...

Came the Closest Bond in Cable.

Developing a close bond requires understanding and cooperation. Understanding your needs and cooperating to develop effective solutions is our idea of Customer Service.

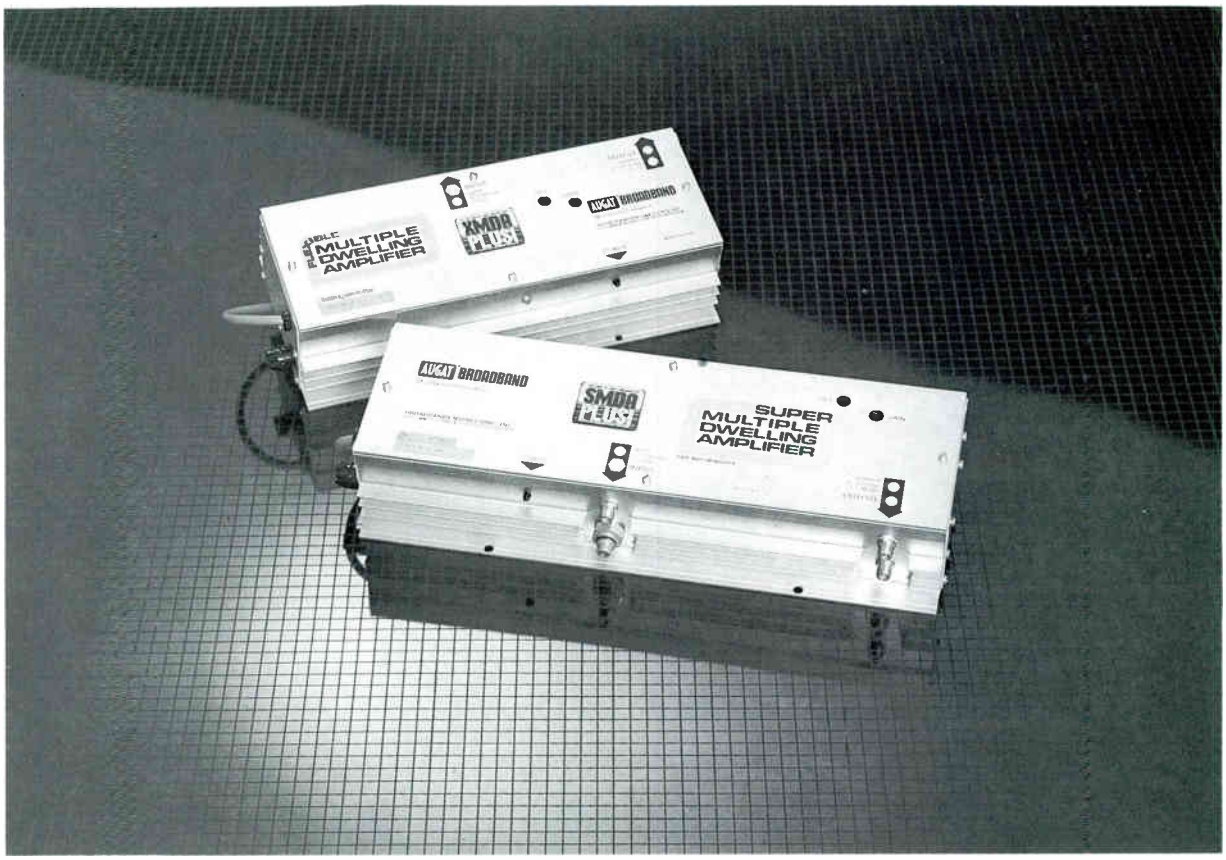
Typical of this approach is our T4 Plus™ coaxial cable. Building on T4 technology, T4 Plus addresses the needs expressed by our customers: improved handling characteristics, mechanical integrity, and resistance to environmental abuse. T4 Plus, 100% bonding (conductor to dielectric, dielectric to sheath, sheath to jacket) provides improved performance while utilizing standard connectors and coring tools.

TFC, where communicating with customers leads to closer bonds. For more information, please call 800-TFC-CATV or write:

TFC

TIMES FIBER COMMUNICATIONS, INC.

CABLE TELEVISION DIVISION
358 Hall Ave., P.O. Box 384, Wallingford, CT 06492



Now with power-doubler hybrids, Broadband's apartment amps offer lower distortion specs, increased flexibility

Good news! You may now order our Flexible Multiple Dwelling Amplifier (XMDA) and Super Multiple Dwelling Amplifier (SMDA) with Amperex power-doubler hybrids.

Our new XMDA-PLUS and SMDA-PLUS give you these added options in designing your system:

- You can reduce system distortion by 6 dB while maintaining present output levels, or
- You can increase output levels by 3 dB with no change in distortions.

Designed for CATV, SMATV and MATV home-run or branching systems the XMDA-PLUS and SMDA-PLUS are state-of-the-art and meet most requirements for apartment, condominium, hotel and motel distribution systems. Both units feature a wide range of options and can be customized to your system's requirements.

The SMDA-PLUS has bi-directional capability, while the XMDA-PLUS will fill most current needs. It's not two-way, but has virtually the same options as the SMDA-PLUS and is competitively priced.

Broadband-engineered and guaranteed, both units are capable of full channel loading at the design bandwidth. Tough and dependable, they offer the maximum in flexibility and performance.

For additional information on specifications or pricing, call us toll free at 800-327-6690, or write Broadband Engineering, Inc., 1311 Commerce Lane, Jupiter, Florida 33458-5636.

Features:

- Power-doubler hybrid circuitry.
- 330 MHz & 450 MHz bandwidths.
- 30 dB & 35 dB gains.
- Plug-in return amp for 2-way operation. (SMDA-PLUS only)
- 120 volt line- and 30/60 volt cable-power options.
- Variable gain & slope controls.
- Plug-in pads & equalizers.
- Power-passing option (XMDA-PLUS, cable-powered version).
- Extruded aluminum housing for excellent heat dissipation.
- Three levels of surge protection.

Distortion Specifications

Bandwidth	Channel Loading	Signal-to-Distortion Ratio* XMod	CTB	2nd Order
330 MHz	40 Chs.	71 dB	69 dB	72 dB
450 MHz	60 Chs.	69 dB	67 dB	72 dB

*Based on output of 46/41 dBmV. All distortions are worst case.

Maximum Output for 57 dB Signal-to-Xmod Ratio:

12 Channels	+57 dBmV
35 Channels	+53 dBmV
40 Channels	+53 dBmV
60 Channels	+52 dBmV

AUGAT® BROADBAND

Quality and Innovation

We have more Blonder-Tongue CATV equipment in stock than Blonder-Tongue.

Or anyone else.

On hand for immediate delivery, we keep an enormous stock of such Blonder-Tongue items as modulators, amplifiers, converters, filters, headend accessories, traps, processors, preamps and more.

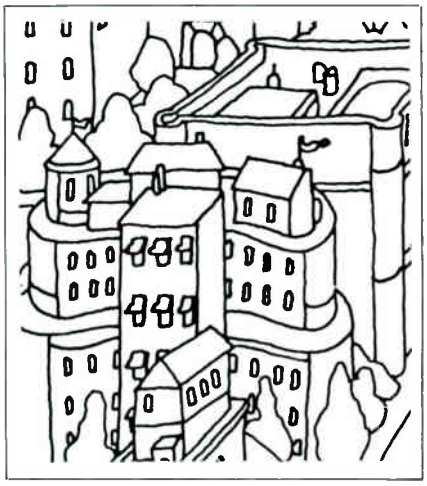
So, whenever you need something in CATV—equipment or answers—write or call Toner toll-free. 800-523-5947.
In Pennsylvania 800-492-2512.

Call us toll-free. Get same-day shipment plus advice from people you can trust.

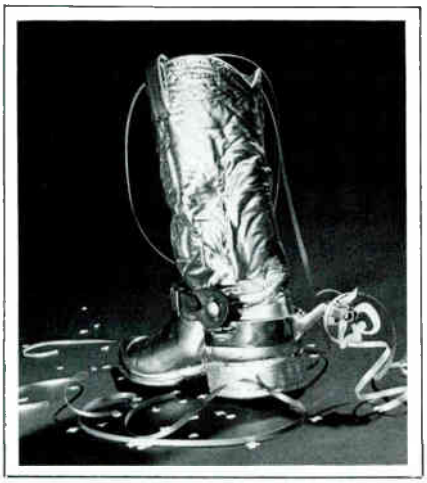
Toner
cable equipment, inc.
969 horsham road
horsham, PA 19044

CATJ VOL. 12 NO. 1

CATJ, The Official Journal for the Community Antenna Television Association is published as a service for Association Members and others providing services to the industry.



See page 6



See page 20

See page 24

ABOUT THE COVER

CATJ salutes the Texas Cable Television Association on the occasion of their 25th Anniversary and invites cable people everywhere to attend their convention January 30 - February 1st in San Antonio, Texas.

catatorial

Carl Schmauder
PRESIDENT OF CATA

HAPPY NEW YEAR!

It's not just because this is the traditional holiday season that I can wish you all a "Happy New Year"! The upcoming year promises to be a happy one for the cable industry. We have finally achieved the federal recognition of our business that has long been needed, and the result is likely to be a steady improvement in the circumstances under which we do business. The most important long-term result, I would hope, is that cable television will be perceived as what it is — a business, like the newpaper business, that is involved in the delivery of entertainment and information into the home. And as such, that business should be interfered with as little as possible by the federal, or any other level of government.

It is entirely possible that with the passage of S.66 the political atmosphere will change sufficiently so that we will no longer have to expend an inordinate amount of time dealing with the political problems of being the focus of every regulatory authority imaginable. It is usually the case that when governments lose the power to control an entity totally, they lose interest in that entity. Hopefully that will be the case for cable television, and we will be allowed to simply run our businesses.

Of course, with that lessening of governmental focus also comes increased obligations on the part of cable operators. We have to make sure that the service we give our subscribers is the best we know how to give, and that it truly serves the needs of our communities. If we do not, two things are likely to happen: first, we will attract (and should attract) aggressive competition. You can expect to see more "overbuild" proposals, more "alternative delivery" mechanisms such as video tape, satellite, or even video delivery by telephone and the like. And second, the government will get back into the picture! So if we want to stay happy about our new position in the new year, it is incumbent upon us to keep doing a good job!

So far as I can see, cable operators, in the main, are doing a good job, and we are improving all the time. There certainly are areas where we must put forth more effort, such as customer service and keeping local, state, and federal officials as well as our customers informed about our business — but the bottom line seems to be that we are providing a service that our customers want and like. That's the best kind of business to be in.

As noted, our "Happy New Year" has already started, slightly ahead of old man time, since S.66 goes into effect on December 29, 1984. Other news, already hitting the presses, portends more good tidings for the coming year. For instance, the decision by Showtime/The Movie Channel to announce its plans to scramble its pay services using the same equipment HBO is already starting to distribute seems to indicate that the move toward scrambling cable programming coming off the satellites will accelerate. That's good for all of us. The theft of service problem is a severe one, especially regarding pay programming. The estimates now range as high as $7 million that each year is lost by the cable industry due to theft of service. And don't think it's not happening in your community — no matter how big or how small! CATA has joined with the rest of the industry in a broad-based coalition to fight theft of service. You will be hearing a lot more about that in the near future. The move to form a coalition (including even the MPAA!) as well as the quickening pace of scrambling satellite signals all bodes well.

On the competitive front I think we have a great deal to be thankful for in the past year and, again, we can look forward to a Happy New Year. The cable originated program services are coming into their own. The programming is better, the scheduling is better, and the information in the program guides is getting to the point where the cable-advertiser-supported channels are becoming a real asset to any system — even if you don't sell ads locally, which I think is an area most operators will start looking at

more seriously in the next year. Further, while the programming options that we offer are increasing and getting better, the competition seems to be having a great deal of trouble. I think that is due, in no small part, to our gains. But anyway, the best example of "trouble" is the announcement recently that Comsat has decided to give up on its DBS venture. $24 million later they have decided that delivery of five or six channels for more than it costs to subscribe to cable (which would give you 20 or 30 or more channels) simply won't make a very good business! They should have been reading CATA material all along — we could have saved them an awful lot of money. The same, by the way, can be said for Prudential Life Insurance, which is still holding the USCI DBS bag — they have invested $68 million to date, and they were trying to merge that operation in with the Comsat plan when the whole thing fell apart.

As a matter of fact, even the modified "home satellite market" appears to be a potentially bright star on the cable horizon. Since specialized DBS is clearly in big trouble, and since there are a lot of home earth terminal owners out there who are going to get a rude shock when HBO, Showtime, TMC, et.al. scramble, they are going to want to be able to legally get descramblers and permission to pay for the service on a monthly basis. It would appear that cable operators are in the best position to act as the "agent" for selling that service in their own franchise area to those folks who can't get cable. Another new source of revenue for cable? I think so, and I know several of the major pay suppliers are thinking along the same lines.

Yes, we have had a good year, and can be very thankful for the things that have come our way as cable operators. They did not come, of course, without a lot of hard work, and on behalf of CATA, I want to say THANKS to all the people who made it happen. Your support — both operators and suppliers — for CATA was a major starting point, and a special THANKS for that! Let's keep it up in 1985! HAPPY HOLIDAYS, AND A HAPPY NEW YEAR. □

CATJ STAFF

Business and Managing Editor
Celeste Rule Nelson

Executive Assistant to the Editor
Diane Howard

Contributing Editors
Karl Poirier
Glyn Bostick
Terry Owens
Stephen Effros

Art Director/Marketing
Phyllis Crumpler

Assistant Art Director
Dianna Johnson

Graphics Designer
Joyce Meiki

CATJ OFFICE

4209 N.W. 23rd, Suite 106
Oklahoma City, OK 73107
405/947-4717

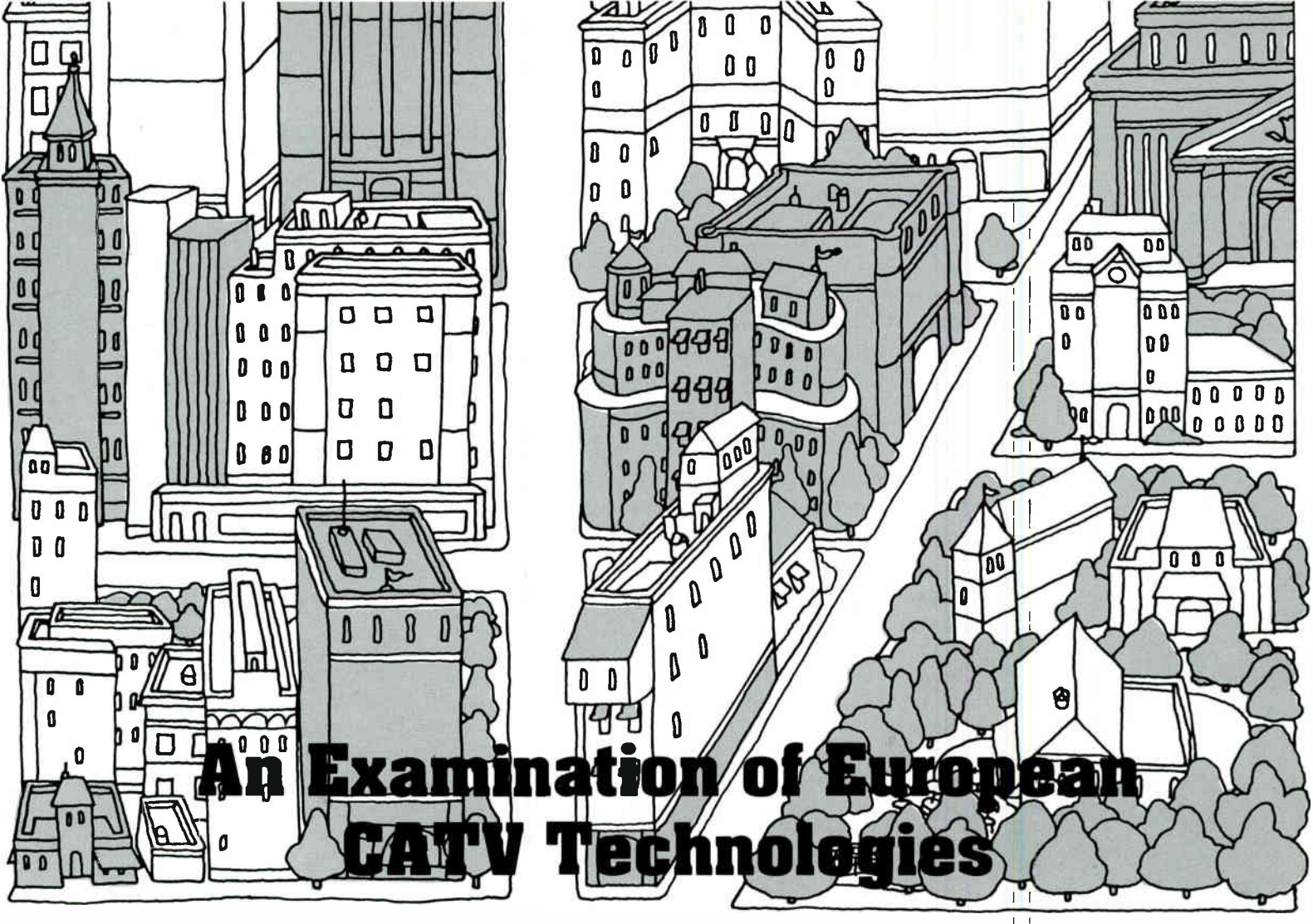
POSTMASTER: Send address change to 4209 N.W. 23rd, Suite 106, Oklahoma City, OK 73107.

CATA OFFICES

CATA (Washington Office)
Stephen R. Effros, Executive Director
3977 Chain Bridge Rd.
Fairfax, Va. 22030
(703) 691-8875

The Community Antenna Television Association, Inc. is a nonprofit organization formed under Chapter 19, Title 18 of the Statutes of the State of Oklahoma. As such, no part of its assets or income shall be the property of its members, such assets and income shall be devoted exclusively to the purposes of the Corporation.

The Community Antenna Television Journal (CATJ)—ISSN-0194-5963—is published monthly by Television Publications, Inc., 4209 N.W. 23rd, Suite 106, Okla. City, OK 73107. Subscription price: $22.00 per year, $26.00 per year Canada, Mexico, and foreign is $30.00 per year. Second class postage paid at Oklahoma City.



An Examination of European CATV Technologies

by Karl Poirier
Triple Crown Electronics, Inc.

In order to better understand the potential future of cable television, it is often valuable to examine the technologies employed in other Industries, or in similar industries in foreign settings.

CATV, in many respects quite different from North American cable, has existed in Europe for many years. The differences relate, not so much to technical characteristics of European signals, but to the policies and intent of cable within these countries. We must remember that in North America, the primary purpose of cable was the collection and carriage of distant stations into poor reception areas, with the fundamental drive being entertainment programming. In this context, the priorities were often likely to be content rather than quality related, although certain minimum standards were targeted.

The emergence of cable in Europe, often as a government controlled or even government operated system, carrying the local

AN EXAMPLE OF DIFFERING SYSTEM REQUIREMENTS

Region	Frequency Allocation Forward	Frequency Allocation Reverse	System Power	Channel Bandwidth	System/ Intercarrier
CANADA/USA	50-450(+)	5-30(33)	60VAC/60Hz	6 MHz	NTSC-M (4.5MHz)
UK	50(80)-440	5-30(60)	50VAC/50Hz	8 MHz	PAL-I (6 Mhz)
HOLLAND	5-21	47-300	42VAC/50Hz	7 MHz	PAL-B (5.5 MHz)
AUSTRALIA	5-30	45-250	50VAC/50Hz	8 MHz	PAL-I (6 MHz)
NORWAY	5-25	40-220	42VAC/50Hz	7 MHz	PAL-B (5.5 MHz)
FRANCE	5-21	40-220	50VAC/50Hz	8 MHz	SECAM-L (6.5 MHz)

government program, was targeted at quality. The objective was primarily to deliver a high quality feed to dense population areas, without high density antenna installations. Cable systems fell normally under the jurisdiction of government operated telephone companies, where cost was of less concern than with the North American Private entrepreneur.

Due to lack of private stations, and the transborder language problem, many cable systems were actually built as single or two channel systems. In more recent times, more international flavour has appeared; Transborder reception has become more common, although the problem of standards conversion and language translation still poses limitations.

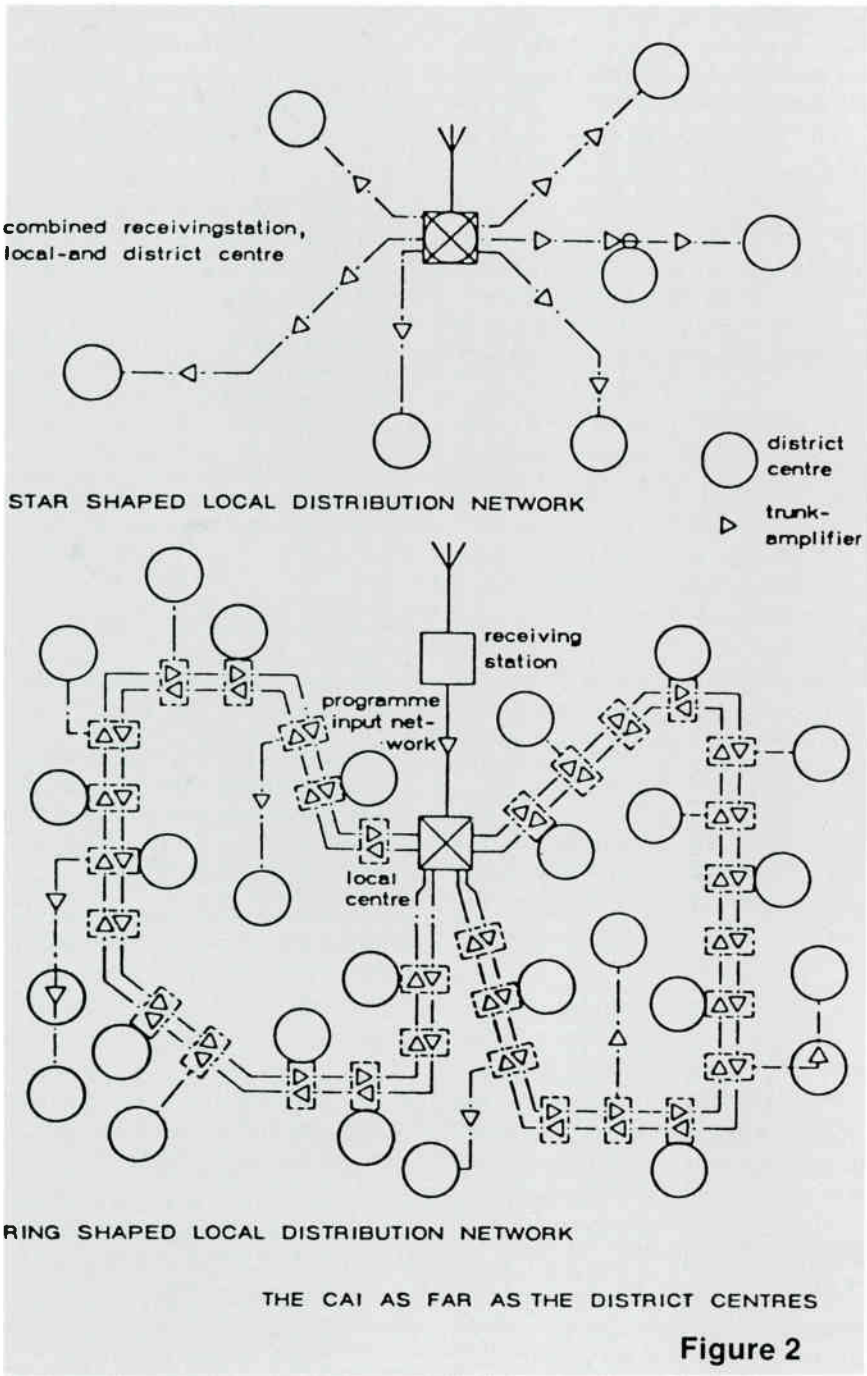


Figure 2

In order to examine the system architectures involved in Europe, and to possibly evaluate these methods as potential ingredients in future North American designs, we should examine the relevant factors which exist in the European television environment:

a. Channel and bandwidth allocations
b. Population density
c. Television receiver characteristics
d. Telephone company involvement
e. Environmental and esthetics

Channel and Bandwidth

While VHF broadcast is common in Europe, a major portion of European broadcast is in the UHF band, with some areas such as UK being exclusively UHF. In these areas, cable must be constructed as a VHF network, with U-V conversion at both ends. In all cases, whether the output be VHF, UHF, or combined V/U out, the distribution and trunk networks operate in (similar to North American) VHF bands. The individual bandwidth requirements often vary with each country, as do television standards and power systems. (Figure 1)

Population Density

The population density in Europe would be a North American cable operator's dream. Extremely large subscriber numbers can be serviced using relatively short trunks, and multi unit drop distribution is the norm. The development of star point distribu-

(continued on page 12)

SHOWTIME/THE MOVIE CHANNEL INC. ESCALATES WAR ON CABLE THIEVES

1984 Saw Opening of Frontal Assault Against Nationwide Theft Problem With Publication of "Combat Kit" and State-Wide Anti-Theft Drives

In early 1984, when SHOWTIME/THE MOVIE CHANNEL began sending representatives dressed in combat helmets and battle fatigues to appear before cable operators' groups, the message was clear: **SHOWTIME/THE MOVIE CHANNEL Inc. was going to war against cable thieves.**

Less than a year later, SHOWTIME/THE MOVIE CHANNEL executives report from the front that the war has successfully been carried into enemy territory. SHOWTIME/THE MOVIE CHANNEL's "Theft of Service Combat Kit,"™ published in June, has presented cable operators nationwide with proved strategies for fighting cable thieves. Seven SHOWTIME/ THE MOVIE CHANNEL-sponsored state-wide surveys of the theft problem have been completed to date. Group W Cable of Tampa, which used SHOWTIME/ THE MOVIE CHANNEL tactics to complete one of the nation's earliest local anti-theft drives, reports seven months after the campaign's end that nearly 90 percent of its converted illegals have retained service — a figure that yields $510,000 of increased annualized revenue on an investment of $48,000. Most important, SHOWTIME executives say, is the fact that in 1984 theft of cable service became a subject of public importance rather than one of private debate amongst operators.

Now SHOWTIME/THE MOVIE CHANNEL is escalating its war against theft. It is joining with 20 Southern California MSOs to study ways of closing cable system loopholes that result in internal cable theft. It is planning additional state-wide and MSO-wide surveys of consumer cable theft. The company is also releasing its latest weapon in the fight: a videotape that chronicles some major theft of service success stories of 1984. Featuring actual news stories and press conferences that have led to successful campaigns in major markets such as Tampa and Denver, the videotape is a persuasive tool designed to encourage cable operators to embark on their own anti-theft drives. The tape is available free to state cable associations and to all SHOWTIME/THE MOVIE CHANNEL affiliates.

The new videotape is based in part on SHOWTIME/THE MOVIE CHANNEL's "Theft of Service Combat Kit," the landmark document now in its third printing. Paul Kagan Associates, the respected industry analysts, last month acknowledged the importance of this manual by writing:

"When SHOWTIME/THE MOVIE CHANNEL Director of Affiliate Marketing David Schreff unveiled the 'Combat Kit' at the National Cable TV Association's Las Vegas Convention, a new chapter in theft-of-service history was written. It's the first stem-to-stern, comprehensive attack on piracy, a tutorial for tenderfoots and a reference for old warriors. Schreff concludes that 86 percent of the problem — all but organized theft — is defeatable by tightening administrative and oversight procedures and by actively combatting customer-initiated theft."

The Combat Kit will be updated periodically in 1985 as new information, such as the results of the Southern California study, become available. The kit has been endorsed by NCTA Chairman Ed Allen, who noted, "The industry owes a debt to (SHOWTIME/THE MOVIE CHANNEL) because it's the only company that has developed on a national basis a how-to-do-it kit, and they've supplied this coast to coast."

Last month, SHOWTIME/THE MOVIE CHANNEL representatives were invited to appear before the NCTA State Leadership Conference, comprised of the leaders of state cable associations, to present recommendations on reducing theft of service. Mr. Schreff, co-director of SHOWTIME/THE MOVIE CHANNEL's Theft of Service Campaign, noted, "We were pleased to be acknowledged once again by the industry as the national leader in theft of service."

Reviewing the year's progress against cable theft, Mr. Schreff pointed out, "1984 was the year in which cable operators became willing to talk to each other and the public about this mammoth problem, which each year costs at least half a billion dollars nationwide. Operators now realize that information exchange is the only way to reduce the problem, which is of concern not only to cable operators and program suppliers but also to hardware suppliers, the Motion Picture Association of America, the American Society for Industrial Security, and the law enforcement officials."

Sandi Wildman, Director of Affiliate Public Relations and "Combat Kit" co-author, added, "In the past, cable theft was perceived primarily as a technological problem. Now, in large part as the result of our efforts, it is seen as a problem that can be solved by vigorous marketing, public relations, and legal efforts. Cable consumers are becoming aware of the problem because news of it is appearing in mass circulation newspapers and on prime-time television. For instance, on 'Hill Street Blues' this year, Joyce Davenport was caught as an unknowing cable thief. Increased consumer awareness of our anti-theft drives can only reinforce the perception that is at the basis of our industry: that cable television is television worth paying for." □

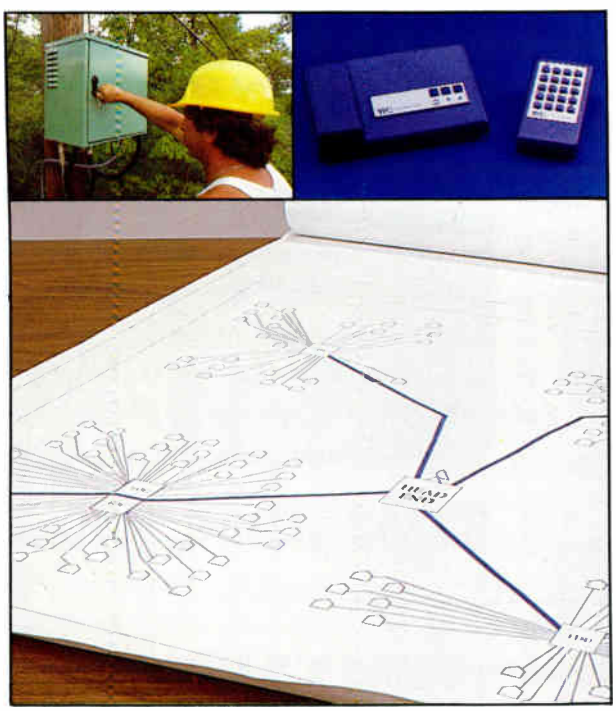
MINI-HUB II building its reputation by being

The Successor to all CATV Systems.

"Watchful waiting" is no longer realistic or wise when it comes to market demands for addressability and pay-per-view.

The number of systems with addressable converters doubled during 1984. Over 50% of general managers are now considering addressability within the next two years, and it is estimated that there will be over 47,000,000 households with addressability by 1990.

And pay-per-view is going to be offered by over 33% of cable operators with addressable systems by 1985.



It was not caution that inspired *Times Fiber Communications* to invest in the development of MINI-HUB II.™ *It was vision*—with a view toward emerging consumer demands and increasing systems revenues.

Also take a look at other MINI-HUB benefits:

- Eliminates the high costs of in-home servicing.
- Eliminates theft of hardware and service.
- Reduces the high cost of in-home equipment.
- Minimizes initial investment for advanced star-switched technology by having lower trunk and feeder costs and fewer electronics and passives.

For more information, write or call: Times Fiber Communications, Inc., P.O. Box 384, Wallingford, CT 06492,(800) 243-6904 .

MINI-HUB II

TFC

TIMES FIBER COMMUNICATIONS, INC.
COMMUNICATIONS SYSTEMS DIVISION

LETTERS

As we have concluded the 10th Anniversary series on CATA Personalities, CATJ wishes to express our appreciation to those participating personalities for their cooperation and patience as their stories were developed. We have received such nice response from those honored, and we wanted to share some of their thoughts with the CATJ readers. It was such an honor to work with these people, and wish it could have gone on — maybe the 20th anniversary!!

Dear Celeste, *Jeff Krumme*

My sincere thanks to you and Kay Sheldon for the article in the October issue of CATJ Magazine. Sincere thanks also for the recognition of Lila's efforts in our joint venture in Cable TV. Her participation was, of course, essential.

In recalling the events covered in the article I was impressed with how fast it has all happened. Our industry has changed significantly and many friends have moved or passed on. The continual evolution of Cable TV equipment is fascinating and many improvements, such as the integral sleeve connector, are allowing technical types to sleep more of their nights now than in the early days of Cable. Maybe someone will now solve sheath separation problem.

My sincere best wishes to you and your fine staff. May the future be kind to your publication which has provided so much needed information at the right time to so many in our Cable Television industry.

Sincerely,
Jeff Krumme

Kerwin F. McMahon

Dear Celeste:

I want to extend my sincere thanks to Mr. G.H. Dodson, President and Publisher of CATJ, and to yourself for having selected me as your September feature personality. I also extend my appreciation to Kathleen Sheldon for the excellent manner in which she interpreted our conversation via the telephone, and the detail that she applied in writing this profile about me.

The CATA Association has always been a closely related organization, not only to myself but to the entire RMS Electronics, Inc. association. I strongly support those programs that CATA advocates for the betterment of the cable TV industry.

Please extend my fondest regards to Carl Schmauder, President, as well as to the other officers of the CATA Association and to the entire CATJ staff.

Respectfully yours,
Kerwin F. McMahon
Senior Vice President
RMS ELECTRONICS, INC. □

John F. Monroe

To CATJ:

It is not only a pleasure but an obligation to thank Kathleen (Sheldon), Celeste, and the entire staff for the able article in your December issue. Now I am considered a semi-legend before my time by the family. I guess heretofore I was just a member!

The arranger of the graphics did a superb job.

Thank you all and again in person at the next convention.

Sincerely,
John F. Monroe •

(continued from page 7)

tion with individual subscriber drops provides for much simpler servicing and control than does tapped distribution line technology. The star distribution does, however place a heavier reliability burden on the system, as any failure is likely to have a higher number of affected subscribers than a normal tapped line. The combination of high density and short distances led Europe to concentrate on trunk quality and reliability. Several designs, in particular Dual Ring Trunking, are near perfect solutions to this problem.

Television Receiver Characteristics

The lack of program quantity, with most countries having only one or two stations, provided no need to develop multi channel selectors as in North American television receivers. Most European receivers incorporate 4-12 tuneable push buttons which can be individually set to a particular program. The capability is not inherent either to handle switching between many channels, or in fact, to handle adjacent channels. Thus any attempt to interface cable to the receiver must be on a non-adjacent channel basis, or, the system must include a pre-selecting device such as convertor or switched star feeder.

Telephone Company Involvement

The operation of CATV systems by the Governmental telephone company (PTT) in most countries generally means a higher level of capital investment and higher performance requirements. The ability to build systems with no great need to show return on investment allows the PTT to engineer as much reliability and performance as they see fit. In some cases, the private sector operates the distribution system as an enterprise. Very often, however, they are required to build to PTT specifications which places a heavy load on available resources.

Environmental and Esthetics

With the exception of the Nordic countries, Europe is considerably less environmentally difficult, with little frost or ice problem. The geology of the area shows little in the way of heavy rock, and underground installation is fairly simple. In addition, very

little utility plant is aerial for esthetic reasons. Underground installation is normally less than 2′ deep and underground cable damage is slight. The reliability and ease of maintenance of this type of system is considerably more simple than in many North American cities. Thus we find that the overall system architecture often bears little resemblance to a typical Canadian or American CATV system. If we examine in detail the CATV technologies of two countries in particular, we will observe the very different approaches involved.

Holland

CATV in Holland involves a combination of PTT operated trunks with privately (usually municipal) operated head-end and distribution plant. The Dutch system is geared to performance and reliability, with considerable regard to grounding and powering.

The system topology consists of district centres each serving between 1000 and 3000 homes. The district centres are fed from the head-end by star trunks in small systems, or dual ring trunks in large systems. The star trunk is quite similar to standard North American trunk distribution systems. (Figure 2)

The Dual Ring trunk consists of parallel, opposite direction trunks, which start and end at the head-end. Taps from this trunk are made via diversity switching amplifiers. The tap is normally set to the shortest cascade direction, and will, on failure of this cascade, transfer to the longer, opposite feed. This type of trunk is highly reliable, and accordingly priced.

Transport of signal from the head end to the district centres is in the VHF low, mid, and high bands on a non-adjacent basis. In order to accommodate the Dutch television receiver which is a VHF, UHF (12 channel total), the mid band signals must be converted to UHF at the district centres. From this point to the individual homes, the distribution is combined V/U. Overall cascades from district centres to television receivers are limited to 2 amplifiers in cascade. The actual cable employed has nominal loss of 3db/100m at 200 MHz (COAX-3), as well as 6 and 12db, (coax-6 and coax-12 respectively). (Figure 3)

This system requires a fairly complex set of electronics at each

(continued from page 13)

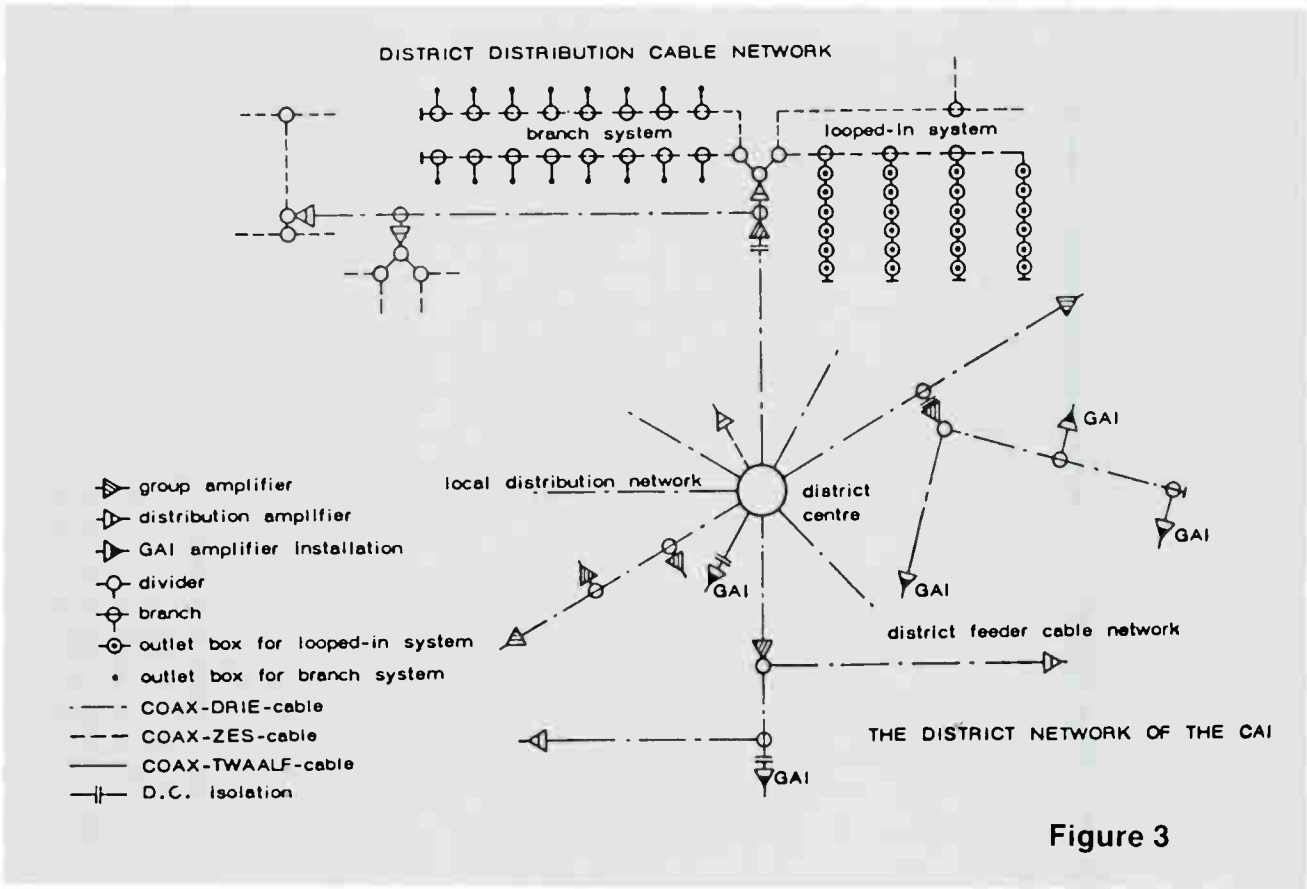


Figure 3

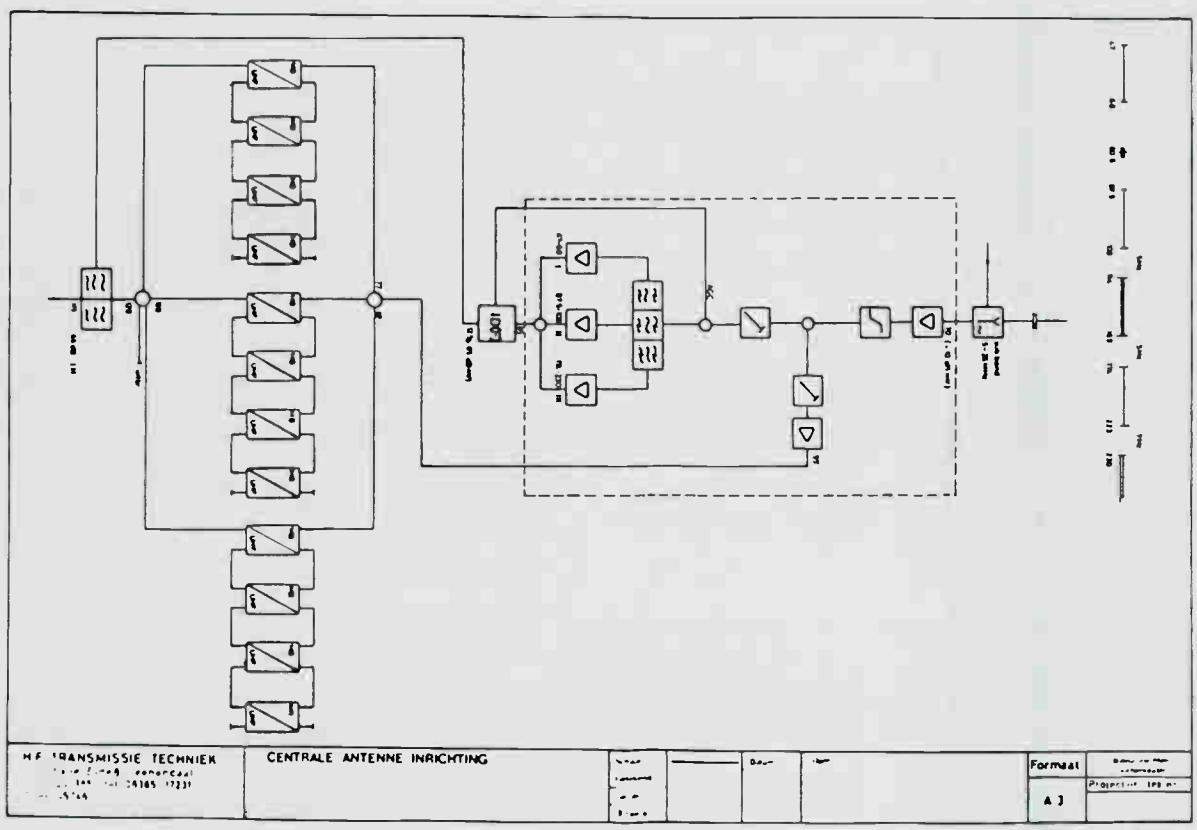


Figure 4

(continued on page 16)

District centre, to perform the separation of mid-band, and conversion of mid-band channels of UHF. (Figure 4) The conversion is performed on a single channel basis, and may be duplicated two or three times depending on the distribution requirements. Typical channel loading is 10 channels with up to 30 FM signals.

Of these TV channels, 4 are usually transported to the District centre as mid-band, and converted to UHF. Thus, the typical house drop carries 2 low-band, 4 high-band, 4 UHF and 30 FM signals. It is then the responsibility of the television receiver to select the desired channel.

England

CATV in the UK appears in two totally different versions or generations. While a form of television distribution has existed for many years, it is only recently that true broadband cable as we know it has been planned. The environment for cable in UK is quite similar to that of Holland with several notable exceptions.

a) TV receivers in UK (with some very old exceptions) are UHF only, and incorporate typically only 4 channel positions.
b) Due to relative physical and language isolation, England has developed more national broadcasters than Holland. In addition, VCR penetration is approaching 50% of television households.

Approximately 70% of existing UK cable is actually High Frequency Twisted Pair technology, involving one pair per channel to the subscriber's home. It is only in the last few years that the decision to cable the UK with coaxial and/or fibre technology has been pursued.

The effects of the situations outlined in (a) and (b) have presented technological and marketing challenges which have not yet been fully resolved. From a hardware point of view, the significance of the television receiver characteristics necessitates that the cable network incorporate the television tuner as part of the overall plant. This has led to a high interest in switched technology. The desire to concentrate such switching to provide combined CATV, Voice and Data, leads to the switched star technology. Of course, the involvement of British Telecom naturally is reflected in their desire to employ their wide experience with optical fibre. Thus, the Fibre optic switched star system is

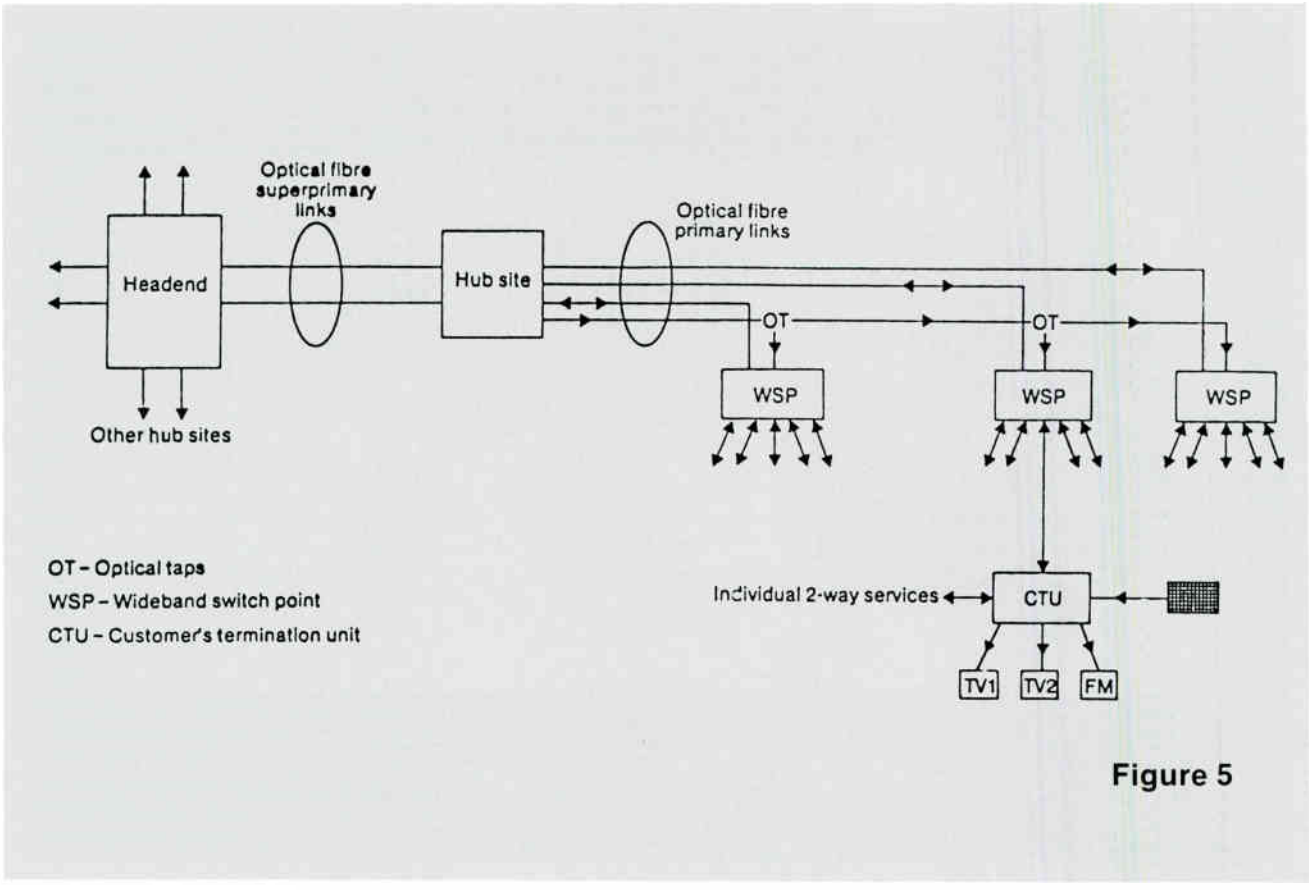
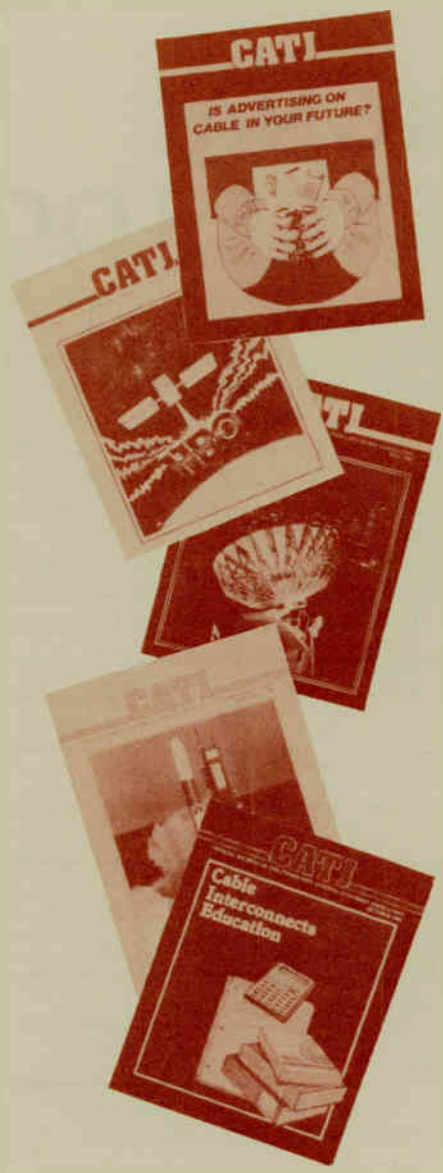


Figure 5

you can't afford not to Subscribe.



NAME _____

COMPANY _____

☐ CABLE TV SYSTEM
☐ SUPPLIER ☐ OTHER

ADDRESS _____

CITY _____ STATE _____

ZIP _____ PHONE _____

TITLE ☐ MANAGER ☐ CHIEF ENGINEER
☐ CHIEF TECH ☐ INSTALLER ☐ BUSINESS OFFICE
☐ ALL OF THE ABOVE (CHECK PRIMARY FUNCTION)
☐ OTHER

SIGNATURE _____

DATE _____

☐ $22.00 Enclosed for 1 Year
☐ $60.00 Enclosed for 3 Years

CANADA/MEXICO SUBSCRIBERS: Add $4.00 per year to rates given above. All other Foreign Countries add $8.00 per year to rates given above. Special handling arranged upon request. U.S. CURRENCY ONLY DRAWN ON A U.S. BANK.

Mail to: CATJ Magazine
Suite 106, 4209 N.W. 23rd
Oklahoma City, Okla. 73107

Date
Location
How Corrected
Probable Cause
Remarks

$10.00 FOR 5 PADS

Each pad is three hole punched for easy insertion into a binder.

Detection and Correction

SIGNAL LEAKAGE LOG

This Signal Leakage Log satisfies the requirements of the FCC Rules and Regulations, Part 76, Subpart K, Paragraph 76.610(d). Although the log is intended for recording cable television signal leakages in the Aeronautical frequency bands (108-136 MHz and 225-400 MHz), it may be used by cable system operators to record all system signal leaks and insure an effective on-going signal leakage detection and correction program.

When using this log for recording signal leakage in the Aeronautical Frequency Bands, the log sheet must remain in the file for a minimum of two years.

NAME _____

ADDRESS _____
(cannot accept P.O. Box)

COMPANY _____

CITY _____

STATE _____ ZIP _____

QUANTITY (SETS OF 5) _____

AMOUNT ENCLOSED _____

* Check must be enclosed with order

CATJ
4209 N.W. 23rd, Suite 106
Okla. City, Okla. 73107

strongly rooted in any CATV architecture which may be contemplated. (Figure 5) The network topology for UK systems, while still in a transitional state, appears to be based on standard cascade trunks, with switched star subscriber distribution points. There is still, however, some possibility that several fibre optic star trunk/-star distribution systems may be attempted. (Figure 6) While the variations in trunk architecture are not nearly as radical as in Holland, the switched star distribution point is quite unlike anything presently employed in CATV.

Switched Star System (British Telecom Proposal)

The switch will be presented with a wideband spectrum of signals in the range of 50-450MHz. Apart from television signals using adjacent 8MHz channels, the spectrum will include FM radio channels in the range 88-108MHz and a block of four alternate television channels at the upper end of the spectrum. The switch will serve up to 20 customers, and each of the 20 UHF outlets will carry the following signals:

- *FM radio channels (88-108MHZ)*
- *The block of four alternate channels translated to Band IV UHF frequencies.*
- *Two selected incoming channels translated to Band IV UHF frequencies.*

The two selected channels will be under both customer and head-end control. Customer control will be facilitated by the use of an IR keypad which interfaces with the switch via a return data carrier at 10.7MHz, while the head-end control will be via a downstream data carrier at 119.7MHz.

As can be seen from the block diagrams (Figures 7 and 8) the system becomes extremely complex. This is even more obvious when telephone and interactive capability is added to the already proposed functions of channel preselection and pay TV control.

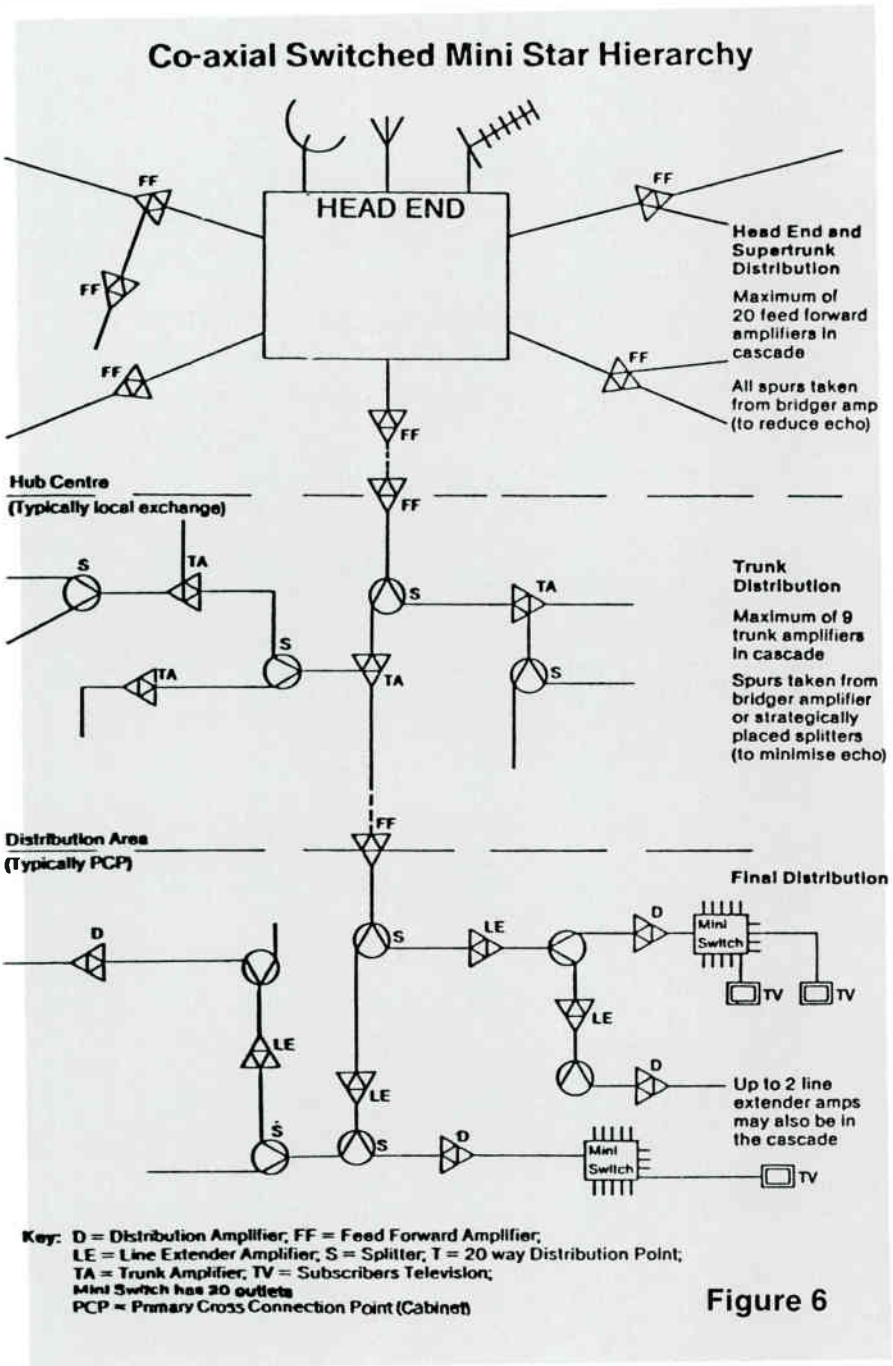
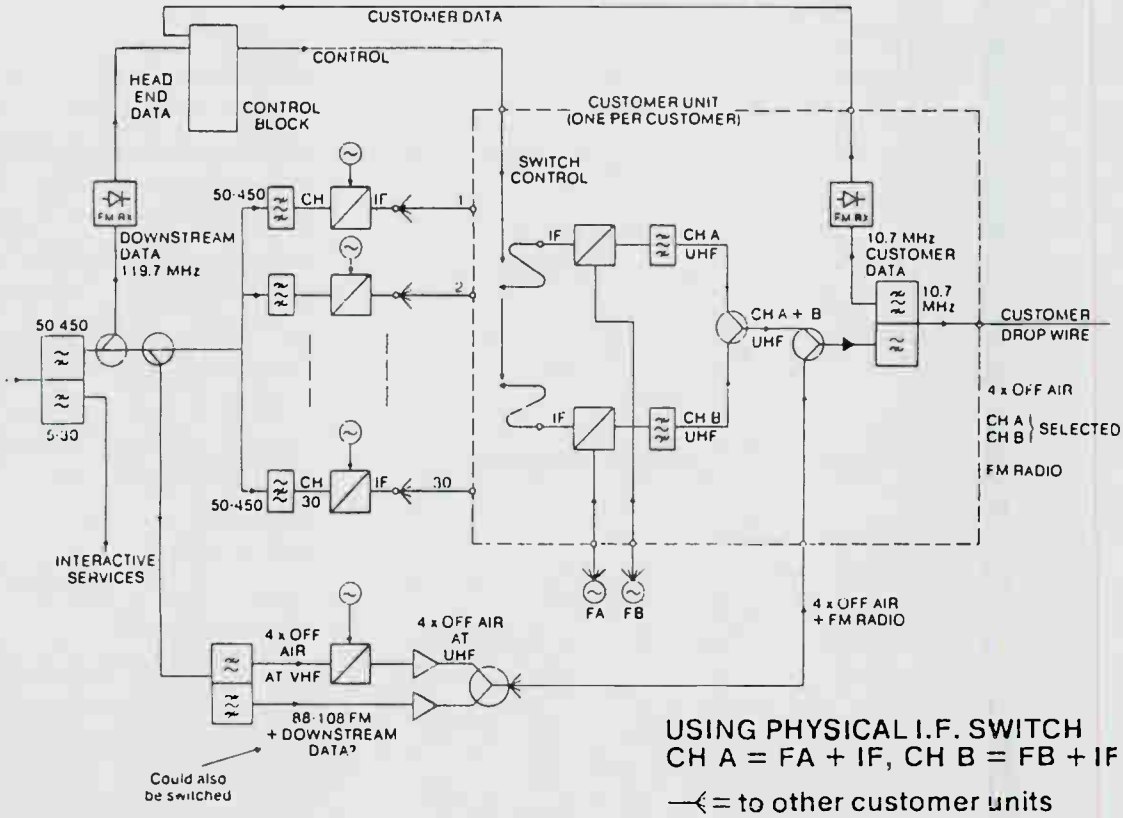


Figure 6

Analysis

While many of the system concepts outlined herein are unsuitable for most North American operations, there are items which could have specific application in proper circumstances.

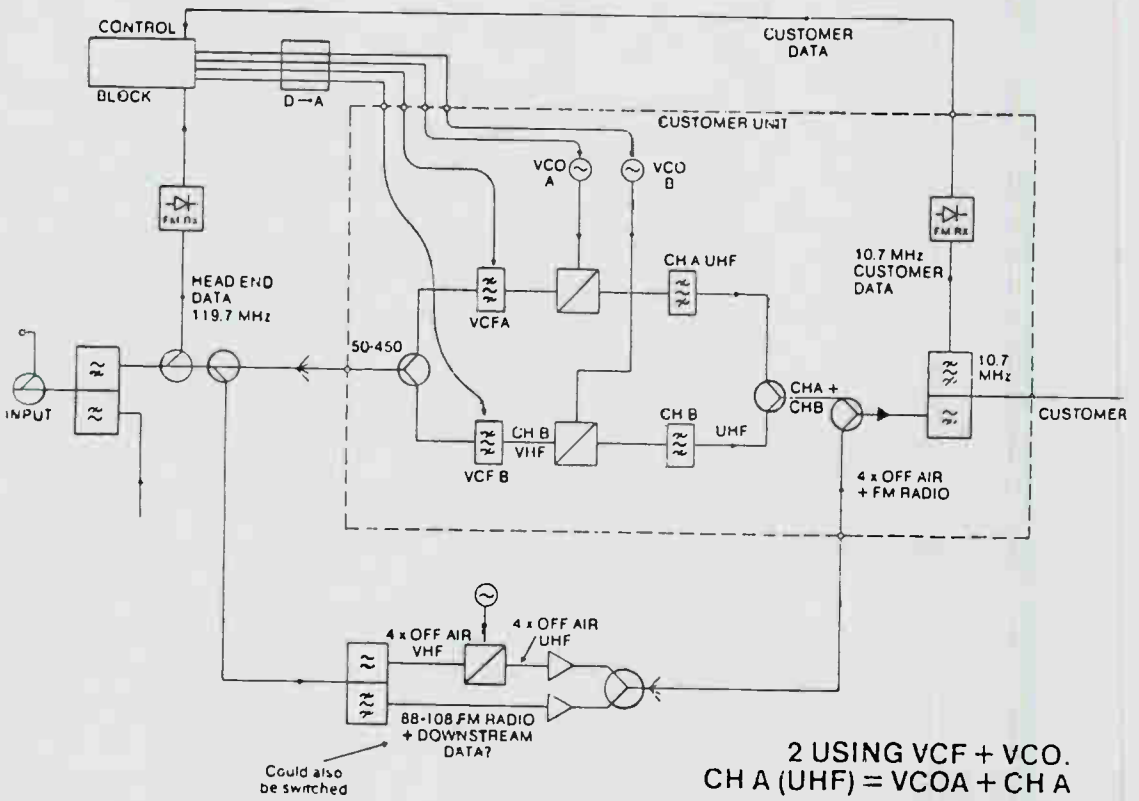
If we examine the function of a Dutch Dual Ring trunk, we can see the inherent advantages and disadvantages. Obviously the



USING PHYSICAL I.F. SWITCH
CH A = FA + IF, CH B = FB + IF

—≺ = to other customer units

Figure 7



2 USING VCF + VCO.
CH A (UHF) = VCOA + CH A (VHF)

Figure 8

architecture is highly inefficient from a service range aspect. If we look at serving an area with a diameter equal to a normal 10 amplifier cascade, we would require approximately 24 amplifiers to provide service in a normal cascade fashion. Dual ring trunking would require approximately 60 amplifiers to serve a similar area. However, while the actual system layout is unmanageable for North America, the concept is quite viable. The concept of parallel, dual direction trunking has the immediate apparent virtue of high reliability: It is only the Dutch topology which does not fit the American situation. If we, however extend this trunk from a **ring** to a **point to point** link, we immediately reduce the cost by 50%, and yet maintain the reliability. We are now suggesting a hub system, with Parallel Opposite Trunks between the hubs, and feeders connected to the Parallel Trunks rather than to the hubs. This architecture provides each feeder with two hubs, and an instant reliability factor increase of 100% is achieved. (Figure 9) In fact, where the normal failure of a hub would result in system outage, the modified hub system can tolerate the loss of any **two** non-adjacent hubs without outage.

We can find similar potential in the Switched Star topology for modification to North American requirements. While again, the concept as defined is unreasonable for many applications, the underlying principle of star point distribution should be examined. The operation of drop networks from high level star points (similar to home run high rise systems) can offer great benefits in serviceability and security. If we construct a star point employing high level feed forward launch amplifiers, and post amplification equalization to pre-correct for long drops, we have a much more Americanized version of the concept. (Figure 10)

As in Figure 10, we can tailor the post equalization and tap values to provide high drop numbers and long drop lengths. This system provides full protection from tampering, and theft of service, while allowing easy access for maintenance and disconnect/reconnect. Many service areas, especially dead-end residential streets, are worth considering in this architecture.

It is always possible that some of the foreign techniques could be incorporated, or at least influence North American designs, and we should be watching for this potential. □

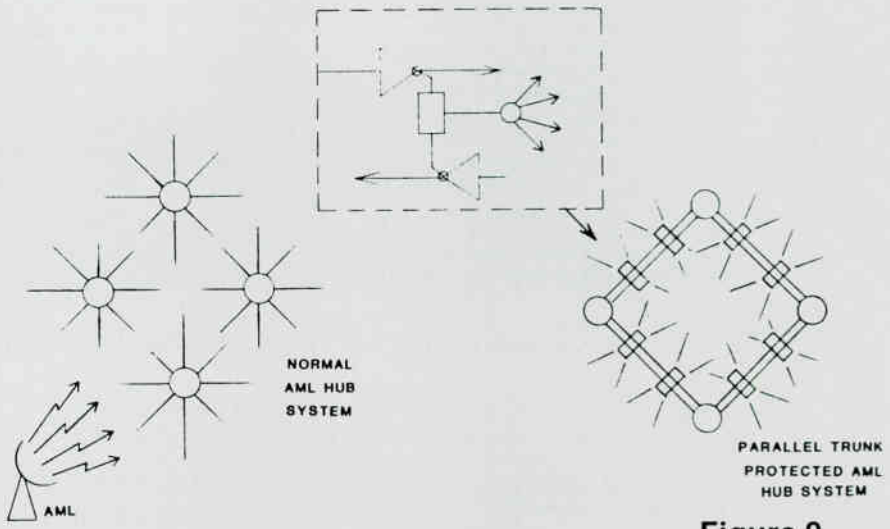


Figure 9

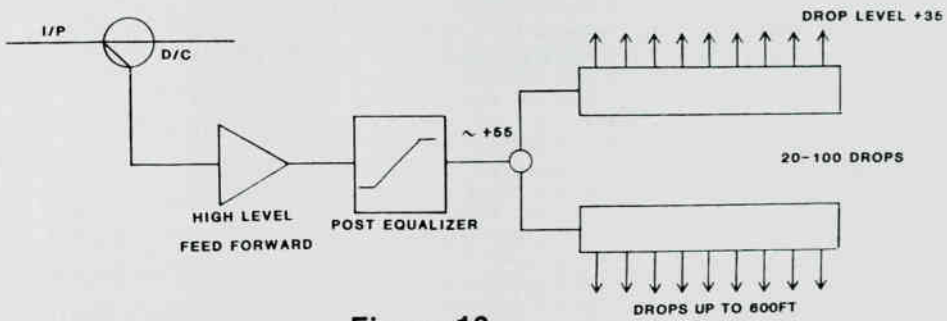


Figure 10

January 30th - February 1st

...at the ★ 25th Anniversary Texas Show ★

Head on down to San Antonio for the Texas Cable TV Association's Silver Anniversary Show January 30th through February 1st. As usual, there will be a complete schedule of management and technical sessions, as well as the hospitality functions for which the Texas Show is famous.

Listed below is the schedule of activities so that you can plan your arrival and time in San Antonio.

There probably is some programming or equipment shopping that you've held off buying, but the Texas Show would be a good time to visit with your vendors and programmers and discuss what materials and services your system is needing. For your convenience, we have included a list of the exhibitors.

As has been customary, the CATA Board of Directors will have their Mid-Winter Meeting in conjuction with the Texas Show; the Directors, coming from all parts of the country, always enjoy the visit to the warm Texas climate for this meeting, and hopefully the Texas weather will cooperate again for some sunny weather.

We know that you won't want to miss this show — and it will be an extra special one this year, celebrating their 25th year. For registration information, contact Bill Arnold (512) 474-2082. See y'all there!!

★ PROGRAM ★

Wednesday, January 30th

9:00 a.m.
- Seminar on S. 66 sponsored by Texas Cable TV Association

9:00 a.m.
- Seminar on Theft of Service, Paul Kagan Associates

9:00 a.m.
- Registration opens

2:00 p.m.
- Exhibit Hall opens

6:00 p.m.
- Cocktail Hour

7:00 p.m.
- Exhibit Hall closes
- BBQ, dance and entertainment by Ray Stevens courtesy of Showtime/The Movie Channel Inc.

Thursday, January 31st

8:00 a.m.
- Continental Breakfast/ Communicating with your Legislators

8:30 a.m.
- Spouse Program

9:00 a.m.
- Exhibit Hall Opens

9:00 a.m.
- PERSONNEL PRACTICES THAT WILL KEEP YOU OUT OF COURT
  —Lynn Price, Group W
  —John Heller, Foster, Bettac & Heller
  —Sylvia Marshall, NCTA
  —Barbara Langenberg, Rogers Cablesystems of Texas
- DIGITAL TELEVISION
  —Bob Luff, United Artists Cablesystems Corp.
- COUNCIL FOR CABLE INFORMATION - WHAT IT DOES FOR YOU
  —Rick Sandler, Council for Cable Information
  —Jackie Cameron, McCann-Erickson
  —Scott Wills, Manhattan Group Associates

10:30 a.m.
- THE CHALLENGE OF COPYRIGHT 1985 — THE CABLE PERSPECTIVE
  —Steve Effros, CATA
  —Bill Strange, Sammons Communications
  —Bob Rogers, TCA Cable TV
  —Jack McEvoy, Kays, Inc.
- TWO DEGREE SPACING
  —Bill Riker, SCTE
  —Norman Weinhouse, Norman Weinhouse & Associates
  —John Gelfer, Microdyne Corporation
- SEGMENTING THE CABLE MARKET: A TRADITIONAL MARKETING TECHNIQUE HELPS OUT CABLE MARKETING AND CABLE AD SALES
  —Russ Barnes, Fralix, Inc.
  —Michael Modzelewski, Frito-Lay, Inc.
  —Nimrod Kovacs, United Cable TV Corp.
  —Mark Estern, Financial News Network

12:00 p.m.
- Exhibit Hall closes
- Luncheon, John Mankin Award
- Guest speaker

1:30 p.m.
- Associate Member Annual Meeting
- THE CABLE COMMUNICATIONS POLICY ACT OF 1984: AN OVERVIEW
  —Jim Ewalt, NCTA
  —Charles Walsh, Fleischman & Walsh
  —Doug Watts, NCTA
  —Ward White, Senate Committee on Communications, Science & Transportation
- SIGNALING & CONTROL
  —Scott Tipton, Home Box Office
  —Paul Beeman, MTV Networks
- CUSTOMER SERVICE REPRESENTATIVES: *The Heart Of Your Business*
  —Karen Alexander, Time Cable Corp.
  —Greg Koch, Southwestern Bell Telephone
  —Ann Smith, American Express
  —Larry Frenchak

2:00 p.m.
- Exhibit Hall opens

3:00 p.m.
- CABLE THEFT DETERENCE THROUGH PROSECUTION
  —Mark Prendeville, Heritage Cablevision
  —Bruce Bole, Austin Cablevision
  —Rey Cantu, District Attorney, Cameron County
  —Larry Aidem, Home Box Office
- MULTICHANNEL SOUND
  —Alex Best, Scientific Atlanta
- A PRACTICAL APPROACH TO TELEMARKETING
  —Janie Cull, Cable Marketing Services
  —Terri Thompson, Cox Cable
  —Ewan Mirylees, Warner Amex
  —Vic Scarborough, Austin Cablevision

4:00 p.m.
- Annual Membership Meeting

6:00 p.m.
- President's Reception

7:00 p.m.
- Exhibit Hall closes
- Fiesta Evening
- Entertainment by HBO

Friday, February 1st

9:00 a.m.
- Exhibit Hall opens

11:30 a.m.
- Bloody Mary Hour

1:00 p.m.
- **Show Closes**

★ EXHIBITORS ★

ACTS
Alpha Technologies, Inc.
AM Cable TV Industries, Inc.
American Marketing/C.S.S.I.
Anixter Communications
ARTS and Entertainment Network
The Associated Press
A-TEC, Inc.
Augat Broadband Comm. Group
Automation Techniques, Inc.
Avtek, Inc.
Belden Corporation
Blonder-Tongue Laboratories
Brink Security Boxes, Inc.
Broadband Engineering/An Augat Co.
Budco, Inc.
Business Systems, Inc.
C-2 Utility Contractors of Texas, Inc.
Cable Communications Media, Inc.
Cable Marketing Services
Cable Terminal Services, Inc.
Cable TV Installations, Inc.
Cable TV Services, Inc.
Cable TV Supply Company
CableAge
CableBus Systems, Inc.
CableData
CableFacts
Cableview Publications
Cablevision Equipment Co.
Cadco, Inc.
J.I. Case Company
CATEL Telecommunications
CBN Cable Network
C-COR Electronics, Inc.
Channel Master Satellite Systems, Inc.
Channell Commercial Corporation
Cindex/Business News Publishing
Commercial Body Corporation
Compucon, Inc.
ComSonics, Inc.
Control Technology, Inc.
Country Music Television
Creative Management Systems, Inc.
Credit Protection Association, Inc.
The Disney Channel
Ditch Witch Dealers of Texas
Donley International, Inc.
Dow Jones & Company, Inc.
The Drop Shop Ltd.
Durnell Engineering, Inc.
Eagle Comtronics, Inc.
Eastern Microwave, Inc.
ECA/Manufacturing Division
Elephant Industries, Inc.
ESPN
Financial News Network
First Data Resources/KMP
Fort Worth Tower Company
General Cable Co./Apparatus Division
General Cable Co./CATV Division
General Instrument Corp./Jerrold Division
Gilbert Engineering Co., Inc.
Home Box Office, Inc.
Home Sports Entertainment
Home Theater Network
Howard Electronics
Hughes Microwave Communications
Ind. Co. Cable TV, Inc.
Intercept Corporation
Kennedy Cable Construction, Inc.
Leaming Industries
Lectro/Capscan Division Burnup & Sims
Lemco Tool Corp.
Lifetime
Lindsay America
LRC Electronics/An Augat Co.
M/A-COM Cable Home Group
M/A-COM MVS, Inc.
Magnavox CATV Systems, Inc.
Magnicom Systems/Control Data Mega Hertz Sales
Microdyne Corporation
MTV Networks, Inc.
Mullen Telecommunications, Inc.
The Nashville Network
Nelson Electric Supply Co.
Northern CATV Sales, Inc.
Oak Communications, Inc.
OEM Enterprises
PAC
Pico Products, Inc.
Pioneer Communications
Poleline Corporation
Portac, Inc.
Power & Telephone Supply Co., Inc.
Premium Channels Publishing Co., Inc.
PTL Television Network
PTS Corporation
Pyramid Industries, Inc.
Quality RF Services, Inc.
Rainbow Programming Services
Reliable Electric/Utility Products
Reuters Limited
Ripley Co., Inc.
RMS Electronics, Inc.
Santa Fe Communications
Satellite Program Network, Inc.
Scientific-Atlanta, Inc.
Showtime/The Movie Channel, Inc.
SIN Television Network/Galavision
Southern Satellite Systems, Inc.
State of Texas Attorney Generals' Office
Tektronix
Telecrafter Products Corporation
Tele-Wire Supply Corp.
Texscan Corporation
Times Fiber Communications, Inc.
Toner Cable Equipment, Inc.
Triple Crown Electronics, Inc.
Turner Broadcasting System
TV Decisions
TV Guide
T.V. Host, Inc.
T.V. Watch, Inc.
TVSM, Inc.
UEC Equipment Company
United Video, Inc.
UNR-Rohn
USA Cable Network
U.S. Cable, Inc.
Video Systems, Inc.
Wade Communications, Inc.
Wavetek Indiana, Inc.
The Weather Channel
Wegener Communications, Inc.
Western CATV Distributors, Inc.
Western Towers
Westinghouse Electric Corp.
Zenith Electronics Corporation

□

COMSONICS REVAMPS ORGANIZATION FOLLOWING CARL HENSLEY'S DEATH

Again, CATJ pays tribute upon the untimely death of one of its friends. At 42, Carl Hensley suffered a heart attack which snuffed out his life in the midst of a very successful career as Vice President of Sales and Corporate Development, for ComSonics, Inc., Harrisonburg, VA., having been with that company since it began in 1972.

We regret that we did not have this information sooner, as we understand it was early fall when Carl's death occurred.

Carl Hensley

Having worked with Carl and ComSonics through the early days of CATJ and CATA, we always appreciated his cooperative and energetic spirit, his helpfulness and wide experience, and his dedication to an industry he loved.

CATJ wishes to extend to his son and ComSonics our deepest sympathy on this loss; we offer encouragement to ComSonics upon the revamping of their fine organization.

Again an untimely death...one so young. Let us remember the message as we ponder Carl Hensley's death...we know not the time or the hour. Requiat in Pacem. □

The booths were smaller — the number of cable operators were less — there were fewer vendors — but the Western Show was once again a spectacular array of activities, programs, hospitality and exhibits. It is always interesting to discuss the state of the industry and the specific problems that the various vendors forsee in their areas of services or products to the cable industry, and this show gave an opportunity to visit about some of these problems.

In talking with some of the vendors, the feeling on economic growth for the cable industry in the next few years seemed to be much the same...that the industry will experience a "forward trend of some significance by the end of 1985 and into 1986" (**Gerry Jordan, World Video Library**), but continues to "hold its own" in the business community with an emphasis on building their revenue stream. **Peggy Isaacson, Broadband Engineering**, expressed some very interesting points when she said "penetration of the market is completed, and now the cable operator has to concentrate on keeping what they've got and introducing new services and ideas to their existing customers". **Jim Faust, President of Zenith Cable Products**, felt 1985 was going to be " what '84 was — a tough year" (even though Zenith experienced a very good year with over 150 systems in the U.S. and Canada having a Zenith Z Tac decoder system in operation indicating three years of significant growth, and that it was time for everyone to be realistic in their marketing.

As the new year approaches, Mr. Jordan felt their "greatest challenge is in the telling...telling our story simple, on the three levels of pay-per-view...needing to convince people to be as strong a believer in impulse pay-per-view as we are". He also commented on their main competition being the rental cassette, and not VCR's, with the other functions of VCR's making them so attractive. Mr. Faust felt that Zenith's philosophy is that "a problem is an opportunity" and that their competition with VCR's will present their opportunities for the coming year.

Broadband's Peggy Isaacson felt one of the major problems they are facing this year is the price consciousness of the industry...is cost more important than performance? She felt frequently quality was sacrificed for a good price, but that her company would be looking for product development ideas to fit the market, and that all companies would have to have the willingness and ability to make capitol investments for those new products.

Gerry Jordan, World Video Library

Jim Faust, President, Zenith Cable Products

The bottom line with those that CATJ discussed this with was that to develop a more sound economic base for cable operators and suppliers/manufacturers a reliability factor was critical — with cable being a service industry, the retention of those cable subscribers (and cable operators) was an important phase of the marketing —

James F. Ackerman, Vice Chairman, Communications Equity

customer consideration and integrity of customer service seemed to underline these comments.

The future of the cable industry holds an optimistic future, and many aspects of development are on that horizon — addition of music and stereo... development of pay-per-view...power doubling, 550 Mhz, more advanced addressable technology, and much more according to our vendor representatives, who also added that technology for this industry has not reached its peak.

COMMUNICATIONS EQUITY ASSOCIATES' EXPANSION

It was CATJ's pleasure while attending the Western Show to have the opportunity to visit with the new Vice Chairman of Communications Equity Associates, James F. Ackerman, certainly a veteran in the financing community. With Mr. Ackerman's 25 years in investment banking, he brings to CEA experience to assist that company in not only national expansion, but international as well.

Again, we found the feeling that "**a problem is an opportunity**" and from that position, Mr. Ackerman will help that company build on its position of being a service brokerage firm by expanding and becoming bigger in areas of mergers, public offerings, appraisals, consulting, franchising, re-negotiating, and perhaps radio and TV...being a "full service broker for any size operator".

Mr. Ackerman remarked, "There is a two-way trend...smaller to larger and larger to smaller" as he visualizes cable property selling at higher prices than two or three years ago. He also felt that it will be the system that is well managed that will command the higher dollar on the market place; therefore, it will also be a service of CEA to help those operators who have not planned where they are going to let CEA assist them with their plans.

As CATJ is intensely concerned with the smaller cable operators, Mr. Ackerman was asked about the possibility of those smaller systems being acquired by larger companies and their future, but Mr. Ackerman's reply was that decisions of the smaller operator to sell or not to sell would be personal ones, based on age, opportunity to sell, personal goals, etc. Again, in regard to the independent operators, with the Cable Bill, there will come significant adjustments with the changing rate structure and the

Charles Evans, President Triple Crown Electronics

opportunity to negotiate contracts for additional satellite and pay-TV services. He also felt that basic rates will increase because of the new cable bill, but that there will be a reduction in pay movie prices.

We came away from our interview impressed with the expertise he brings to CEA and understanding his connections of many years with the cable industry as he has served as President of the Indiana/Illinois Cable TV Association, is a past Board Member of the NCTA, and still owns a cable system in his state.

CATJ congratulates Rick Michaels and Communications Equity on this outstanding addition to their staff, known for their excellence in performance. CATJ looks forward to a continuing relationship with this outstanding company and CATJ readers can expect some financing articles from this source in 1985.

TRIPLE CROWN ELECTRONICS ACQUIRES DELTA-BENCO-CASCADE

CATJ attended the Press Conference called by Charles Evans, President of Triple Crown Electronics, and were delighted with their news of the acquisition of Delta-Benco-Cascade, operating in Canada since 1953. As Mr. Evans remarked, the personal side of the story is very interesting in that he served as DBC's Executive Vice President and

Hospitality Functions at the Western Show!!

General Manager, but was "released" from that position in 1973; since that time to now, their profits plummeted to a 9 million dollar deficit. Upon his leaving DBC, five outstanding people left that company in protest and joined him at Triple Crown, working with him to bring it to the profitable status that the company enjoys today. He laughingly remarked, but with modesty, that the comparison of the two companies under his leadership was certainly significant, and

that upon acquiring DBC, he had never seen a company as messed up as it was, being in "dreadful shape" but with the tremendous potential of improving DBC with the engineering expertise that Triple Crown personnel possess. He looks forward to that challenge, and being associated once more with his former co-workers at DBC.

It has been a steady growth for Triple Crown since they began more than ten years ago, having acquired a cable power supplier company earlier this year and opening a 28,000 square foot facility in Florida with plans to increase that to 48,000 square feet soon. This plant is located in Deerfield Beach, Florida — a long way from Mississauga, you say? Indeed, but it was felt that this facility was vital to protect the Triple Crown interest in the United States which accounts for some 70% of their volume.

Triple Crown continues to look ahead to the potential in the United States, with little manufacturing remaining in Canada; with the expansion in addressable systems, DBC will not be able to be contained in Mississauga but will remain in Rexdale, some twenty minutes away from the Triple Crown plant.

It is with continued pride that the relationship with Triple Crown and CATJ continues, and we wish them much success with this new venture.

HERE 'N THERE

Premium audio on cable...there is definitely a

market...saw what Studioline's stereo music service had to offer as well as Star Ship Stereo, currently the industry's only 10-format premium audio package now on satellite. And how about "HOLOPHONICS"? Sat in on a demonstration and talk about real!! That sound completely engulfed you when you were blindfolded during the demonstration, complete with being hit from behind by a truck. What a sensation — HOLOPHONICS —we'll try to find out more for you.

USA Network on-air personalities will put on their faces behind a national campaign of specially produced public service announcements concerning cable piracy, announced at the first press conference of C.O.S.T. (Coalition Opposing Signal Theft); these spots will be made available by USA via the network's promo feed free of charge to cable systems nationwide, in addition to regular airing on the network.

Texscan has been selected to build display equipment for AP NEWS PLUS...their MSI Compuvid division will design and manufacture a micro processor-based scheduler/controller to be installed in the cable system headend.

NCTA President Jim Mooney predicts new growth as cable leaves the "Catch-22 world of misguided regulation" — "without rate regulation, and with their discretion sharply curtailed at renewal time, local franchising authorities will have little opportunity to intrude into cable's business decisions...(and) there won't be much rationale left for maintaining an extensive regulatory bureaucracy."

Candid shots from the Exhibit Floor at the 1984 Western Show

LIFETIME, with technology no more sophisticated than the telephone, will create the first truly interactive, information/entertainment network when it premieres its new prime time programming on January 14, 1985...with programs on vital life topics, such as money, style, current ideas, personal relationships, guided by informed, entertaining hosts, LIFETIME viewers can get answers
and ask questions six nights a week.

COMSEARCH announced a new service to protect cable television systems from interference caused by Low Power Television; this service, called CLIP (CATV/LPTV Interference Protection) uses a computerized data base to identify potential interference cases.

United Video's new Cable Sportsline is a new alpha-numeric sports forecasting service providing point spreads from Las Vegas for all major college and professional sports and is available to cable systems carrying United Video's Cable Sports Tracker service, a total sports information service introduced in October, 1984.

CONCLUSION

So, you see lots was going on in Anaheim — as we said, things were a little more subdued, but as some of our interviewees commented, the industry is getting "real". Again the California Cable Television Association is to be commended for another fine show. □

Steve Effros, CATA Executive Director

Washington Update

S. 66 Requirements Effective December 29, 1984

Yes, Virginia, it finally happened. The thing we have been arguing about, negotiating over, trying to figure out, and so on went into effect on December 29, 1984. The cable industry is starting a new era under new federal legislation that for the first time defines what we are, and what local authorities can and cannot do regarding the regulation of our business. The chaos that is likely to result from this massive change in the regulatory atmosphere for cable television will not subside for months, and probably years. You will just have to have faith, if you are one of the operators caught in the cross-fire, that when it is all over the industry will have come out ahead. We firmly believe that is the case, but for those of you with a renewal coming up in the next thirty months, or so, it may not be that clear.

Let's take a look at some of the more controversial things in the bill and how they might affect you so that you can understand at least what the CATA position is on them, and so that you can hopefully discuss them with your city officials if need be. We feel, by the way, that it would be a smart move to explain what is going on to your city folks. They have got to be more confused than we are at this point! That's one of the ironies in this whole situation — despite the fact that we all know how confused, and confusing the law is, and we are about the law, we are the "experts" compared to everyone else! Imagine how they must feel!

For those of you with upcoming renewals — within 30 months, the legal situation is, to say the least, fluid. The bill contains no transition period for the renewal provisions. Therefore it would appear that the rules go into effect immediately. That is how CATA reads it. Now that does present some problems since there are some time frames written into the law. That is, you or the city are supposed to initiate certain procedures within the 36 to 30 month frame before expiration, then you are supposed to do other things within four months after the conclusion of investigations started in that 36 to 30 month period and so on. The drafters of the legislation on Capitol Hill say that even though those time frames may not be able to be met for folks that have already passed the 30-month-from-expiration point, the rules do apply, and you either do a shorter version of the entire renewal procedure or you skip the parts that you have missed but the procedural and legal safeguards for the operator remain. The only operators this specifically does not apply to are those in localities where the renewal process was commenced prior to the enactment date of the bill. The bottom line here is that if procedures have not yet started in your franchise area, and your franchise expires within thirty months from October 30, 1984, you should notify the city immediately that you are submitting a proposal for renewal and that the provisions of S.66 apply to that proposal.

It is interesting to note that even though some legal advisors for the cities say that their reading of the bill means that the renewal provisions do not apply to any franchise that expires prior to the 30-month period following the effective date of the bill (they mistakenly read the statement that there is "no transition period" to mean there is a delay, rather than an immediate application of the rules — they also missed the fact that the renewal provisions are in force on the day of enactment of the legislation, not the effective date), the advice being given to cities is that they follow the rules in any event! That is smart advice. It is contained in the analysis of the bill sent out by the National League of Cities in their magazine, "Nation's Cities Weekly". They advise city officials as follows:

> "...it is likely that a cable operator whose renewal application is denied will challenge the validity of any denial which is not made in accordance with the provisions of section 626. Consequently, compliance with the requirements of section 626, particularly section 626 (c), would protect against legal challenges to the validity of the process in cases in which the renewal application is likely to be denied."

Now that, we believe, is good advice. Note that the city folks are focusing, as we do, on the procedural and legal safeguards of the renewal section — 626(c), as opposed to the initial time consuming investigative procedures that give rise to all the time constraints in the first place. In any event, if you are running into trouble with this section, give

CATA a call.

For those of you, as we mentioned last month, who are between 36 and 30 months of renewal, you should notify your city of the new law immediately and invoke the procedures for your own safety. For those operators with more than 36 months to renewal, you should mark your calendar for that month that starts the 36 month period and be sure to notify the franchising authority at the appropriate time.

Of course, ideally, you will not have to actually use any of the "adversarial" proceedings built into the new law. You will simply get your renewals done amicably. Probably the best route to take is to get extensions of the franchise rather than bother with renewals at all! Think about it.

On the subject of rate increases, as we predicted, there is a great deal of talk going around about our simple observation in the last issue that the 5% automatic rate increase section could conceivably be read to be applicable on a "per year" as opposed to an "every 12 months" basis. We already know of some operators who have notified their franchising authorities that pursuant to the law thay are invoking a 1984 increase of 5% on the effective date of the bill and they intend to invoke a 1985 5% increase as well. As we noted, there are likely to be some legal challenges to that interpretation, but the reaction in some quarters seems to be that the city would have had to go through a proceeding within the next year anyway and given a probably needed increase of over 10%, so why not avoid that process and let the federal law take the blame instead of local officials! It all depends on your local circumstances, and how you do it, and when. We just want to reiterate that we are not necessarily advocating lots of rate increases, we are simply saying that in order to protect your options, informing your subscribers and city and applying the 5% rate increase before the end of the calendar year would seem to be a prudent step — that is, if you intend to go that rate increase route at all.

Another portion of the new bill that has raised lots of interesting questions is the definition of cable system franchises for the purpose of federal law. The law says:

> "The term 'franchise' means an initial authorization, or renewal thereof (including a renewal of an authorization which has been granted subject to section 626), issued by a franchising authority, whether such authorization is designated as a franchise, permit, license, resolution, contract, certificate, agreement, or otherwise, which authorizes the construction or operation of a cable system."

Now that leads to some pretty interesting questions. For instance, what if I have a system that has been running for years solely on the basis of a resolution giving me the right to build a cable television system in town XYZ, and the resolution has no "termination date"? It would seem to us that that operator is "home free" as the saying goes! And what about all those operators who thought they needed to go through a referendum process because they only held "permits" to build cable systems? According to the federal law, that permit is considered a franchise for federal purposes — what effect does that have on state consideration of franchises? Good questions, we just don't have the answers yet.

Another one that comes to mind is the problem we have been presented with by the unfortunate, and as far as we can tell unintended use of language in the section dealing with easements. The purpose of the section is, we think, clear. Congress meant for cable operators to be able to get the benefit of preexisting easements used by telephone, electric, and other utility users. That, in fact, is what they said. Unfortunately, they used the term "dedicated" as opposed to simply saying easements "used for" or some other term. Now the problem is that the term "dedicated" is a legal term of art in the field of easements. There are lots of easements that are not leagally "dedicated". The drafter of that provision has told CATA that he meant to use the term in its every-day usage form, not the "term of art" form. He even went so far as to say that had he known there would be a problem he would have used another term! But it's too late now. The legal challenges are sure to follow until we can get a court to understand that there was no intention on the part of Congress to restrict our use of easements. Of course we can also expect a court challenge at some point from easement holders arguing that the law itself is unconstitutional because Congress cannot abrogate property rights. There are arguments on both sides of that issue, and we will just have to wait to see how it comes out.

CATA members have received a sample form to help satisfy the requirements in S.66 for a privacy disclosure statement. It is somewhat complicated, but once you, and we, get it all down straight ►

then all you have to worry about is being sure that every new subscriber who signs on your system after December 29 gets a copy of the form and that all other system subscribers get a copy within 180 days (by June 27, 1985). Then you have to send it out annually to all subscribers after that. We are considering designing a form for this purpose in conjunction with the NCTA so that everyone uses the same thing — at least at first. If that work is not completed in time you will be getting a CATAform from us that will protect you in the interim. Just be sure you use something starting on the 29th! We should note, by the way, that the privacy section entails more than just notifying your subscribers. The most difficult part of enforcing those rules, we suspect, may be controlling your own office and sales staff! You MUST lay down a hard and fast rule that there can be NO gossip in the office about who is taking what service! What the Mayor or the Minister or Aunt Minnie has signed up to watch is THEIR business, and no one else's! The same is true for your sales teams — if they are going from door to door it is now going to be very much against the law for them to say"...well your neighbor just bought XYZ service" or the like. This is definitely one to watch out for!

Needless to say, every time someone calls the CATA office with a new wrinkle regarding the various problems associated with the application of S.66 we try to add it to the list of things we need to tell you about. We will not apologize in advance for boring some of you for the forseeable future with articles each month on the various vagaries of the bill.

Most of the major Washington communications law firms have now come out with initial analyses of the bill. The ones we have seen are all pretty good. They tend to take, as lawyers usually do, a more conservative approach to the reading of the law than we do — but that is part of our job, as we see it — to read the law aggressively in favor of cable, and always caution you that that is what we are doing! If you are interested in securing a more detailed analysis of the bill, and one that includes the entire bill as part of the package, as well as samples of many of the forms that will be needed by systems in various circumstances, we have gotten agreement from the firm of Cole, Raywid and Braverman that they will make their 144 page bound book which they distributed to their clients available to any CATA member at a cost of $200. Now that may seem like a hefty price, and it is, but you have to remember how much clients pay Washington law firms! CATA will be supplying you, through the coming months in an updated version of our "Briefing Book", with most of the forms you will need to avoid running afoul of the law. We will not, however do the exhaustive type of analysis of S.66 that this book entails. Frankly, we don't think most cable operators will ever need it! But if you are interested, call the CATA office and we will arrange for the analysis to be mailed to you. The law firms of Cole, Raywid and Braverman as well as Dow, Lhones and Albertson have been kind enough to supply CATA with copies of their analyses. We use these documents all the time and want to publicly thank these firms for their cooperation during the entire process of developing the new federal law. As we noted earlier, there are lots of excellent legal studies of S.66 floating around right now. Most will be outdated by legal decisions in the coming months, and most operators will only be affected by certain portions of the law. However we wanted to make a full-blown analysis available to you if you were interested. Just call the CATA office.

AERONAUTICAL FREQUENCY RULES CHANGED — NEW PROCEDURES REQUIRED

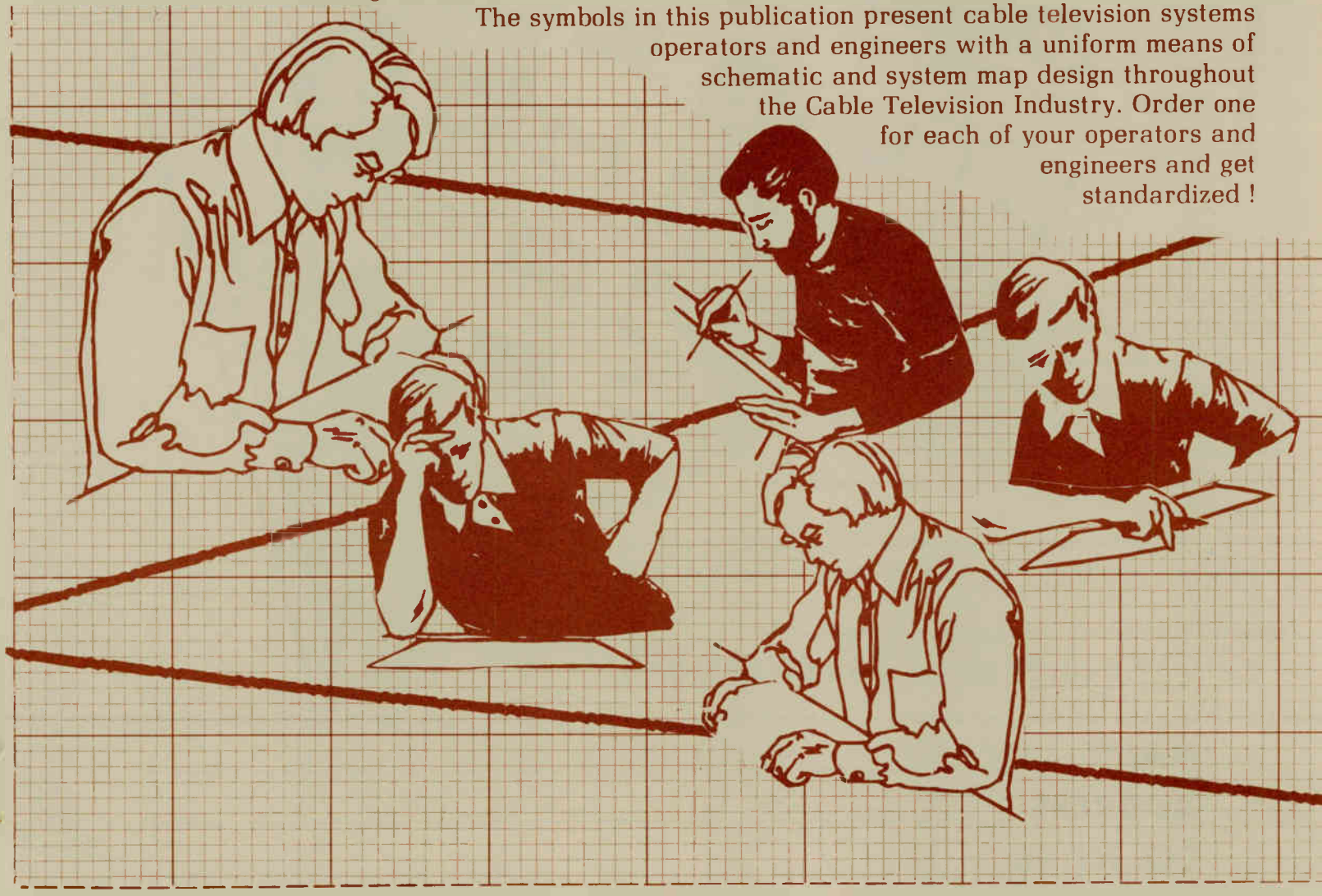
The FCC had decided on a major change in the way cable systems may use the aeronautical frequencies. The result will be that cable operators will no longer have to file for prior authorization to use certain carriers on certain channels — instead, offsets will be required. In addition, two mandatory testing requirements will be added. Unfortunately,there is no clarity yet as to the effective date of these changes, so everything is in limbo right now.

As you will remember, the Commission, several years ago, upon the urging of the FAA, became a lot stricter about cable use of the channels in the aero-

STANDARDIZE

WITH THE NATIONAL STANDARDS FOR CATV SYSTEMS — GRAPHIC SYMBOLS

In order to help you standardize your grid and map preparation Television Publications is now offering a brochure of National Standards for CATV systems Graphic Symbols. The symbols in this publication present cable television systems operators and engineers with a uniform means of schematic and system map design throughout the Cable Television Industry. Order one for each of your operators and engineers and get standardized !



YES! I WANT THE NATIONAL STANDARDS FOR CATV SYSTEMS — GRAPHIC SYMBOLS GUIDE
SEND TO:

NAME _____ SYSTEM NAME _____

ADDRESS _____ PHONE _____

CITY _____ STATE _____ ZIP _____

PLEASE SEND _____ SYMBOLS GUIDES. ENCLOSED IS $_____ FOR MY ORDER.

PRICES
5.00 each
40.00 for 10 guides
90.00 for 25 guides

MAIL TO: TELEVISION PUBLICATIONS, INC. SUITE 106 4209 NW 23 OKLA. CITY OKLA. 73107 405/947-7664

FM VIDEO TRANSMISSION WALL CHART — This chart gives you a basic introduction to FM transmission, helping you to recognize particular distortions or set up problems, whether observed with a waveform monitor or a video monitor.

HEADEND/INTERFERENCE WALL CHART — has more than 20 off-the -screen photos of typical (and not so typical) off-air headend type problems. Each is identified, and with this chart you can zero in on headend problems in one big hurry. Explains what headend interference looks like and leads you to solutions to eliminate it.

FCC TESTS WALL CHART — is the industry's best training tool for teaching system employees how to recognize everything from cross-mod to HumMod. Has more than 60 off-the-screen photos of typical plant problems; things like Hum Mod (with calibration), signal to noise, co-channel and more.

CB INTERFERENCE WALL CHART — leads you quickly and painlessly to cures to CB interference.

COST FOR EACH IS: ☐ **$10.00 or** ☐ **$35.00 set of 4.**

NAME _____

ADDRESS _____

CO. NAME _____

ADDRESS _____

CITY _____ **STATE** _____ **ZIP** _____

I am enclosing a check for $ _____ **for the items marked below.**

- ☐ **A — F.M. Video Transmission Chart**
- ☐ **B — CBIC — Citizens Band Interference Committee Diagnostic Chart**
- ☐ **C — FCC Compliance Tests Subjective Evaluation System Chart**
- ☐ **D — Head End Signal Quality Evaluation Comparison Chart**

Mail to: CATJ Magazine
Suite 106, 4209 N.W. 23rd
Okla. City, Okla. 73107

nautical frequency bands. The problem, they said, was that cable systems were subject to so much signal leakage that the use of carrier frequencies at the same location as aeronautical frequency bands caused potentially dangerous situations for air navigation and safety. The result was a process whereby cable operators must file in advance to get approval of the use of a proposed frequency within the 108-136 and 225-400 MHz bands. The Commission checks with the FAA to see if there is use of the particular channel requested in that particular area, and if not, the cable operator's use is approved. If the FAA is using that frequency then the cable operator must "offset" his use before being approved — that is, the operator must not be directly on the frequency, but must offset his use by a specific amount.

The FAA still didn't like the whole idea, and wanted the FCC to ban use of any frequency they potentially could use. That would have wiped out a great deal of useable spectrum for the cable industry. The Commission has now finally announced that it will not ban those uses, but rather will require all cable operators proposing to use cable carriers of a certain strength to ALWAYS be offset from the frequencies assigned to the FAA, whether those frequencies are presently in use or not. The new rules increase the amount of signal necessary to trigger the rules, thus it would appear that aural carriers will no longer trigger the rules, as they do under the current situation, but visual carriers will. The new mandatory offsets are as follows:

* 118-137 MHz — 12.5 kHz offset +/- 5 kHz
* 225-328.6 MHz — 12.5 kHz offset +/- 5 kHz
* 335.4-400 MHz — 12.5 kHz offset +/- 5 kHz
* 108-118 MHz — 25 kHz offset +/- 5 kHz
* 328.6-335.4 MHz — 25 kHz offset +/- 5 kHz

Once the new rules go into effect (and there is total confusion at the commission at the moment as to when that will be, although the betting is sometime during late January or February of 1985) any use of those frequencies will require the offset listed, which in essence means you will have to order crystals for your modulators which comply with those offsets. Use of frequencies already cleared are grandfathered for five years. After that, even those you got certification for will have to be offset.

Now, so far so good as far as we can see. The offset requirement will not cost cable operators that much — especially for new uses, since all it means is getting different crystals. The offsets will not materially affect tuners or convertors. The problem lies in the next step — in order to use those offset frequencies, cable operators will have to send a notificatiion to the commission of the use, along with notification of the results of a test the commission will be requiring yearly of all systems once the grandfather period expires. The test is a signal leakage test that computes a "CLI" or "Cumulative Leakage Index". Now we will not go into the details of that test here — the engineers are busy working on articles to teach you how to do it simply and inexpensively. In essence it requires that you either test your system — your entire system, on the ground with a 3-metre dipole for leakage and then plug numbers into a formula the commission has concocted to come up with a CLI, or you send an airplane over your system to do the same thing from the air. If you come up with a cumulative number above a certain level you must clean up the system before you can get to use any new frequencies. If you fall below the magic number ►

you can file your offset notification and you are free to use the frequencies without further bother.

Now the CLI test as well as a requirement that the system be monitored for signal leakage at least once a quarter (we think that regular monitoring and logging which most systems already do on a daily basis will comply with this latter rule) will be required of all systems in five years. However, any system that wants to use even one new aeronautical frequency after the effective date of the rules will have to comply with those rules immediately in order to legally use the frequencies.

What about all the applications that are already on file for certification that have not been granted yet? We don't know, and neither does the commission staff. At the moment there seems to be a processing freeze on everything while this thing gets sorted out. What about filing more certification requests now? We doubt that the commission will process them, in favor of allowing the new rules to take care of them and at the same time eliminate lots of paperwork for the FCC.

On the whole we think this new procedure will be beneficial for the industry. Yes, there will be a new required test, but it is one that we have been urging all cable operators to do for some time! Signal leakage is no joke, and if you have and keep a good clean system you should have no problem with any of this once we get clear information to you about conducting the test. For those of you with badly maintained, badly monitored systems — clean up your act!

Again, as soon as there are more specific dates and procedures we can tell you about, we will. The new rules, once final (and we already know some folks, including the FAA, will probably file for reconsideration) will be part of Section 76.612. The "Second Report and Order" announcing them is part of Docket 21006. That document is so confusing (even to the FCC staff) that there are strong rumors that a revised, clarified notice will be issued in the near future. We will keep you advised.

THE CABLE CO—OP

There has been lots of talk about a cable buying cooperative to deal with the problem of the bulk discounts that benefit the big MSO's, but not the rest of the cable industry. CATA is now doing something about it. As we mentioned last month, CATA, in conjunction with the MidAmerica Association has initiated a study of the appropriate legal way a cooperative could be started if the Steering Committee of the group decides that is the appropriate way to go. Funding for the study has now been solicited from the initial cable operators who said they are interested in participating in such a co-op if it is formed, and CATA is supplying matching funds to get the legal bills paid and assure that whatever happens it is done properly, considering the antitrust and other problems involved. We already know that neither CATA nor the MidAmerica Association or any other trade group would be directly involved in the co-op, were one formed. That would present too many legal problems. However we feel that an investigation of the issue consistent with the wishes of a large number of cable operators who have asked us about forming such a cooperative is obsolutely necessary — so it is being done. Stay tuned.

KINLEY NAMED TO CATA BOARD OF DIRECTORS

David Kinley, Vice President of Northland Communications and former FCC Cable Television Bureau Chief has been named Vice-Director of CATA District 7 (Oregon, Washington, Idaho, Montana, Wyoming, Colorado and Alaska). The Board, at its last regularly scheduled meeting was advised by its Nominating Committee that Kinley had been recommended for the postion by CATA President Carl Schmauder, who is also Director of District 7. The Board unanimously adopted the recommendation of the Nominating Committee. Kinley, as well as presiding over the Cable Television Bureau, has extensive experience in cable television system management from his former postion as a top executive at Viacom and ATC.

In other actions regarding seats on the Board of Directors of the Association, the Board decided against making any interim appointment to the Directors seat for District 3 (Maryland, Virginia, and West Virginia) which is now vacant. Several members have indicated interest in the seat to the Nominating Committee. A formal

call for nominations and election will be included in the January issue of the CATAcable.

BOB TARLTON NAMED CATA REPRESENTATIVE TO CABLE MUSEUM

Long-time CATA member and supporter Bob Tarlton, founder of Wm. Penn Cable Company in Merryville, Pa. has been named as the representative of the Community Antenna Television Association to the Cable Pioneers Museum and Archives being formed at Penn State University. Plans for the museum and archives are being coordinated through the cable "Pioneers", in conjunction with Penn State. The CATA Board was invited to name a representative to the newly formed Museum and Archives and thought it only appropriate that Tarlton considered one of the first cable operators in the nation, be named. Another CATA member, George Barco, was one of the guiding forces behind the formation of the new entity. George has been named an ex-officio member of the Board of the new organization. Congratulations to both! We will be writing more about the Museum and Archives as plans progress. We are sure many CATA members have valuable contributions to make to the Museum.

THE COPYRIGHT OFFICE STRIKES AGAIN! A REVERSAL OF LPTV RULE

We already mentioned to you ►

in the past about our absolute awe of the U.S. Copyright Office. Those are the folks who interpret the Copyright Act in such a way that logic usually is left far, far behind. It is the Copyright Office which maintains that if you carry a distant signal for one day during a "pay period" then you must pay for the carriage of that signal for an entire six months, whether you carry it or not! They say they have no option — that is how they read the law, although most attorneys say that is not the case. The Copyright Office is also the location of the impecable logic that says that the law, while not signal specific, still prohibits the substitution of one generic type of signal for another of the same type without massive increases in royalty fees.

And, as noted recently, the Copyright Office is the one responsible for a recent decision that said that low power television broadcasters (LPTV) — even though they have extremely limited range and are designed to be a community service, must be considered as distant signals for the purpose of computing copyright royalties!

Well, as we mentioned, that raised a very big stink, because the obvious result, since LPTV does not have "must carry" status, was that all cable operators would refuse to carry LPTV stations! After all, it would cost some of you 3.75% of your gross revenues to carry them under that interpretation! Rep. Kastenmeier, the head of the House Copyright Subcommittee, and his counterpart on the Senate side, Senator Mathias, wrote a letter to the Copyright Office challenging their interpretation and suggesting that such a reading of the law would effectively kill, according to LPTV spokesmen, the whole industry! The Congressmen suggested that the Office look at the rules again, especially in light of the fact that Congress is seriously looking at the need to clarify the cable portion of the copyright act (especially given some of the interpretations the office has been coming out with!).

The Copyright Office has now seen the light. Following a public hearing at which CATA argued forcefully in favor of allowing cable operators to consider LPTV signals as local signals, the Office has revised its stance. Ever brave and straightforward with their lucid opinions, the office has issued the following opinion:

> Having reviewed the statute and the legislative history with an examination of the divergent views presented at the October 12 hearing and during the comment period and having noted the Kastenmeier-Mathias letter, the Copyright Office has concluded that the status of low power television stations under the cable compulsory license of the Copyright Act is ambiguous. Consequently, the Copyright Office will take a neutral position on this specific issue, awaiting the legislative clarification mentioned in the letter from Senator Mathias and Representative Kastenmeier.

Now how's that for clear headed, forthright leadership! The Office went on to say it would simply not challenge the filing of any statement of account that listed LPTV stations as local signals. What we have to do now is get Senator Mathias and Rep. Kastenmeier to write another letter pointing out that the Copyright Office positions on tiering, prorata use of signals, substitutability and a host of other things are also subject to question because the Act is somewhat ambiguous on all these points. The Office should remain at least neutral on all of those as well until we get some more definitive instructions from Congress.

Of course that is the objective of CATA, and indeed the entire cable industry's push for legislative action on Copyright in 1985. The first step in that process is to open the copyright question up to the industry and specifically discuss, openly, what exactly the industry wants! CATA's Executive Director, Steve Effros acted as moderator of the Copyright panel recently at the Western Show, and will repeat that role at the Texas Show. The CATA approach to the issue of copyright for the coming year is to guarantee that the industry has a full, robust discussion of the issue before any "deals" are made with anyone! We will spell out some of the very complex questions in the next issue, but in the meantime we invite you to call the CATA office and discuss the issue of copyright with Steve if you have any firm views you want to express — we want to know! □

C-COR SEMINAR

C-COR Electronics, Inc., will be conducting a **technical seminar** for CATV Technicians in the **Los Angeles area January 22-24, 1985.** The seminar will be held at the Best Western Airport Park Hotel, 600 Ave. of Champions, Inglewood, CA, 90301.

The registration fee for the seminar is $100 per person. Participants are encouraged to attend the full three-day session for maximum benefit, but are welcome to attend on any day provided that they join the group at either 8:30 a.m. or 1:00 p.m. and stay for the remainder of that half-day session. Please note that the $100 fee is applicable whether attending all three days or any portion thereof. A certificate of completion will be given to each attendee who participates for a minimum of two days.

Because of space limitations, we are requesting that no more than three (3) personnel attend from any one system. The meeting facility limits total participants to a maximum of 50.

The agenda below has been included for your review. We hope that this letter will permit sufficient advance notification so that key technical personnel from your organization can be scheduled to attend this seminar. Should you wish to register someone now, you may call **Debra Cree** at **800-233-2267, Ext. 301.**

FUTURE SEMINARS

Chicago, ILL	March 19-21, 1985
Dallas, TX	May 21-23, 1985
Boston, MA	July 23-25, 1985

C-COR ELECTRONICS, INC.
Regional Technical Seminar

Day 1

8:00 am-8:30 am Registration

8:30 am-11:45 am

A. System Basics
  1. Coaxial Cable
    a. Description
    b. Characteristic Impedance
    c. Attenuation
    d. The Decibel
    e. DC Loop Resistance
    f. Temperature Effects
    g. Velocity of Propagation
    h. Video Tape - Coaxial Cable
  2. Passive Devices
  3. System Amplifiers
  4. System Design
  5. Calculating System Power Requirements

B. Adjustment of Amplifier Levels
  1. Measurement of Levels
  2. Field Strength Meter Basics

11:45 am-1:00 pm
Lunch

1:00 pm-4:30 pm
  3. Level Set Up
  4. Equalization
  5. Cable Simulator
  6. Attenuation
  7. Unity Gain
  8. Level Control in Cable Systems
    a. Automatic Level Control
    b. ALC System Concept
    c. Types of Level Control
      (1) Closed Loop
      (2) TLC
      (3) Thermal equalizers

C. System Performance
  1. System Performance Calculations
  2. Computer Performance Calculation Print Out
  3. FCC System Requirements

4:30 pm-5:00 pm
Questions and Update

Day 2

8:30 am-11:45 am

A. System Upgrade
  1. Forward Bandwidths
  2. Two-Way Systems

3. Standby Powering

B. System Problems

1. Grounding and Sheath Currents
2. Developing a Preventive Maintenance Program
3. System Problems and Effects on Picture Quality
4. Diagnosing Common System Faults

11:45 am-1:00 pm

Lunch

1:00 pm-4:30 pm

C. Theory of Operation, 500 Series

1. T-500 Block Diagram
   a. RF Chassis
   b. Trunk Powered Housing
   c. Power Supply Switching Regulator
2. MT-500 Block Diagram
3. B-507 Block Diagram
4. D-500 Block Diagram
5. D-500, E-500 Dual Output Baseplate Block Diagram
6. E-500 Block Diagram
7. BA/RA Block Diagram

D. Understanding the Specification Sheet

1. Model T-500
2. Model B-507
3. Model E-507

E. Incoming Bench Testing 500 Series Amplifiers

1. Trunk Station
2. Bridger Amplifier
3. Reverse Amplifier
4. Distribution Amplifier
5. Extender Amplifier
6. Passives

F. Energizing a Cable System

1. Introduction
2. AC Distribution Strip Set-up
3. Fusing and Circuit Breakers
4. AC Voltage Selection
5. Voltage Check for Switching Regulator Power Supply
6. Adjustment of Raw DC
7. Energizing the System

4:30 pm-5:00 pm

Questions and Update

Day 3

8:30 am-11:45 am

A. Forward System Balancing Techniques

1. Pilot Carrier
   a. Modulated Carrier Level Control
   b. TV Carrier Level Control
   c. Pilot Carrier Set Up
2. Rough Balancing
3. List of Equalizers and Pads
4. C-COR Approach to Final Balancing
5. Problems with Final Balancing a Cable System

11:45 am-1:00 pm

Lunch

1:00 pm-4:30 pm

B. Reverse System Balancing Techniques

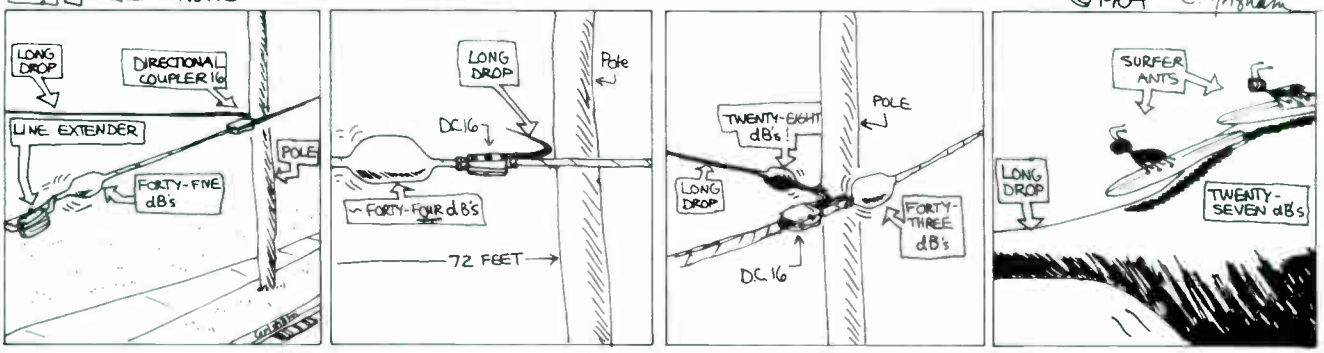
1. Introduction
2. System Preparation for Reverse Balancing
3. Procedure for One or More Reverse Paths
4. Balancing Feeder Line
5. Balancing Trunk Line
6. Reverse Balancing an Entire System
7. Reverse Balancing Procedure for Trunk Station
8. Reverse Balancing Procedure for Feeder Line
9. Reverse Balancing Notes

C. SCAT Presentation

4:30 pm-5:00 pm

Questions and Update

□



Temperature Stability

THE CABLE TECH'S FILTER COOKBOOK #21

OF PAY-TV TRAPS:

SOME TEST RESULTS

By: Terry Owens
Glyn Bostick
MICROWAVE FILTER COMPANY, INC.

Typical cylindrical Pay-TV trap. The outer metal sleeve is forced over the end plugs which are integral with the connectors. Hence the most likely leakage source in any clearance at either end of the tube.

SUMMARY

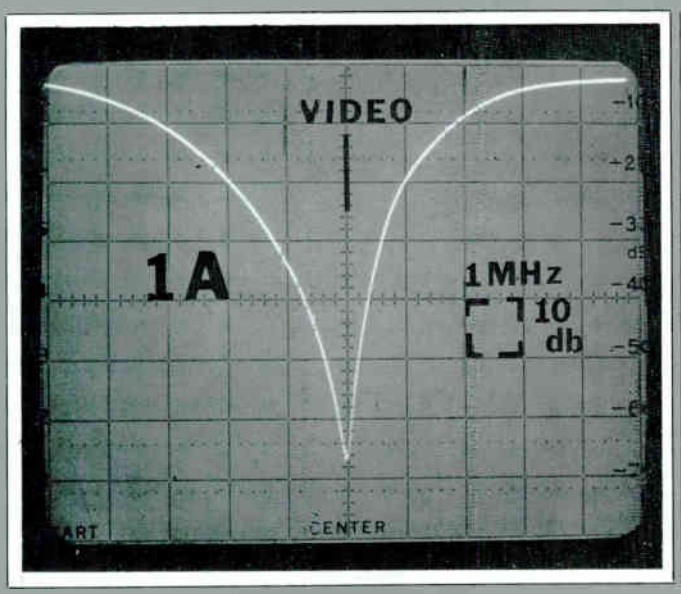
Tests on representative Pay-TV traps available on the current market indicate satisfactory performance over the temperature range -30° F to +140° F.

SPECIMENS AND TEST CONDITIONS

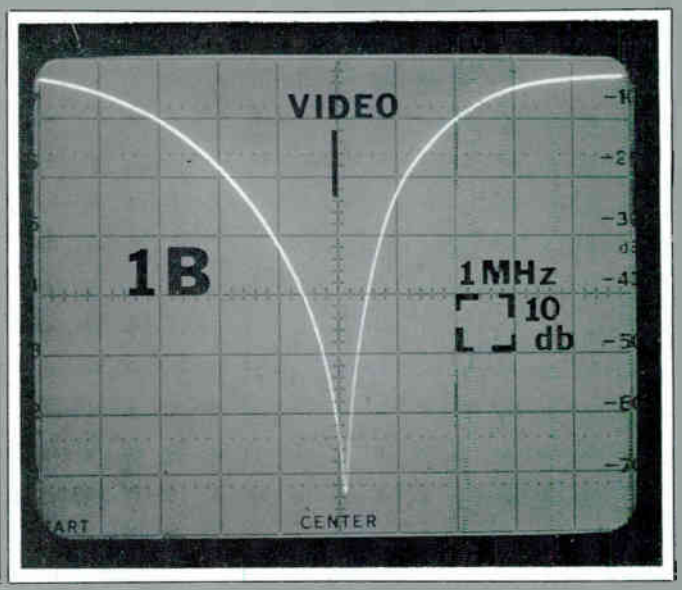
The specimen Pay-TV traps were the same as those tested for leakage in a previous article (See *CATJ December 1984*). These were video notch filters packaged in the standard metal cylinder (see photo).

The traps were placed in a temperature chamber programmed to change temperature between -30° F to +140° F and to dwell at these temperatures, and room temperature, for 2 hours.

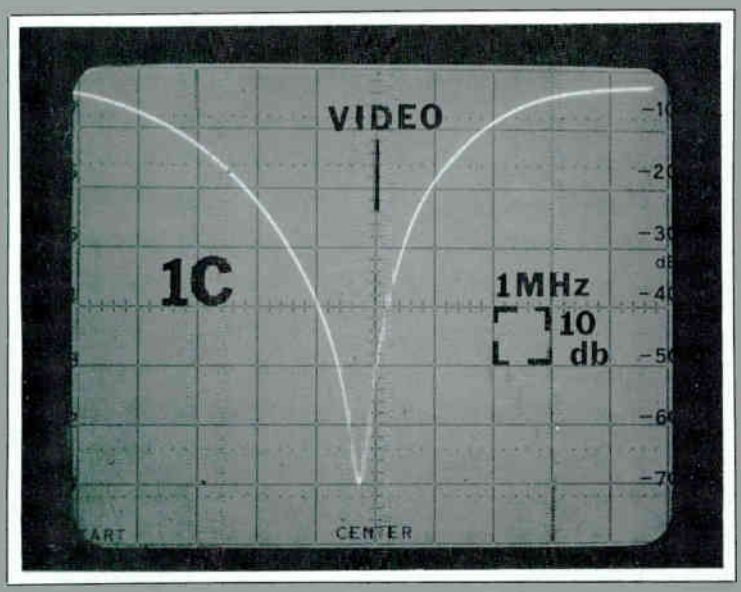
The chamber was equipped with input-out-put cables to permit observation of the notch on a swept spectrum analyzer. The specimen was chosen from each manufacturer's lot whose notch peak coincided with the video frequency.



1A — Video notch coincides with video frequency at +72° F.



1B — At -30° F, the typical Pay-TV trap notch moves up in frequency.



1C — At +140° F the typical Pay-TV trap notch moves down in frequency, giving additional loss to lower, adjacent sound.

Loss at **video frequency** was recorded for -30° F, 72° F, and 140° F for each specimen. It was also noted whether or not movement of the notch peak was down in frequency: this would increase loss on the lower adjacent sound.

CONCLUSIONS

40 db notch loss to video (at drop level not to exceed +12 dbmv) has been found adequate to completely remove the picture. 50 db notch loss will usually remove the sound also.

Therefore, all traps tested in this industry sample give adequate performance on the intended function over the range of tem-

TEST RESULTS

TABLE I

Loss at the Channel Video Frequency as a Function of Temperature

Manufacturer Code	Channel	Notch loss (db) -30° F	+72° F	+140° F
A	A	67	70	*54
B	3	55	73	*53
C	A	*51	64	*52
E	A	64	66	*50
F	A	65	71	*56

*=*Notch moved down in frequency, giving additional loss to lower, adjacent sound frequency.*

peratures encountered by most CATV systems.

Where loss to lower adjacent sound is of concern, it is noted that high-temperature environments are most likely to increase this loss: the notch moves **down** in frequency.

NEXT TIME

We will report the results of moisture tests on this same sampling of industry traps. Testing is in process and is being conducted to determine the affect of moisture on video notch loss and signal leakage.

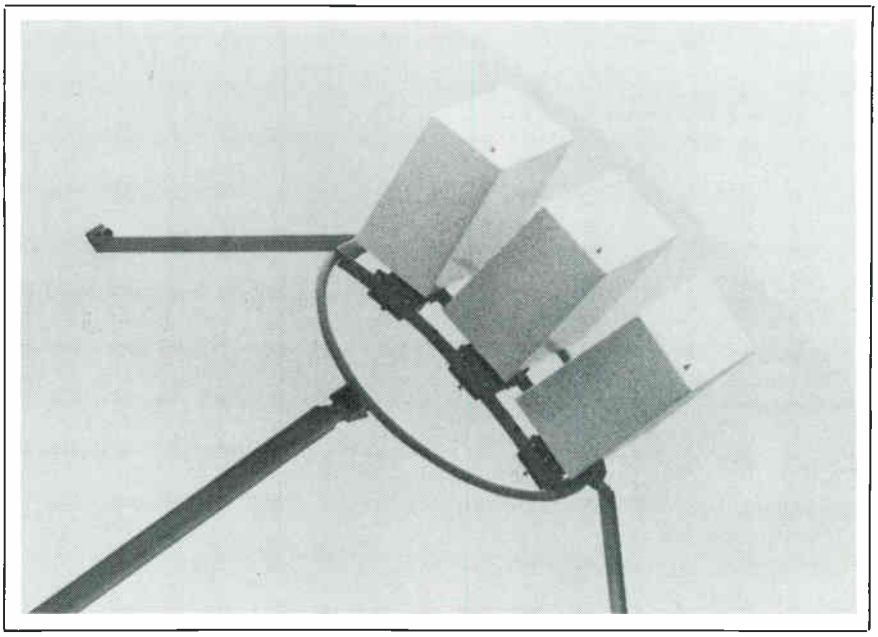
ACKNOWLEDGEMENTS

Special thanks to David Sherman for designing and conducting the tests. Thanks also go to Carol Ryan, John Greatrex and Chris Bostick for editing the copy, providing the analyzer captions and for the "cook sketch", respectively.

□

Showcase

MULTIPLE SATELLITE FEED SYSTEM NOW RETROFITS MICRODYNE, SCIENTIFIC-ATLANTA, AND ANDREW TVRO ANTENNAS



Microdyne's Multiple Satellite Feed System (MSF) can now be used on Andrew's 4.5 meter and Scientific-Atlanta's TVRO antennas, in addition to Microdyne's own line of satellite communications antennas.

The MSF allows a broadcaster or cable system operator to simultaneously receive up to five satellites on a single antenna, with little or no perceptible loss in the antenna gain. When installed on a 5-meter antenna, isolation between beams is better than 20 dB, with a loss of about 1 dB at 4 degrees off boresight.

The MSF can be easily retrofitted, in the field, by changing only the struts and feed support brackets.

For more information on Microdyne's Multiple Satellite Feed System, call Earl Currier at (904) 687-4633 or write to Marketing Department, Satellite Communications, Microdyne Corp., P.O. Box 7213, Ocala, FL 32672. •

TEXSCAN'S T9CFT SERIES OF DIRECTIONAL TAPS

Texscan announces a new line of directional taps. These taps feature:

1. Excellent electrical performance
2. 5-450 MHz bandwidth
3. 4-inch pedestal mountable
4. Permacoated 360 aluminum
5. Modular construction
6. Texscan patented rotating seizure mechanism
7. Integral "F" connectors
8. Low cost

These taps are available in either two or four way configurations. Both are available from stock.

Price is: 4-way $6.75
2-way $6.25

For more information contact: Raleigh B. Stelle III, (602) 252-5021. •

(ANNOUNCING) MULTI-CHANNEL TELEVISION SOUND SOCIETY OF CABLE TELEVISION ENGINEERS TECHNICAL SEMINAR

ARE YOU READY? Virtually every television set manufacturer will be heavily promoting stereo television sets for Christmas this year. The networks are gearing up for full-scale stereo production; already several stations are broadcasting in stereo. Tests conducted by the NCTA and others have shown serious potential problems for cable operators who attempt to carry this new programming without adequate preparation. STEREO TELEVISION MAY REPRESENT YOUR MOST SERIOUS TECHNICAL CHALLENGE THIS YEAR.

In January, the SCTE will assemble a distinguished panel of industry professionals to give YOU the information you need to deal with this new format.

TOPICS:

- Potential technical problems of television stereo sound
- Actual field tests and experiences of other operators
- Status of FCC Must-Carry ruling on Multi-Channel sound.
- Scrambling system compatibility issues.
- Headend and microwave equipment compatibility issues
- Alternate technologies for providing stereo sound.

WHERE: Sheraton Hotel, Concord, California (415) 825-7700
WHEN: January 22 and 23, 1985
REGISTRATION: $150 SCTE members, $195 non-members, paid in advance, includes lunches and cocktail reception.
INFORMATION: Pete Petrovich (415) 828-8510 or Dave Large (408) 998-7333
ADDRESS: Society of Cable Television Engineers, P.O. Box 455 Pleasanton, California 94566 •

Showcase

BROADBAND INTRODUCES LINE EXTENDER SERIES AND INDOOR AMPLIFIERS WITH POWER DOUBLER HYBRIDS

Broadband Engineering, Inc., introduces its BLX Series line extenders for CATV, SMATV and MATV distribution systems. The new series includes the BLX-PLUS models, equipped with Amperex power-doubler hybrids.

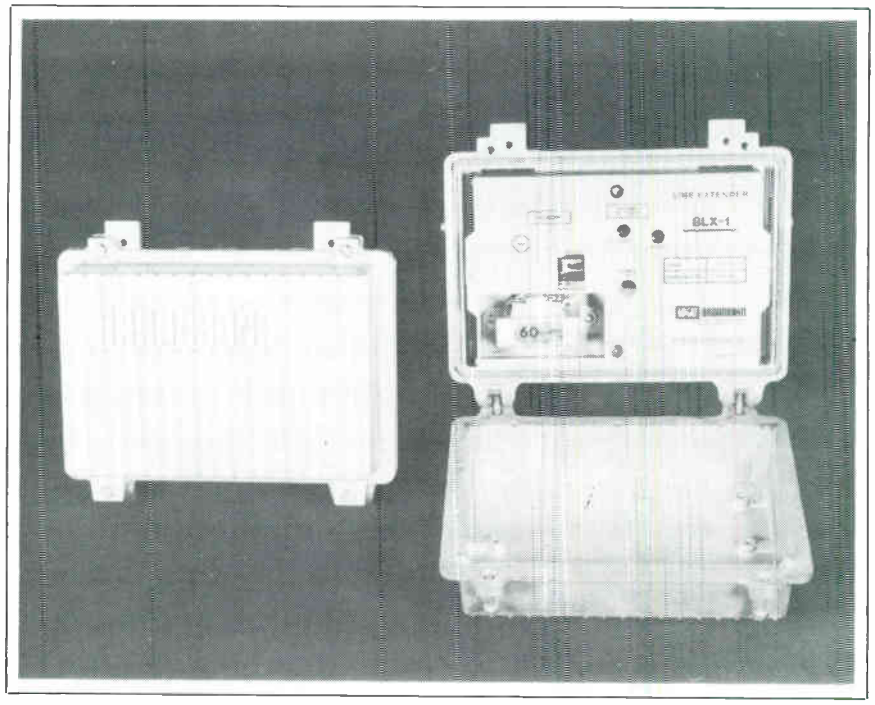
The units are available in 330 and 450 MHZ bandwidths, offer a choice of gains from 28 through 50db, and have convertible 30 or 60 volt powering. The BLX series incorporates design features that offer greater flexibility and easier access for installation and maintenance.

The new line extenders have "in", "out", and "through" powering and are system upgradable with plug-in hybrids for different gains. To allow for mounting in either direction, depending on the path of the signal, the amplifier module can be installed with the input at either end of the housing.

Also being announced is the addition of power-doubling technology to its line of indoor amplifiers. The XMDA and SMDA (one- and two-way multiple dwelling amplifiers) are now available as the XMDA-PLUS and SMDA-PLUS, both units using Amperex power-doubler hybrids.

According to Broadband's president, Bill Ellis, the new hybrids help solve some of the design problems inherent in multiple dwelling units: "Operators now have a couple more options available. They can run their indoor amps at their present levels with 6db less distortion. Or they can run them at 3db higher output levels with no change in distortion."

Broadband's indoor amplifiers will now be manufactured with or without the power-doubler hybrids at customer request. Production models of both the XMDA-PLUS are available immediately.



BLX-1 Line Extender

A subsidiary of Augat Inc. of Mansfield, Massachusetts, Broadband manufactures house-drop, apartment and trunk amplifiers for CATV distribution systems. The firm is a leading manufacturer of replacement electronics and is the CATV industry's largest independent supplier of replacement components.

Augat Inc. designs and manufactures a broad range of electromechanical components for the electronics industry and is a major supplier of related services.

Augat's principal products and services are integrated circuit sockets and accessories, coaxial cable network and fiberoptic interconnection products, subminiature switches, high reliability packages for microcircuits, packaging panels, computer-aided design and wiring services, interconnection test probes and systems, and custom connector assemblies for the automotive and telecommunications industries. •


INDOOR AMPS

BLONDER-TONGUE SMATV/MATV/CATV/TVRO SEMINAR SET

JANUARY 22, 23 & 24, 1985:

A **Blonder-Tongue** SMATV/MATV/CATV/TVRO Technical Seminar will be held at the Holiday Inn Airport/South, Atlanta, Georgia, in conjunction with Adams and Associates, Inc.

Contact:
Sharon Leight (201) 679-4000 •

NEW HUGHES MICROWAVE LINE EXTENDER BROADENS RANGE OF CABLE TV SYSTEM

A new microwave line extender, designed to extend the range of a cable TV system where natural barriers, size of amplifier cascades or cost of cable would otherwise be prohibitive, has been introduced by Hughes Aircraft Company's microwave products division.

The new unit is a broadband multichannel transmitter using block upconversion techniques to distribute one to 60 channels of programming to small or specialized subscriber pockets. It accepts VHF inputs in the 54-to 440-MHz range, and provides microwave output for distribution to cable hub sites.

Anticipated applications of the line extender includes special local distribution service, crossing natural barriers, short hop repeatering, temporary restoration of multichannel service in the event of planned or emergency interruption, and as a frequency agile "hot standby" to protect regular or pay services.

The new microwave line extender is compatible with all Hughes broadband AML receivers. Microwave output power levels are determined by distortion criteria and are dependent on the number of channels transmitted. Price is expected to start at under $38,000, with delivery scheduled for the forth quarter of 1984.

For more information, contact Hughes Microwave Communications Products, P.O. Box 2940, Torrance, CA, 90509-2940. •

MICRODYNE'S BACKUP TV MODULATOR COMPATIBLE WITH MAJOR SCRAMBLE SYSTEMS

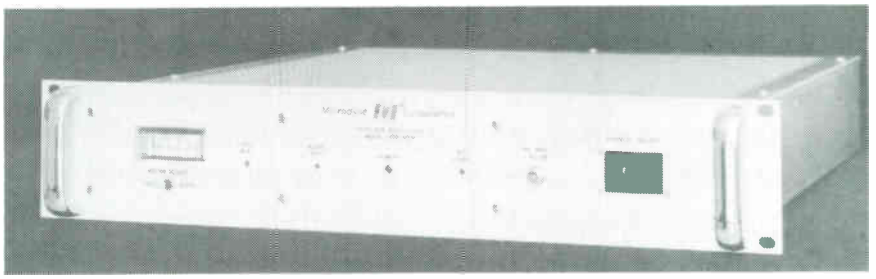
Microdyne's 1100 HEM tunable head-end modulator, with SAW IF filtering and spurious outputs 60 dB below video, is compatible with the major scrambler systems on the market today.

The 1100 HEM is the ideal back-up television modulator for all VHF channels and mid-band channels A through I. Its front panel thumbwheel switch makes it easy to dial up any channel in case of a malfunction in one of the dedicated-channel modulators. Unlike most tunable modulators, the HEM is so stable it will not degrade signal quality.

The modulator can also be used as a back-up for the processor output by using the HEM IF input.

The HEM joins Microdyne's 1000 LCM dedicated-channel modulator for head-end systems. Both modulators feature exceptional frequency stability, low noise characteristics, and are compatible with major scrambler systems.

Microdyne Corporation is a major producer of satellite communications equipment for the radio and television broadcasting, cable television, teleconferencing, and private communications markets.



Microdyne's back-up TV modulator, with exceptional frequency stability and low noise characteristics, is compatible with the major scrambler systems on the market today.

For more information contact the Sales Department at:

Microdyne
(904) 687-4633 •

ANIXTER IS NAMED AN AUTHORIZED DISTRIBUTOR OF IBM'S NEW CABLING SYSTEM

Anixter Bros., Inc. has been named an Authorized Distributor for IBM's new Cabling System, it was announced by Alan B. Anixter, President.

Anixter will stock the IBM Cabling System products in its distribution centers throughout the United States.

The IBM Cabling System allows a building to be prewired for communications and data devices during building construction or renovation. In addition to providing the ability to transmit data at a very high speed, it also provides for complete telephone communication requirements. Current installations will enable users to be better prepared to meet telecommunication and data transmission needs of the future.

"As a premier supplier of telecommunications products and equipment for not only the telephone industry, but for businesses in general, the addition of the IBM Cabling System enables us to be the 'one stop' source for Local Area Network requirements," stated Mr. Anixter.

Anixter Bros., Inc. is a supply specialist for the telephone, telecommunications, and cable TV industries. In addition, it operates an international network of electrical and electronic wire and cable service centers. □

Associate Roster

Alpha Technologies
1305 Fraser St. D-G,
Bellingham, WA 98225
206—671-7703
(M9, Standby Power Supplies)

AMCOM, Inc.,
Bldg. E, Suite 200,
5775 Peachtree-Dunwoody Rd., N.E.,
Atlanta, GA 30342
404—256-0228
(S9, Brokering & Consulting)

Anixter Communications,
4711 Golf Road,
Skokie, IL 60076
312—677-2600
(D1)

Arts & Entertainment Network
555 Fifth Avenue
New York, NY 10017
212—661-4500
(S9)

The Associated Press
50 Rockfeller Plaza,
New York, NY 10020
212—621-1513
(S9 Automated News SVC)

Automation Techniques,
1550 N. 105th E. Ave.
Tulsa, OK 74116
918—836-2584
(M9)

Av-Tek, Inc., Inc.,
Box 188,
Aurora, NE 68818
402—694-5201
(M8)

Blonder-Tongue Labs, Inc.,
1 Jake Brown Rd.,
Old Bridge, NJ 08857
201—697-4000
(M1, 2, 4, 5)

Broadband Engineering, Inc.
P.O. Box 1247,
Jupiter, FL 33458
1-800—327-6690
(D9, M4, S9)

Budco, Inc.,
4910 East Admiral Place,
Tulsa, OK 74115
1-800—331-2246
(D9, Security & Identification Devices)

CATEL,
4800 Patrick Henry Dr.,
Santa Clara, CA 95054
408—988-7722

Capscan, Inc.
P.O. Box 36,
Adelphia, NJ 07710
1-800—CABLETV or 222-5388
(M1, 3, 4, 5)

CBN Cable Network,
CBN Center
Virginia Beach, VA 23463
804—424-7777
(S9)

C-Cor Electronics, Inc.,
60 Decibel Rd.,
State College, PA 16801
814—238-2461
(M1, 4, 5, S1, 2, 8)

CWY Electronics
405 N. Earl Ave.,
Lafayette, IN 74904
1-800—428-7596
(M9, D1)

Cable Graphic Sciences
7095 N. Clovis Ave.
Clovis, CA 93612
209—297-0508
(M9 Character Generators)

Communications Equity Associates,
851 Lincoln Center,
5401 W. Kennedy Blvd.,
Tampa, FL 33609
813—877-8844
(S3)

ComSonics, Inc.,
P.O. Box 1106,
Harrisonburg, VA 22801
1-800—336-9681
(M8, 9, S8, 9)

Electron Consulting Associates,
Box 2029,
Grove, OK 74344
918—786-5349
(M2, D1, S1, 8)

The Disney Channel
500 S. Buena Vista
Burbank, CA 91521
213—840-5080
(S4)

Ditch Witch,
P.O. Box 66,
Perry, OK 73077
1-800—654-6481
(M9)

The Drop Shop Ltd., Inc.,
Box 284,
Roselle, NJ 07203
1-800—526-4100 or
1-800—227-0700 (West)
(D3, 4, 5, 6, 7, 8, 9, M5, 6, 7, 8, 9 Plastics)

Durnell Engineering Inc.,
Hwy 4 So.
Emmetsburg, IA 50536
712—852-2611
(M9)

Eagle Com-Tronics, Inc.,
4562 Waterhouse Rd.,
Clay, NY 13041
1-800—448-7474
(M9, Pay TV Delivery Systems & Products)

Eastern Microwave, Inc.,
3 Northern Concourse,
P.O. Box 4872,
Syracuse, NY 13221
315—455-5955
(S4)

Electroline TV Equipment, Inc.,
8750-8th Ave.,
St. Michel,
Montreal, Canada
H1Z 2W4
514—725-2471
(M4, 5, 7, 9, D7, 9)

ESPN,
ESPN Plaza,
Bristol, CT 06010
203—584-8477
(S9)

Gardiner Communications Corp.,
3506 Security St.,
Garland, TX 75042
214—348-4747
(M9, TVRO Packages, S1 2, 8)

Gilbert Engineering Co.,
P.O. Box 23189,
Phoenix, AZ 85063
1-800—528-5567 or
602—245-1050

Group W Satellite Communications
41 Harbor Plaza Dr.,
P.O. Box 10210,
Stamford, CT 06904
203—965-6219
(S4)

Harmon & Company
5660 S. Syracuse Circle
Greenwood Plaza,
Englewood, CO 80111
303—773-3821
(S3)

Heller-Oak Communications
105 W. Adams St.,
Chicago, IL 60603
1-800—621-2139 * 7600
(S3)

Home Box Office, Inc.,
12750 Merit Dr.
Dallas, TX 75251
214—387-8557
(S4)

Ind. Co. Cable TV, Inc.,
P.O. Box 3799
Hwy. 167 N,
Batesville, AR 72501
501—793-4174
(D1)

Jerry Conn Associates, Inc.,
P.O. Box 444,
Chambersburg, PA 17201
1-800—233-7600
1-800—692-7370 (PA)
(D3, 4, 5, 6, 7, 8)

KMP Computer Services, Inc.,
135 Longview Dr.,
Los Alamos, NM 87544
505—662-5545
(S4, 5)

Distributors	Manufacturers	Service Firms
D1—Full CATV equipment line	M1—Full CATV equipment line	S1—CATV contracting
D2—CATV antennas	M2—CATV antennas	S2—CATV construction
D3—CATV cable	M3—CATV cable	S3—CATV financing
D4—CATV amplifiers	M4—CATV amplifiers	S4—CATV software
D5—CATV passives	M5—CATV passives	S5—CATV billing services
D6—CATV hardware	M6—CATV hardware	S6—CATV publishing
D7—CATV connectors	M7—CATV connectors	S7—CATV drop installation
D8—CATV test equipment	M8—CATV test equipment	S8—CATV engineering
D9—Other	M9—Other	S9—Other

Note: Associates listed with * are Charter Members.

Katek, Inc.,
215 Wood Ave.,
Middlesex, NJ 08846
201—356-8940

Klungness Electronic Supply,
P.O. Box 547,
107 Kent Street, .
Iron Mountain, MI 49801
1-800—338-9292
1-800—682-7140 (Mich)
(D1, 8, S2, 8)

LRC Electronics, Inc.,
901 South Ave.,
Horseheads, NY 14845
607—739-3844
(M7)

Larson Electronics, Inc.,
311 S. Locust St.,
Denton, TX 76201
817—387-0002
(M9 Standby Power)

Lifetime
1211 Avenue of the Americas
4th Floor
New York, NY 10036
212—719-7230
(S9, Programming)

Lindsay America, Inc.
P.O. Box 15775
1202 B West 19th St.
Panama City, FL 32405
904—769-2321

MA/COM Cable Home Group
P.O. Box 1729
Hickory, NC 28603
1-800—438-3331
(M2, 3, 7, S2)

Magnavox CATV Systems, Inc.
100 Fairgrounds Dr.,
Manlius, NY 13104
315—682-9105
(M2, 3, 7, S2)

McCullough Satellite Equipment,
Route 5, Box 97,
Salem, AR 72576
501—895-3167
(M2, 9, D3, 4, 6, 7)

Microdyne Corporation,
471 Oak Road,
Ocala, FL 32672
904—687-4633
(M9 Satellite TV Receivers)

* **Microwave Filter Co.,**
6743 Kinne St., Box 103,
E. Syracuse, NY 10357
1-800—448-1666
(M9 Bandpass Filter)

Oak Communications, Inc.
16935 West Bernardo Drive
Rancho Bernardo, CA 92127
619—485-9880

Panasonic Industrial, Co.,
One Panasonic Way
Secaucus, NJ 07094
201—392-4109

Power and Telephone Supply Company, Inc.
530 Interchange Drive N.W.,
Atlanta, GA 30336
1-800—241-9996
(D1)

Quality RF Services, Inc.
825 Park Way, Suite 3,
Jupiter, FL 33458
305—747-4998
1-800—327-9767
1-800—433-0107 (In Florida)
(M4, S9)

RMS Electronics
50 Antin Place
Bronx, NY 10462
1-800—223-8312
1-800—221-8857 (Poleline)
(M4, 5, 6, 7, 9)

Sadelco, Inc.,
75 West Forest Ave.,
Englewood, NJ 07631
201—569-3323
(M8)

Showtime/The Movie Channel, Inc.
1633 Broadway,
New York, NY 10019
212—708-1600
(S4)

Satellite Syndicated Systems, Inc.,
P.O. Box 470684
Tulsa, OK 74147
918—481-0881
(S9)

Telstar Marketing & Consulting
C.T.H."F" 2930
Blue Mounds, WI 53517
608—437-5460
(S9)

Tele-Wire Supply Corp.,
7 Michael Ave.,
East Farmingdale,
NY 11735
516—293-7788
(D1, 2, 3, 5, 6, 7, 8, 9)

* **Texscan Corp.,**
3102 N. 29th Ave.,
Phoenix, AZ 85017
602—252-5021
(M9 Bandpass Filters)

* **Times Fiber Communications,**
358 Hall Avenue,
Wallingford, CT 06492
1-800—243-6904
(M3)

Tocom, Inc.,
P.O. Box 47066,
Dallas, TX 75247
214—438-7691
(M1, 4, 9 Converters)

* **Toner Cable Equipment, Inc.,**
969 Horsham Rd.,
Horsham, PA 19044
1-800—523-5947
In PA 1-800—523-492-2512
also 1-800—523-5947 (PA)
(D2, 3, 4, 5, 6, 7)

Triple Crown Electronics, Inc.,
4560 Fieldgate Dr.,
Mississauga, Ontario,
Canada L4W 3W6
416—629-1111
Telex 06-960-456
(M4, 8)

Turner Broadcasting System,
1050 Techwood Dr.,
Atlanta, GA 30318
404—898-8500

TV Watch, Inc.,
1819 Peachtree Rd. N.E.
Atlanta, GA 30309
1-800—554-1155
(S9)

United Press International
220 East 42nd St.,
New York, NY 10017
212—682-0400
(S9 Automated News SVC)

United Video, Inc.,
3801 South Sheridan Rd.,
Tulsa, OK 74145
1-800—331-4806
(S9)

USA Network
303 East Ohio Street
Time & Life Bldg. Suite 2701
Chicago, IL 60611
312—644-5413
(S9)

Viewstar, Inc.,
705 Progress Ave.,
Unit 53,
Scarborough, Ontario,
Canada M1H 2X1
416—439-3170
(M9 Cable Converter)

Vitek Electronics
710 Narragansett Park Dr.
Pawtucket, RI 02861
401—724-4400

Walsh, Walsh, Sweeney & Whitney, S.C.
P.O. Box 1269,
Madison, WI 53701
608—257-1491
(S9)

Warner Amex Satellite Entertainment Corporation
1211 Avenue of the Americas,
New York, NY 10036
212—944-4250
(S4)

* **Wavetek Indiana**
5808 Churchman,
Beech Grove, IN 46107
1-800—428-4424
TWIX 810—341-3226
(M8)

Weatherscan,
Loop 132,
Throckmorton Hwy.,
Olney, TX 76374
817—564-5688
(D9, Sony Equip. Dist., M9 Weather Channel Displays)

Western Towers
Box 2040
San Angelo, TX 76902
915—658-6539/653-5291
(M2, 9 Towers)

Zenith Radio Corp.,
1000 N. Milwaukee Ave.
Glenview, IL 60025
312—391-8195
(M1, 6) □

Classified

OPPORTUNITIES

CATV & LAN TECHNICAL FIELD SUPPORT

If you like meeting people and the thought of coast to coast travel opportunities appeal to you, there may be a place for you on our team.

To qualify, as a minimum, candidates must have:

- Successfully completed a 2 year electronics technology school program
- 4 years CATV experience
- Headend equipment maintenance skill
- Broadband system sweep and balance exposure

Send resume and salary requirements to:

ComSonics, Inc.
P.O. Box 1106
Harrisonburg, VA 22801
Attn: Field Engineering Dep't.

An equal opportunity employer

ATTENTION!

SYSTMEM MANAGERS—
TECHNICIANS
NEEDED

Excellent opportunity for system managers and technicians for our systems in Colorado, Texas, and Oklahoma. Need qualified personnel for these Southwestern locations, good working conditions and opportunity for the right people who want to work and stay actively involved in the cable business. These systems have good equipment to work with and offer excellent situations to grow in the cable business. If interested, send resume to the box number indicated below.

Box 71080
c/o CATJ
4209 N.W. 23rd
Suite 106
Okla. City, OK 73107

CATJ Classified advertising is offered as a service by CATA for its membership.

Any member of CATA may advertise in the CATJ classified section FREE of CHARGE (limit of 50 words per issue - 3 issues per year.)

NON MEMBERS may also use the Classified Section at the rate of 50 cents per word with a minimum charge of $20.00. Non-members should include full payment with ad insertion.

take advantage of me

CATJ
4209 N.W. 23rd, Suite 106
Okla. City, Okla. 73127

CATJ classified advertising is offered as a service by CATA for its membership.

ANY member of CATA may advertise in the CATJ classified section FREE of CHARGE (limit of 50 words per issue—3 issues per year.)

CATA offers three types of memberships:

1.) Systems—paying regular monthly dues based on number of system subscribers.
2.) Associate Members—pay an annual fee.
3.) Individual Members—pay an annual fee.

NON MEMBERS may also use the Classified section at the rate of 50 cents per word with a minimum charge of $20.00. Add $2.00 for blind-box. Non-members should include full payment with the ad insertion.

Deadlines for all Classified Advertising is the 1st of the month for the following month's issue.

Address all Classified material to: CATJ, Suite 106, 4209 N.W. 23rd, Oklahoma City, Okla. 73107.

POWER KING™
Proven Dependability!
Standby and AC Regulated Power Supplies

RMS ELECTRONICS, INC., CATV DIVISION: 50 Antin Place, Bronx, New York, 10462
Toll Free: (800) 223-8312 (Continental U.S.A., Puerto Rico, U.S. Virgin Islands) (212) 892-1000 (Call Collect, New York State Only)
WESTERN OPERATIONS: 2901 W. Garry Ave., Santa Ana, Ca., 92704 • TEL.: (714) 662-1041
Toll Free: (800) 247-8435 (Cal. Only) Toll Free: (800) 624-2511 (Continental U.S.A., Puerto Rico, U.S. Virgin Is., Alaska, Hawaii)

See Us at the Texas Show booth #617