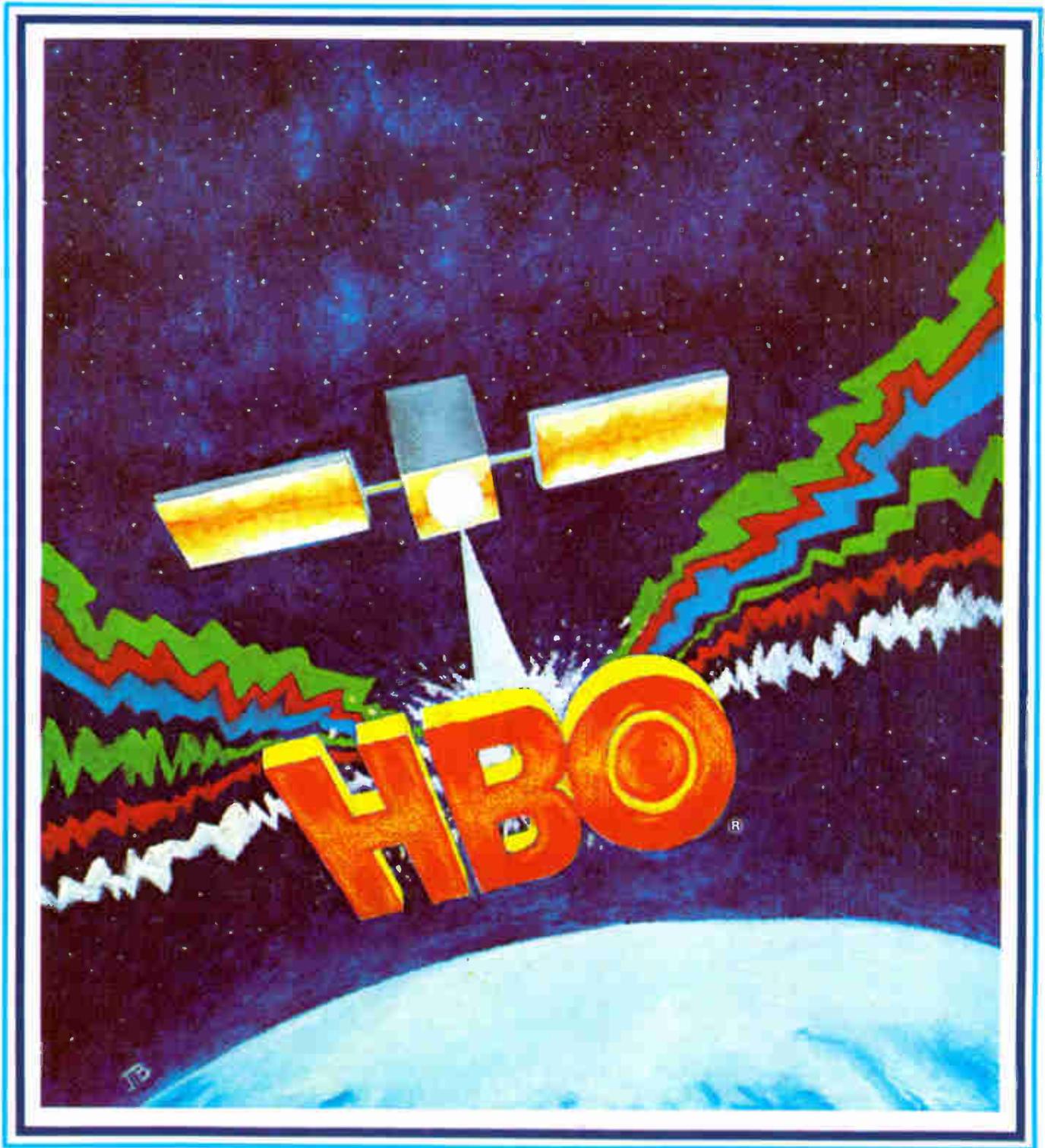


CATJ

OFFICIAL JOURNAL OF THE COMMUNITY ANTENNA TELEVISION ASSOCIATION
APRIL 1983



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



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ABOUT THE COVER

This original illustration highlights the feature article in this month's issue on HBO scrambling satellite signals. (Cover Artist, Terry Bernardy)

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catatorial

President of CATA — Peter Athanas

THE LETTER OF THE LAW — EQUALITY

As I'm sure everyone knows by now, the Community Antenna Television Association recently announced its support for a legal position that would have the effect of virtually eliminating the imposition of the 3.75% per signal rate increase recently announced by the Copyright Royalty Tribunal. That legal theory has been explained elsewhere in these pages, and I need not go into the details here. The important point for right now is that what CATA did was argue for a "literal" interpretation of the law. We said that a simple, straight reading of the law, the words that were written on the page, clearly indicated that our interpretation of the law was correct and that the 3.75% increase, in fact, would not apply.

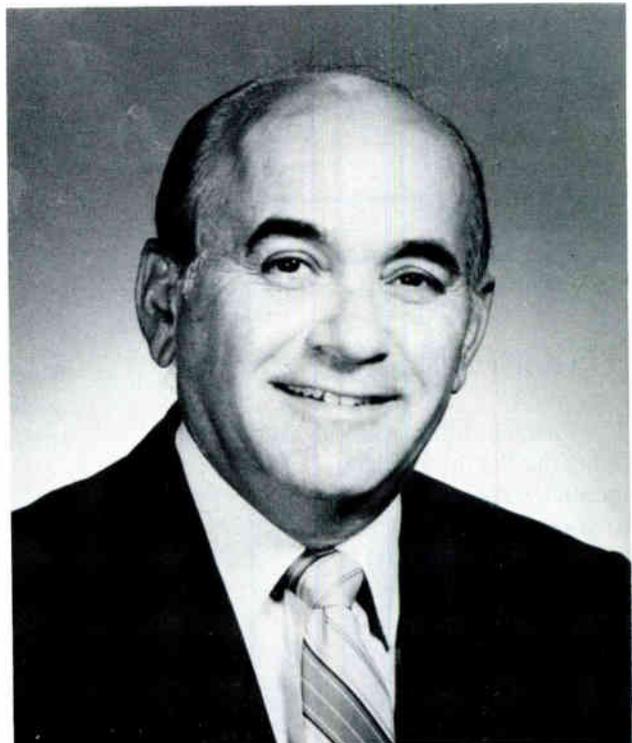
Ever since we announced that reading of the law, there has been a great deal of discussion about the so called "CATA loophole". I'd like to straighten that misimpression out. We are talking about a loophole. We are talking about the way the law is written. We are asking that the Copyright Office and everyone else involved in this ongoing battle be consistent in the way they apply the law.

It is true that CATA is seeking a literal reading of the law. It is also true, however, that ever since the law was adopted and the Copyright Office has interpreted that law, it has stated that a literal reading is the only one that it can make. For that reason, for instance, the Copyright Office has said that a cable operator **must pay for an entire 6 month pay period** of use of a copyrighted distant television signal even though the cable operator **may only use that signal for one day during the 6 month period**. That interpretation clearly does not comply with the common sense reading of the Copyright Law. We believe it is, of course, clearly the intent of Congress that a cable operator should only have to pay for the copyrighted works that he actually used or supplied to his subscribers. Nevertheless, a literal reading of the law by the Copyright Office results in our having to pay for programming we don't use. We have not asked for anything more or less than what has been applied to the cable industry since 1978 regarding the Copyright Law. In essence, **we are asking for equality**. We are asking that we be equally treated under the law the same way the Copyright Owners have been treated since the law's inception and since the Copyright Office has insisted on a literal reading of the rules. We are simply saying that that literal

reading should apply when the result is favorable to the cable industry just as when the result is unfavorable.

To date only unfavorable rulings, that is those that would cost the cable industry more money, have come out of the Copyright Office. Whenever the cable industry raises an issue of interpretation under the law, either a literal reading is given which results in more payments by the cable industry, or the Copyright office simply refuses to make a ruling which has the same result. In this case, CATA has asked the Copyright Office to rule the way it has ruled on many other cases that a literal reading of the law is required.

Having now seen all of the legal arguments on all sides against that literal reading we are confident that a ruling by the Copyright Office will, in fact, come out in favor of the cable industry should a literal reading of the law prevail. The only way to stop such a favorable ruling would be if the Copyright Office simply refused to act. As of the writing of this Catatorial, that is exactly what the Copyright Office has done on more than one occasion.



For instance, the cable industry has been asking the Copyright Office for well over a year to deal with the issue of how a cable operator is supposed to account for tiered programming of distant independent signals. The Copyright Office has taken a literal approach to tiering which says that regardless of the fact that only a portion of the cable operators' subscribers actually see the signal, all subscribers must pay copyright. When challenged on that point, the Copyright Office has simply chosen not to answer the challenge and, therefore, the cable industry is foreclosed from taking any such answer to Court.

Now we have the CATA interpretation of the specialty rules and that too faces the potential of stonewalling by the Copyright Office. We are not saying that at this time, in fact, this is what has happened. The Copyright Office did indeed have a very swift notice of inquiry with comments due on March 1st when the entire issue of specialty stations was raised. At the time of this writing, a decision has not come down from the Copyright Office. Should that decision be delayed **past March 15th** it would, in our view, constitute the height of administrative irresponsibility.

In essence what would happen is that the Copyright Office by refusing to act would force the cable industry to make decisions **based on conjecture** rather than the **interpretation** of the law given by the agency which is entrusted with the administration of that law. Hopefully, by the time it is printed, the Copyright Office will have, in fact,

ruled. And, again, that is all we are asking for; a ruling. **We are asking for equality.** We are asking to be treated equally under the law. If the Copyright Office insists in all other cases on a literal reading of the law, then we believe a literal reading of the law is applicable in the specialty station case. If that is the case, then the 3.75% rate increase will not apply to most cable operators and we need not take off distant signals by March 15, 1983. However, if the ruling is not made before that date, the likelihood is that cable operators will be forced to take off the signals for fear of liability. On the other hand, if the Copyright Office now "gets religion" and decides for the first time that it can **interpret** the law as opposed to simply **read** it literally, then the other rulings of the Copyright Office which have insisted on literal readings of the rules will then fall and the cable industry will once again reap the benefit of being able to pro rate signal carriage costs and pay only for those people who actually see the programming on tiers.

One way or the other, what CATA has initiated will, we believe, result in substantial savings for the cable industry. The only way that can be prevented, so far as we can see at this point, is for the **Copyright Office to simply not act.** We believe it is a fundamental element of fairness and equality under the law that the Copyright Office act as soon as possible to at least give the cable industry guidance or the ability to go to Court should we disagree with their position and thereby let the law apply and be administered equally to everyone, not just to the Copyright Owners. □

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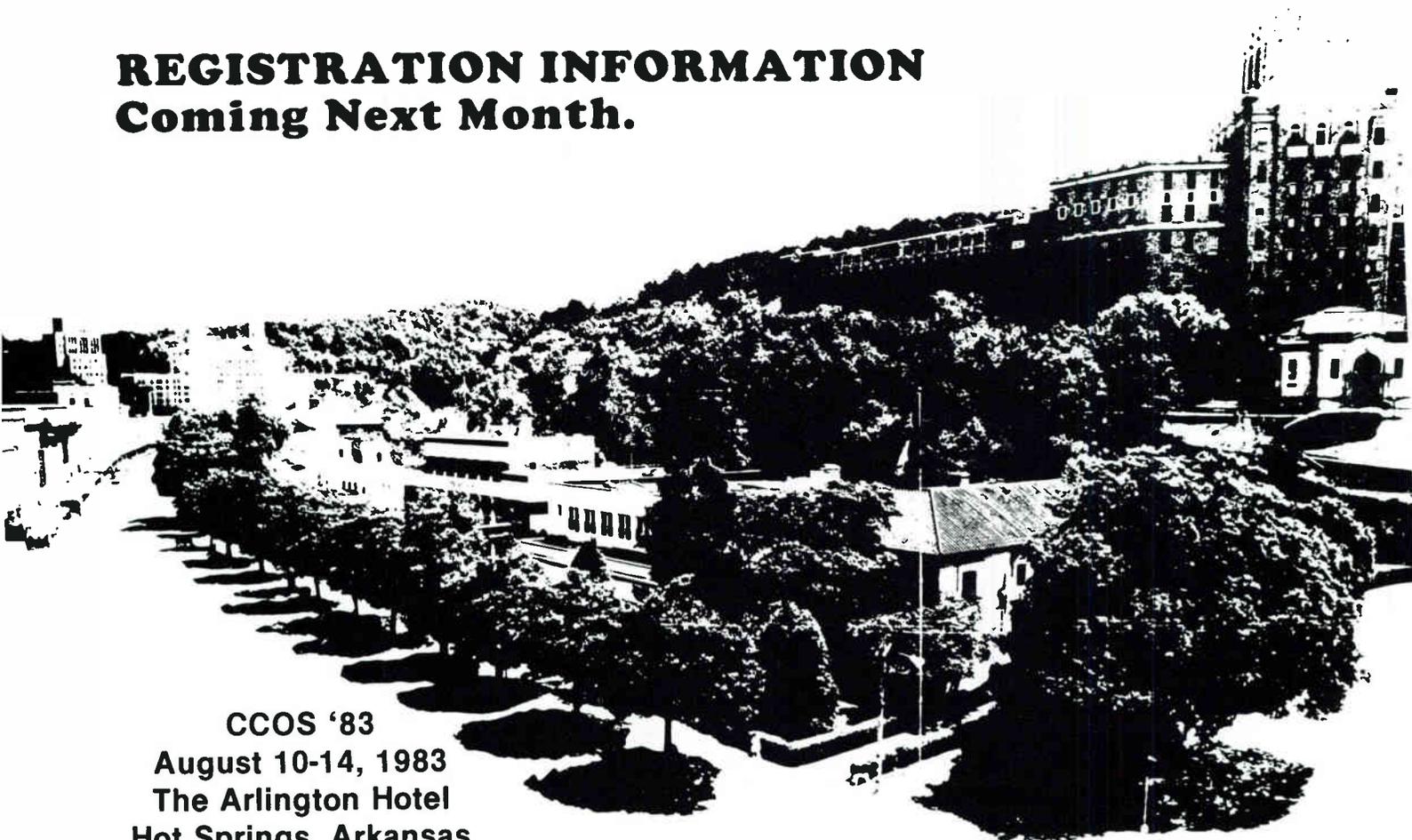
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The Community Antenna Television Journal (CATJ)—ISSN-0194-5963—is published monthly by Television Publications, Inc., 4209 N.W. 23rd, Suite 106, Okla. City, OK 73107. Subscription price: \$18.00 per year, \$22.00 per year Canada, Mexico, and foreign is \$25.00 per year. Second class postage paid at Oklahoma City.

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

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REGISTRATION INFORMATION Coming Next Month.



CCOS '83
August 10-14, 1983
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Set aside these dates for the annual CATA CCOS seminar and exhibits and make your plans to travel to the beautiful green country of Arkansas for another memorable gathering.

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CCOS '83

WATCH FOR REGISTRATION INFORMATION IN THE NEXT ISSUE!!!

How to avoid those down-time blues.



Los Angeles Times Photo

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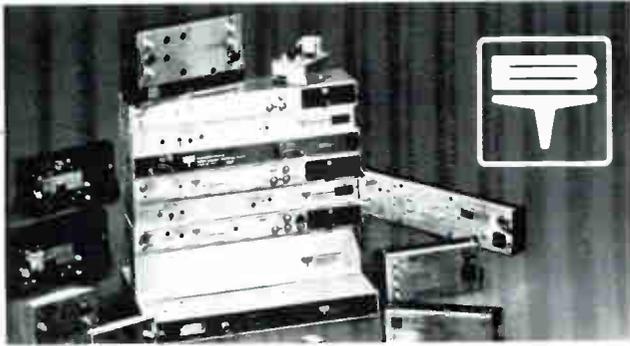
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**BIRKILL COLUMN ABSENT
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The regular series, **S. J. BIRKILL ON EXPERIMENTAL TERMINALS**, will not have a segment in this month's issue due to the strenuous schedule of Mr. Birkill as he is in the midst of a move from one area of England to another. As you may remember, Mr. Birkill was originally scheduled to be relocated here in the United States, (Tulsa, Oklahoma actually), but the plans did not materialize and his immigration to the U.S. was cancelled. Since that time, he has been involved in negotiations for a new position within the United Kingdom, and we can now announce that he will be relocated by the time this issue is received by the CATJ readers.

Mr. Birkill was extremely apologetic for missing this issue, but one can certainly understand the pressures of a new position and relocating to another town; he promises to be represented in the next issue. We feel we can look forward to some very good material coming from Mr. Birkill as he will be in a Research and Development situation that we will tell you more about when the information can be released. We know the regular Birkill readers will be disappointed, but there's more Birkill to come!! □

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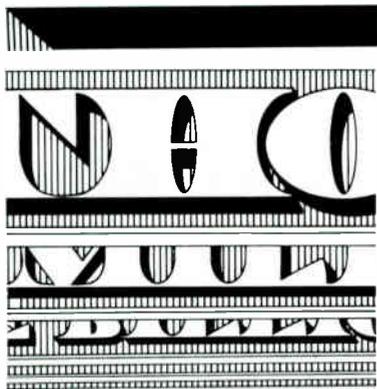
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REDUCING YOUR "MAKE READY" COSTS

By: Ralph A. Haimowitz
CATA Director of Engineering



In many cases, cable companies have run into a problem where there just is not enough room on existing telephone poles to install our coaxial cable plant. The only solutions were to install expensive crossarms, where possible, or to replace the pole.

Recently AT&T completed testing and field evaluation of a pole attachment extension bolt that can be used to provide clearance on a pole for a second telephone cable or a cablevision systems coaxial cable. The extension bolt is furnished with either a 3/4" or 5/8" internal thread that is mated with an existing suspension clamp bolt. The horizontal stand off that it provides makes it possible to place a second cable in the same horizontal plane as the existing cable without violation of the clearances required by the National Electrical Safety Code and

the Bell Systems Practices. This device, where applicable, will provide an alternative means of cable rearrangement on the telephone poles and reduce under the overall "make ready" costs.

AT&T has provided the technical data and information regarding this new hardware and procedure. Certain considerations must be given to loading the bolt to assure proper installation. The printed document that will be issued for this specific data to all AT&T operations is **BSP (Bell Systems Practices) 627-220-200**. The bolt and associated reinforcing strap are available from General Machines Products Company in Trevoze, Pennsylvania.

The following information is provided for ordering the proper hardware:

- Cable Extension Bolt, Type C
(for 3/4" suspension bolt)
#74112-C
- Cable Extension Bolt, Type S
(for 5/8" suspension bolt)
#74112-S
- Expansion Bolt Reinforcing Strap
Type C or Type S
#74113

If you would like additional information about the extension bolt or installation procedures, please contact Walter Hollingsworth, phone (212) 393-2639.

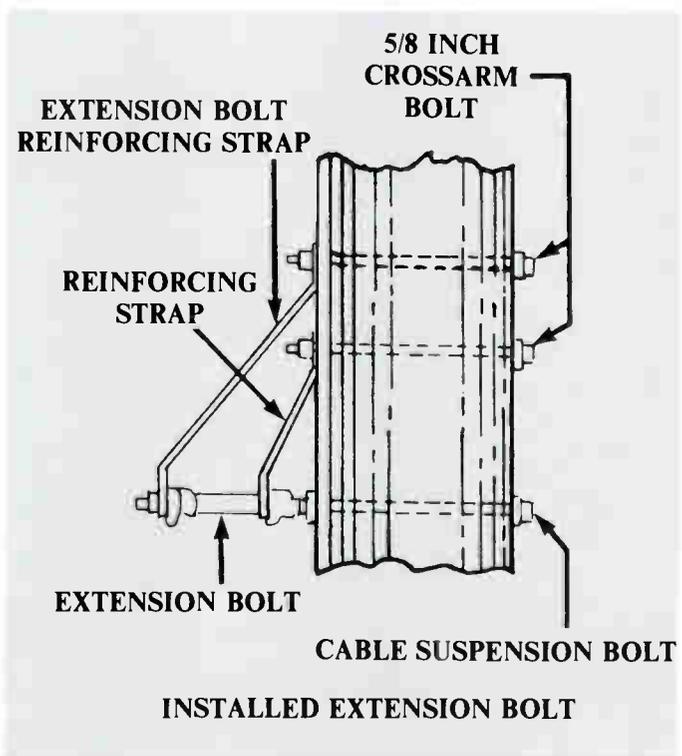
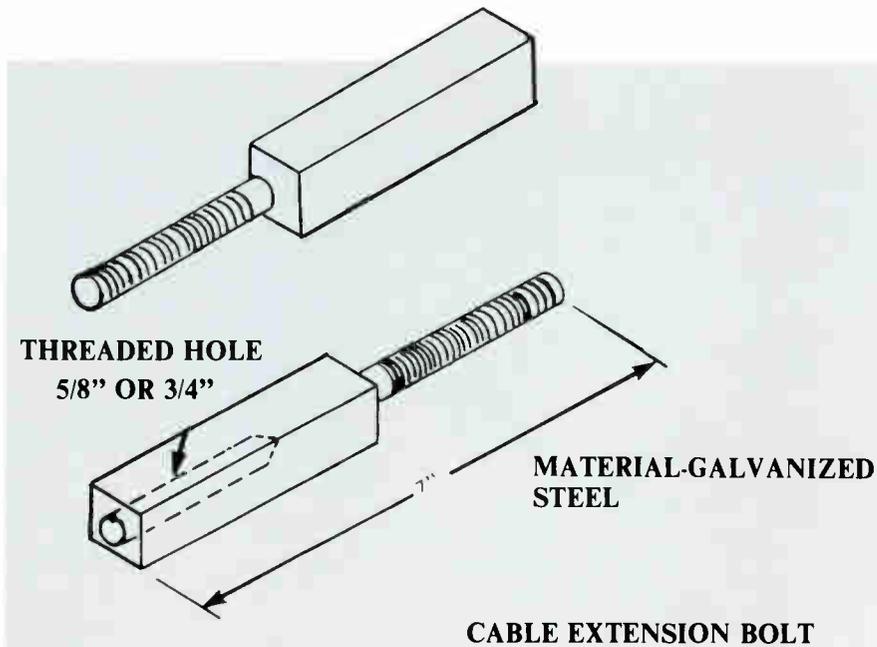
If you are not in an AT&T telephone system area, it may prove

beneficial to provide your local telephone company with this data and request them to accept this same practice on their system poles.

One important point of clarification. This does not allow the cable company to parallel their coaxial cable with an existing telephone cable because of the differences in allowable sag limitations between the two types of cables. It only permits the cable operator to run another coaxial cable parallel to the existing coaxial cable, such as trunk and sub-trunk or two trunk cables. The cable system is the owner of the hardware described in this article where we are dealing with paralleling two coaxial cables on an existing telephone pole.

CABLE EXTENSION BOLT

- **The Cable Extension Bolt** may be used where it is necessary to place a second cable at the same level and on the same side of a pole as the existing cable. The Extension Bolt is available in two sizes, the S type for use with a 5/8-inch suspension bolt and the C type for use with a 3/4-inch suspension bolt.
- **The E. B. Reinforcing Strap** is used to support the outer end of the extension bolt and cable. The strap is available in two sizes corresponding to the two types of extension bolts.



- The type of Extension Bolt used depends on the size of the existing suspension bolt. The use of the extension bolt is limited to strand **not exceeding size 10M**. Allowable cable weight is computed as:

$$W = \frac{1700}{(L_1 + L_2)}$$

where: L_1 = total span length right side of pole-ft.

L_2 = total span length left side of pole-ft.

W^2 = cable weight - pounds per foot.

Extension Bolt Installation

1. Secure existing strand and cable to pole.
2. Remove the nut from the suspension bolt holding the strand and cable.

3. If the existing cable did not require the use of a standard reinforcing strap, place one before adding the extension bolt.
4. Torque the extension bolt up tightly to the reinforcing strap on the existing cable run.
5. The threaded shank of the extension bolt is then treated as a standard suspension bolt and the suspension clamp, strand, and cable are attached.

6. The E.B. Reinforcing Strap is then placed on the outside of the suspension clamp and secured by the outer nut. The strap is placed before the cable and strand on a prelash cable run. See attached illustration. The reinforcing strap shall be secured to the pole with crossarm bolts and not by drive screws. □

by David N. Emberson
Vice-President Marketing
Triple Crown Electronics, Inc.

The Construction Techniques and methods must be established during the initial design of the system. The contractor and the cable manufacturer(s) can help you to establish the best possible manner in which the cable and equipment should be installed.

Specific parameters must be laid down to ensure that the quality of the plant construction will remain consistent from beginning to end.

These parameters should include:

1. Minimum distance to be maintained between Cable TV and other utilities. This is usually established by local utility by-laws or by direct negotiation with the utility itself during permit application.
2. Shape and size of cable loops — the metal cables are subject to expansion and contraction with temperature variations and these loops allow this to happen with minimal damage to the cable itself.
3. If jacketed cable is employed, determine the type of flooding compound to be used in specific areas and confirm correct installation methods.
4. Correct size of steel strand cables to be used and the approved method of pole attachment plus the grounding and bonding requirements.
5. The quality of the poleline hardware to be used, this is usually specified by the utility in the attachment agreement.
6. Type of cable lashing wire and approved method of installation.
7. Type and location of ground anchors and method of installation.
8. Utility inspection guidelines and specifications, that is, what will be inspected and the time frame, costs and frequency of inspection.

These are only a few of the parameters and again the use of a professional cable contractor can save many dollars which might otherwise be spent on correct deficiencies in the original installation of the cable TV plant. For those who still insist on doing their own plant construction, a very intensive training of all construction/linemen is essential to ensure the highest quality of workmanship and the least amount of cable and equipment damage. The hiring of a qualified construction supervisor is a must and he can then assume responsibility for the correct training of the line crews.

The Headend Layout and equipment requirements for the system rates second in importance only after the actual cable requirements for the system. The geographic location of the system has the greatest affect on the equipment requirements such as: —

1. Size of Satellite receiving antenna, type of LNA, Low Noise Amplifier, LNB, Low Noise Blockconverter or LNC, Low Noise Converter.
2. Number of satellite receivers required and type.
3. Number of TV Signal Processors required to process off-air TV channels. If these local channels are high power, then these channels may be impaired or unuseable on the cable system. These then must be converted clear channels. The impaired channels can

then only be used by "phase-locking" the frequency of the cable channel to the frequency of the off-air TV channel.

4. Use of FM radio channels either off-air or via satellite.
5. Additional Digital services for weather, stock market, news, aircraft arrivals/departures etc.
6. Local Origination television channel for use by local residents for producing their own TV programs.

There are many other features which can be included in the Cable TV system and these are only limited by ones imagination. Once the equipment requirements are established, it is then necessary to properly design the manner in which the equipment will be installed and connected together to put all the different channels onto one single cable for feeding the Cable TV system trunk line which in turn feed the entire system.

Various types of equipment must be connected in different methods and the equipment manufacturer is best suited to show you the recommended method. There have been a number of articles written on this subject but it is most wise to follow the manufacturers suggestions for best results. Use of Dual Hetrodyne Processors, Hetrodyne Modulators etc. offer the greatest number features and provide additional facilities such as emergency override system, which permits every channel on the system to be replaced by a single common channel hence regardless of which channel the customer may be viewing, they will see the emergency message being flashed across the screen. Simultaneously an audio signal is also heard, advising the customer of the emergency and giving instructions to be followed if necessary.

continued

This type of equipment has now been made most cost effective whereas original similar equipment was sold for over one thousand dollars is replaced by equipment with the same features for half that price.

In this way, the cost of assembling a full headend is reduced substantially, without sacrificing quality of operation or any of the features.

A similar advancement has also occurred in the broadband amplifiers required to amplify the television and FM radio signals through the cable television system.

Original trunk and distribution amplifiers were contained in very large cast aluminum housings and cost about a thousand dollars. Now, using smaller sized line amplifiers and distribution line extenders, equipment can be assembled to do the identical function for about five hundred dollars.

The success of the small cable television system is dependent upon such technological advances and

when these and other practices are followed the result is a most cost effective design which provides the same high quality of service offered by the larger systems but at a price that substantially reduces the capital cost of the system and permits the system owner to pay back his bank loan and still have a tidy profit for himself.

As an example, the following will give a typical layout for such a system.

The design for the typical antenna site is shown for a twelve channel system as well as for a nineteen channel system. This can begin with as few as one or two channels and the remainder can be added easily as they become available. While only the output channels are shown in these drawings the program source can be anything from Satellite to Local Origination Programming.

In both of these designs, the modulators and processors have been combined with even and odd channels "daisy chained" together using directional couplers and then

the individual groups are combined using two way combiners which are actually two way splitters connected in reverse. The use of the special amplifier at the headend or antenna site provides for complete isolation between the frequency sensitive components in the headend and the broadband trunkline which feeds the cable TV system. This amplifier contains two Hybrid Integrated Circuits (IC's) operating in parallel and being both fed "in-phase". This amplifier is almost invisible with respect to adding to the system cascaded distortion parameters.

This concept was originally explained in an article written by me and published in CATJ magazine in the Fall of 1981.

The concept of using line amplifiers and distribution line extenders as a trunk bridge combination was originally explained in an article which was also written by me and published in Cable Communications magazine in March 1976.

continued

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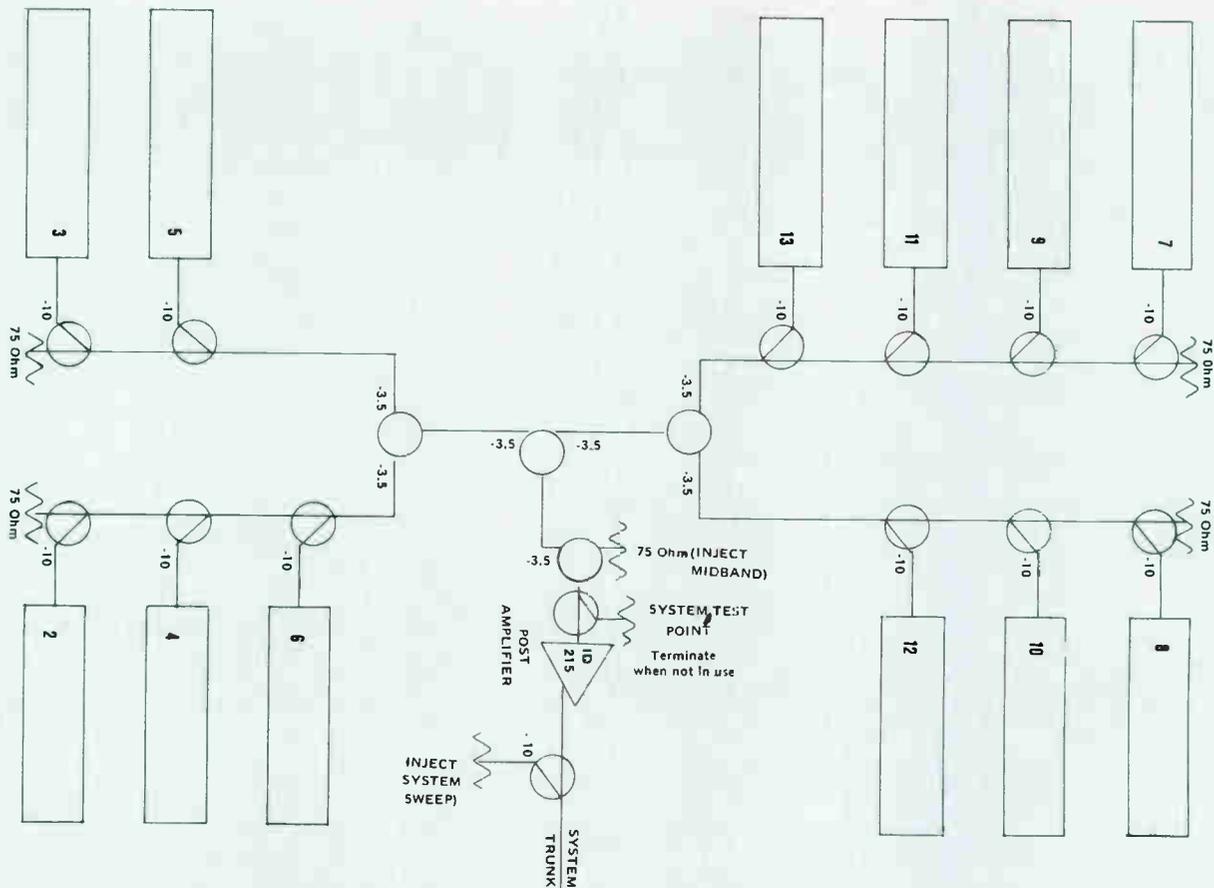
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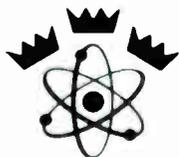
At Triple Crown — small is BIG! Our products are designed and manufactured specifically to suit small system applications. We built our first 36 channel system almost a decade ago. Since then we have provided the expertise and top quality equipment for hundreds of systems around the globe.

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would be proud to introduce you to one ... his testimony may make you one too!

Our extensive experience in the field of television reception and distribution systems coupled with our constant dedication to engineering excellence, makes Triple Crown an industry leader. We can give you big system performance with a small system price tag. If you are in the market for equipment or even some friendly advice, call us first ...

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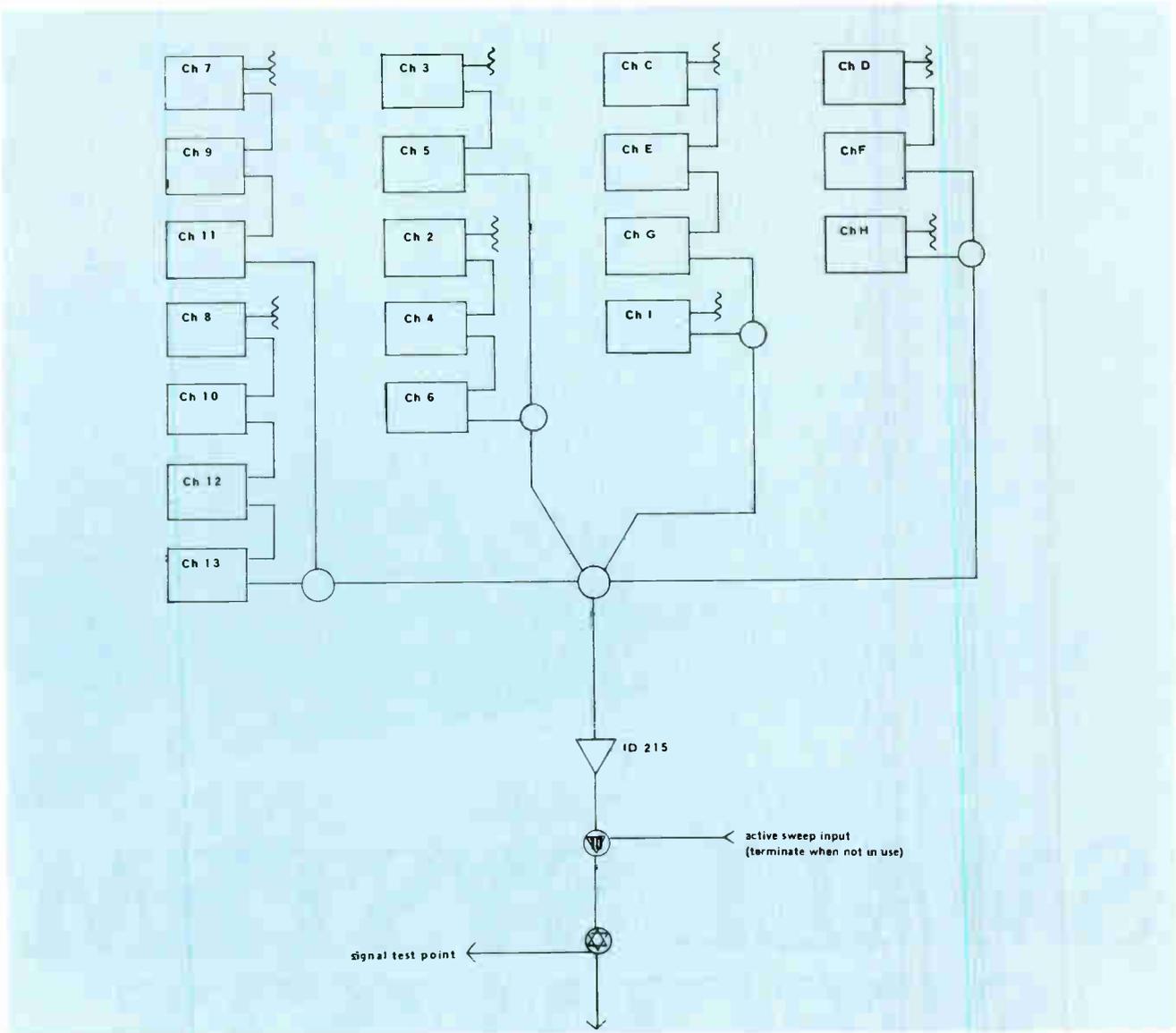
TRIPLE CROWN ELECTRONICS INC.

4560 Fieldgate Drive, Mississauga, Ontario, Canada L4W 3W6 Tel.: (416) 629-1111 Telex: 06-960456

APRIL, 1983

CATJ

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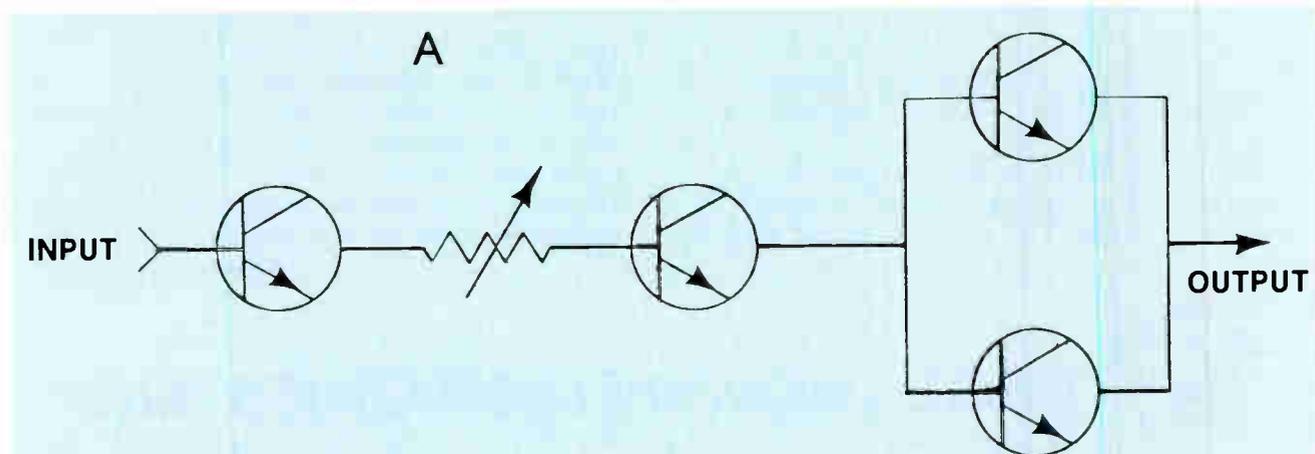


To assist in understanding the concept of the "Mini-Trunk" it is necessary to review the various configurations in which line amplifiers have been designed and built.

Drawing A, shows a single ended input stage, followed by attenuation feeding a second single ended amplification stage which drives a push-pull output stage.

Intermodulation products are caused in the single ended stage and the input stage is easily overdriven by input level fluctuations.

continued



Drawing B is similar to that in A, however, the simple push-pull output stage has been replaced by a "quad" amplification stage.

The overall I.M. (inter-modulation) performance is improved but the basic problems remain.

Drawing C is similar in operation to both A and B but the output stage has become a hybrid amplifier or I.C., and an input attenuator has been added to permit control of the input level to the amplifier. This distributes the total attenuation between the various amplifier stages preserving the noise figure and avoiding overdriving of the amplifier stages.

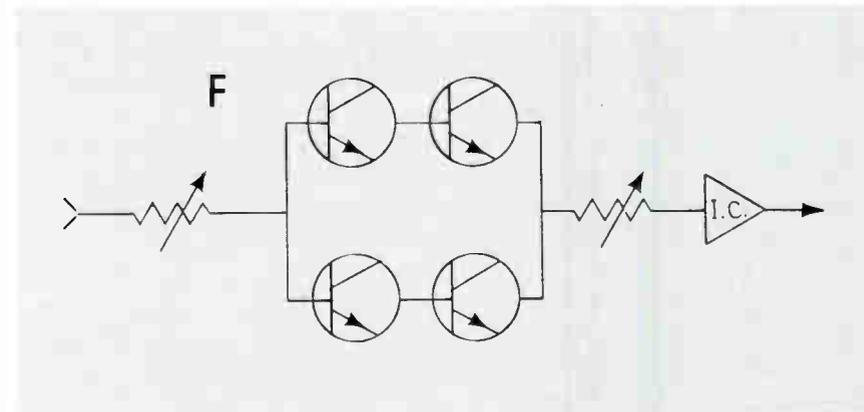
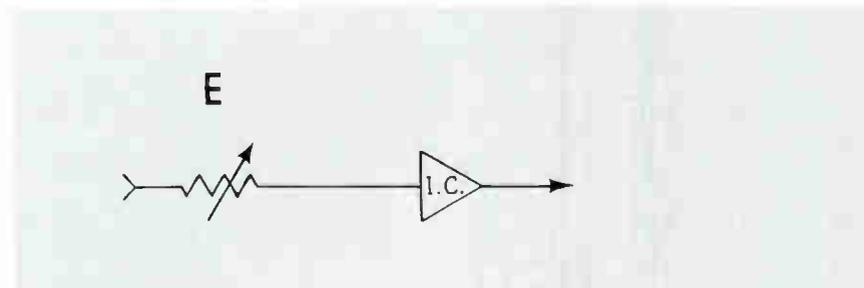
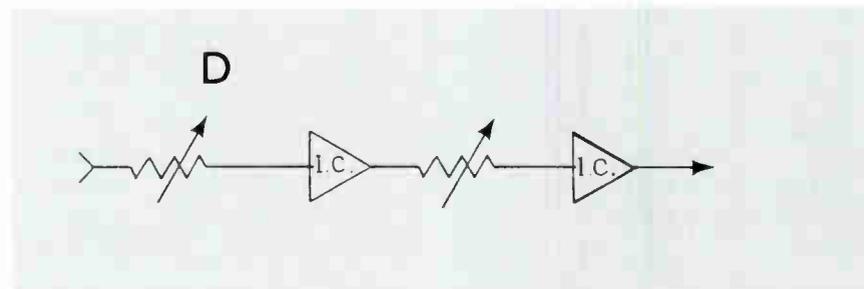
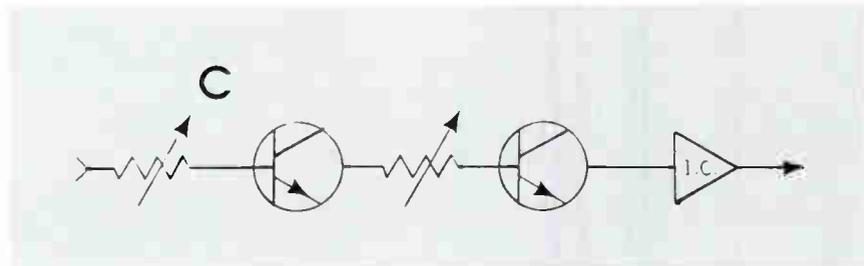
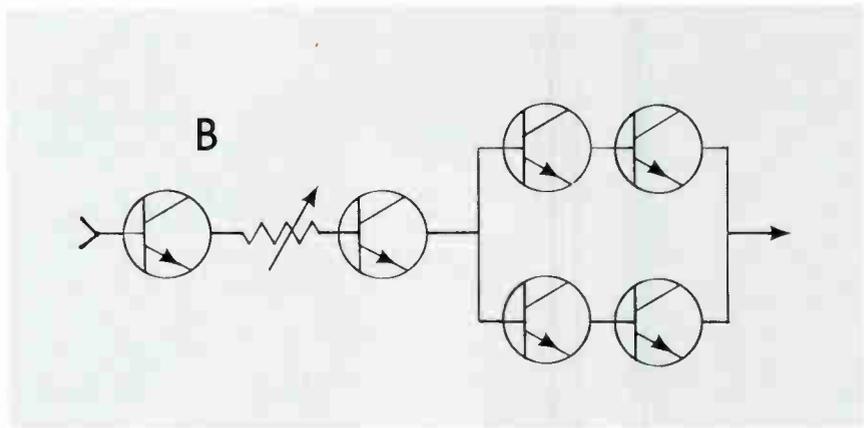
Drawing D is a dual hybrid amplifier which now adds total push-pull from the input to the output of the amplifier, further improving the output capability, reducing I.M. and preserving the noise figure of the amplifier by distributing the total attenuation between the stages, LA type amplifier.

Drawing E is a single hybrid amplifier which is prone to excessive noise contributed by the introduction of **all** the necessary attenuation at the input to the 30dB gain hybrid amplifier.

Drawing F shows the basic configuration of the DL Series Triple Crown Amplifiers.

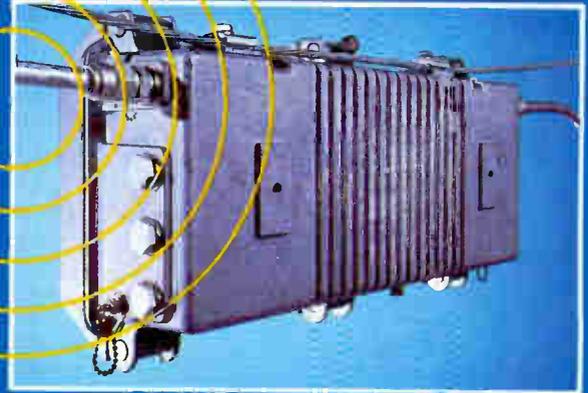
1. The input attenuator protects the first amplifier from excessive input levels.
2. The input "quad" amplifier provides superior noise figure with a low current consumption, hence less heat dissipation.
3. The interstage attenuator prevents the output amplification stage from being overdriven by the input amplifier stage and maximizes out-put performance.
4. The output amplifier in a hybrid amplifier stage which contributes significantly to the preservation of the output performance.

Triple Crown Electronics Inc., produces the DL/LA series of amplifiers using the configurations shown in Drawings D and F.

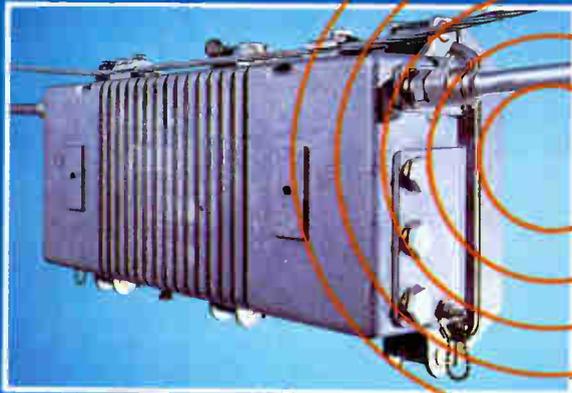


Texscan Bloodhound

Detect RF leakage
at 107.9 MHz



Detect RF leakage
at 217.25 MHz



twice as effective

Detect radiation leakage at two discrete frequencies with the Texscan Bloodhound.

The Bloodhound system can track down damage easier than any other diagnostic tool. It's technically superior and operationally more effective than any other system. Narrow receiver bandwidth, squelch control, dual frequency reception with speaker and metered output, produces a leakage monitoring system with a high probability of detection.

The FDM-1 transmitter unit injects two signals, at 107.9 MHz and 217.25 MHz from the headend. The FDM-2 receiver can be vehicle mounted for transportation throughout the plant cable runs. This portable battery operated receiver can detect signals as low as -80 dBmV and make calibrated measurements.



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For Distribution Equipment:
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2960 Grand Avenue
Phoenix, AZ 85017
(602) 252-5021

By a proper application of these various features, it is now possible to analyze the operation of the mini-trunk concept.

Many small cable systems have found that they can achieve full trunk performance while relieving tight budget problems by trunking with the mini-line distribution combination. This method is ideally suited to systems of 12-20 channels designed with a trunk cascade of up to 16, with normal extender cascades of 1-4 depth.

The mini-trunk generally consists of: —

- LA 326 or 330 as ALC trunk module
- DL 352T or DL 331T as manual trunk module
- DL 350 or DL 352 as low gain bridger
- DL 339 or DL 348 as high gain bridger

Interface connections are built from DC 12 line directional couplers, line splitters and close coupled 5/8 entry connectors such as VHH or G-KS-KS-M.

For line installations, as in the drawing, the strand bracket on the bridger module is reversed, allowing both trunk and bridger modules to be mounted securely, and allowing the trunk output cable to pass behind the bridger module. Although this assembly method is most common, any mechanical configuration which maintains the same electrical layout can be used. For example, the close coupled connectors may be replaced by cables up to 50' long as the need dictates, allowing the trunk and bridger portions to be placed in the most convenient locations.

Typical small system operating levels

Trunk input	+ 12dBmV @ Ch 13
	+ 20dBmV @ Ch 2
Trunk output	+ 35dBmV @ Ch 13
	+ 32dBmV @ Ch 2
Bridger output	+ 47dBmV @ Ch 13
	+ 41dBmV @ Ch 2
Spacing @ Ch 13	
	20-22dB with LA 326 module
	22-24dB with LA 330 module

Actual operating levels would be determined by system overall length and channel loading.

Typical station power requirement:
(trunk, ALC, bridger): 600mA @ 60VAC
Trunk manual, bridger: 500mA @ 60VAC

Most applications would involve alternate ALC and manual stations, but this can be tailored to individual system needs.

As this system also provides full sub low bi-directional capabilities, it can be used in any small system in exactly the same role as a 300MHz push pull trunk amplifier.

This concept has been most successfully used in hundreds of systems since 1975 when the first system using these figures was built by me in Hamilton, Ontario. While line amplifiers were employed similarly prior to that, the distortion parameters were not achieved and they did not meet the necessary regulated parameters. Recently, similar systems have exceeded 30 and 35 amplifiers in cascade and the results are most satisfactory. In extended cascades, the aspect of automatic gain control can become critical and in such instances the use of a full sized amplifier with automatic slope and gain control is recommended. These would usually be necessary about every sixth or even seventh amplifier location and they act similar to a "mop up" amplifier to stabilize the amplifier levels. When properly installed and designed, these systems are well behaved and require very little actual maintenance. In fact, the less the amplifiers are opened and closed, the better the system operates. A specific amount of fluctuation tolerance has been designed into the system and the operation parameters to allow for level changes without noticeable picture degradation. If a system is operating within these preset parameters, it should be left to operate.

Continual opening of amplifiers changes the ambient operational temperature inside the unit and lends even further causes to create even greater fluctuations in the

system operating levels. This can also contribute to premature failure in the housing hinges, rubber seals and the test-point connectors and seals. The following paragraphs suggest an appropriate maintenance program for such a system. This program would employ the simplest possible test equipment and methods to achieve the desired results, that is a high quality signal and most dependable service, at the most conservative costs.

System activation and fire-up for the small system would follow the same procedures as for large systems. Once the connectors are installed and the power supplies connected to the power utility, it is possible to begin installation of the active devices (amplifiers). The signal into the first active device must be properly terminated before accurate signal levels can be recorded. It is usually necessary for the amplifier module to be installed within the amplifier housing before AC power can pass from the input to output port of the amplifier or vice versa.

The procedure is to begin at the power supply feeding the run and install the necessary modules into the housings, programming the power director plugs, applying the appropriate attenuators and equalizers as indicated by the design map. These can be indicated by the system designer during system design for the construction drawings. The actual figures for signal levels and the values for the attenuators and equalizers can be later changed if necessary for the "as built" map or drawings. When all the modules are installed and the signal is applied, the input level to the first amplifier can be measured and recorded. Comparison to the levels on the design map usually indicate the actual signal levels to be within one or two dB's of those calculated. If this is not the case, a possible fault exists between that amplifier location and the signal source. This fault **must** be corrected before the amplifier output level can be set. If the correct signal levels are present, the correct equalizer and attenuators applied then using the

continued

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RF signal leakage is not a new concern for cable system operators.

Loose connectors, hairline cracks in expansion joints, loose or corroded covers on equipment housing can all lead to signal leakage problems.

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Tracer Model TR-1

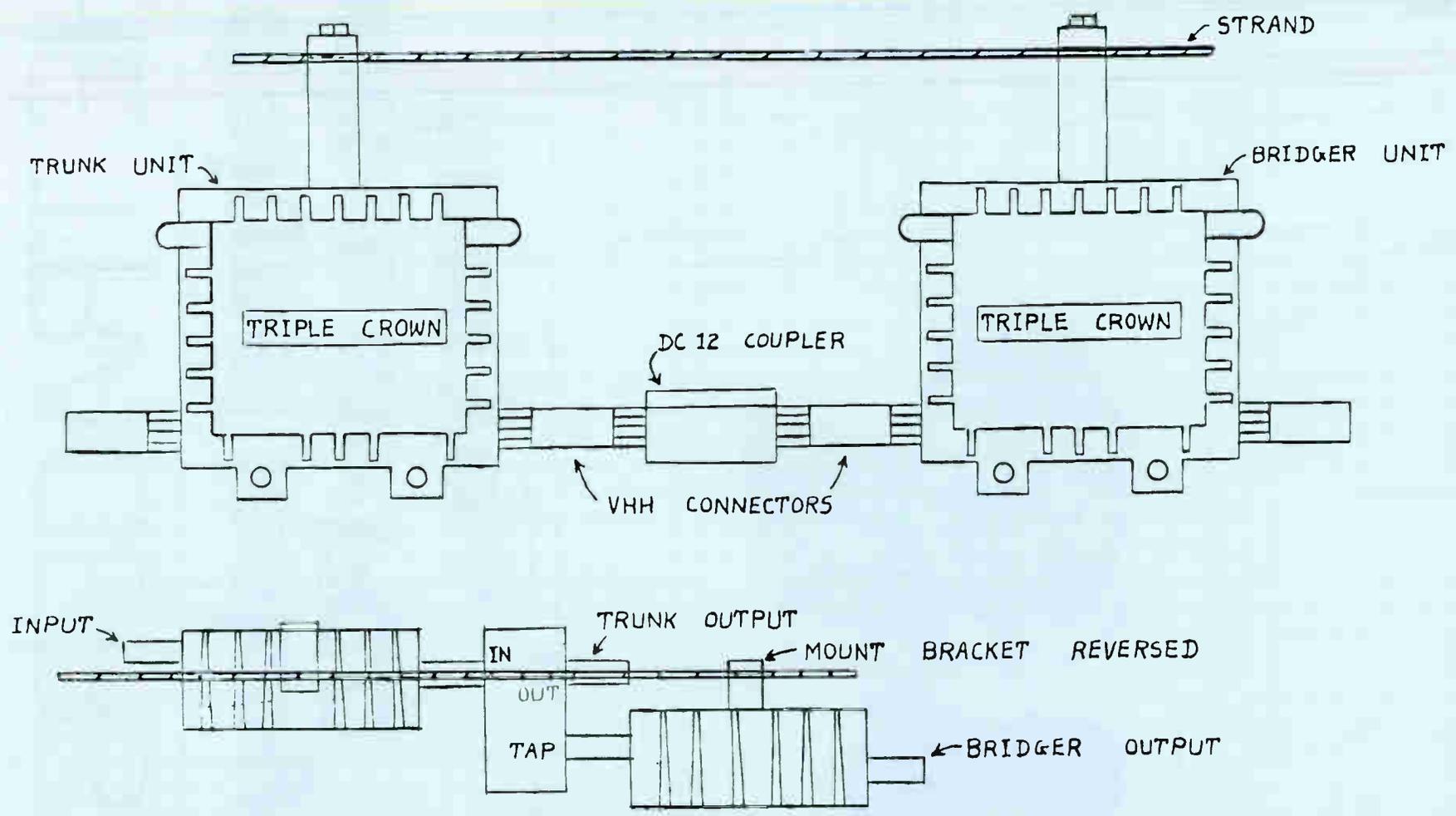
Tracer Model TR-2

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variable slope and gain controls can produce the desired output signal levels.

Both the input and output signal levels, for each channel must be recorded as well as the values for the equalizer and attenuator. These will be filed and used as the reference for all future signal levels measured and recorded at that particular amplifier location. It is necessary that each amplifier location be designated by a number or code to facilitate it's being easily identified during fire-up and on-going system maintenance, this can be done by relationship to the power supply by which it is being powered. The power supplies will simplify troubleshooting system faults in the future.

When the first amplifier is correctly adjusted and the input/output signal levels are recorded and the AC line voltage, equalized and attenuator value, power director position is noted, the housing is closed following the correct procedure and using the proper tools. It is always wise to record the data obtained within the amplifier housing for future reference. The use of a small container of silica gel crystals will absorb any moisture entrapped in the housings and prolong amplifier life by preventing corrosion contacts and electrolysis of metal surfaces.

Amplifier test point protection covers must be affixed and snugged tight to activate the weatherproof seals. Use of silicon grease or other moisture repellent is sometimes used at the system operators discretion.

A final visual check of the housing, mounting hardware, amplifier housing & seal as well as input and output connectors and heat shrink (if used) completes the task and is now possible to set the second amplifier. Note — It is necessary to set the forward levels only in the initial activation of the system. Once these levels are reasonably close, it is then necessary to reverse this procedure to set the return path or reverse amplifiers. Again, it is necessary to record all input and output levels. Remember that the amplifier housing output test point is really the input test point for the return path or reverse amplifier.

The input test point on the housing will permit measurement of the return path or reverse amplifier output signals.

Each amplifier is adjusted sequentially using the same procedure described previously until all levels have been correctly set and all pertinent data recorded accurately.

Any peculiar occurrences should be noted in detail and the circumstances and locations documented and carefully filed. Such information can be invaluable should strange behavior be experienced in a specific area during the first few months of system operation.



Occasionally a poor connection, broken cable or other fault does not appear until after the plant has been subjected to abnormal weather, temperature fluctuations or physical stress. (This usually occurs about February 15th at 12:30 AM at -40°).

It is during the period of system activation that the technicians have the opportunity to thoroughly inspect, test, analyze and correct any faults found in this process. After this time, the customers will experience the inconvenience of any faults which have been overlooked or not detected. This will inconvenience the technician. It is most important that the fire-up and activation be completed with the greatest enthusiasm and dedication!

The on-going system maintenance will detract directly from your revenues. Anything in the initial construction and fire-up period to prevent intersification of system maintenance will be reflected in your bank account.

Correct equipment selection, proper design, correct installation and

careful system activation are all the weapons you have to use to decrease the total maintenance costs for your system. The key word for the small system operation must be "cost-effectiveness", that is getting the most for capital expenditure. The insurance to this must be realistic technician training which is thorough and complete.

Technician training should begin during the early design stages and continue through the process of equipment selection, system construction and plant activation. If a technician is expected to totally maintain the system, he should fully understand and be intimately familiar with the equipment and the design.

The actual procedures of system maintenance will vary due to system design and technician preference but the actual job function should be aimed at "preventive" maintenance rather than "Breakdown" maintenance.

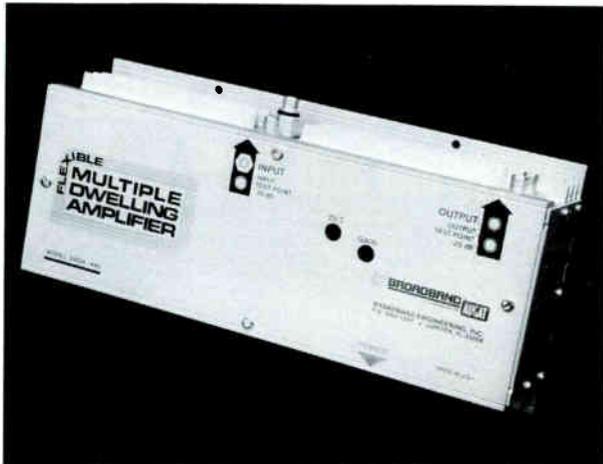
Breakdown maintenance occurs after the fault appears, Preventive maintenance before. Even at the antenna site or Headend this process must be continued with a proper Headend Journal or book in which all levels, problems, occurrences, visitors, equipment changes, modifications or other pertinent information is recorded and stored for possible future reference. These details, correctly recorded can prove invaluable sometime in the future as a possible troubleshooting aid.

The actual function of a system maintenance technician is almost an accounting function. They must accurately account for every decibel throughout the cable television system and know where they are all going.

Imperfections in the transmission media lose dB's and these must be corrected to prevent the loss. This need not be an unending task, because by using the records of previous measurements and the picture quality of a well maintained television set, it is possible to assess signal levels and picture quality at specific "system test points" which

continued

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The XMDA also features the latest hybrids for maximum output with minimum distortion. And it is housed in a finned aluminum extrusion to remove heat quickly from active devices and extend component life.

We've designed the XMDA for one-way transmission only. This should meet the needs of most systems, and you don't end up paying for a two-way capability you may never use.

Rugged and dependable, the Broadband XMDA combines high performance with maximum flexibility at a low cost.

For additional information on specifications or pricing, call us toll-free at 800-327-6690, or write Broadband Engineering, Inc., P.O. Box 1247, Jupiter, Florida 33468. While you're at it, ask for our free catalog describing our full line of CATV products and services.

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SEE US AT THE CABLE-TEC EXPO

BOOTH NUMBER 500

will serve as indicators of the correct operation of the entire cable system, up to those test points.

After that, the only indicators which count will be the eyes of the beholder or "the customer". The end goal of the game is customer satisfaction and if he is happy he pays the monthly rate. All the most sophisticated test equipment in the world does not surpass the ultimate test of the subscribers television set. (Even if it is 20 years old). After the system is properly maintained documented and pampered, it is necessary to do the same for the subscribers.

The service technicians and maintenance men must develop a proper "Set-side-manner" as he will be the companies representative at that point and any comments made by him will be accepted as the "final word!"

Again — the subscriber's set could be your "hassel". At no time should a technician point out the subscribers receiver as faulty. Using a proper

"test" television set, connected together with the subscribers television set and demonstrated properly you can usually convince the customer that their set is at fault — if not — call your supervisor!

All signal levels at the subscribers drops should be recorded at the signal levels available as recorded at the time of the installation. Any changes in these levels should be traced, and corrected to restore the original quality of service. In fact — dB's are accountable right down to the subscribers receiver.

"Many month's later —"

Now that the system is operating, it is essential that the customers be properly serviced in all aspects. In the case of disconnected or non-connected households, it is very important that these be surveyed periodically to ensure that service is in fact not being provided. These problems can arise for many reasons, some honest mistakes, some not-so-honest. In any matter actual physical drop audits must be continually performed and when

necessary legal action commenced and publicized to deter loss of revenues from the system.

Such policing can be by system technicians/servicemen or installation persons or can be handled by professional auditors who are most proficient at gaining subscribers.

In this study, we hope that some of the technical problems presented when cable operators are faced with more than six or eight channel availability have been clarified, with the cost differentials amply explained. For cable operators, this material has addressed not only the matter of design and construction of a cost effective cable system, but the maintenance as well. From what we read about franchising problems, it seems that the key to that problem is operating a good, clean system, and we hope this material will help in providing the ways to do just that. As suggested in Part #1, we would be pleased to hear from any of the readers with questions or suggestions, and would appreciate the opportunity to discuss this further. □

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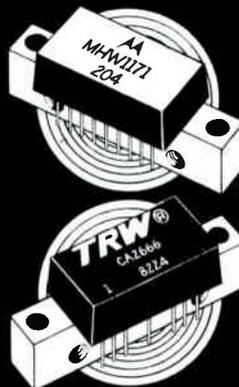
In addition, the TM-2400A is the only unit in its price range with easy, in-the-field channel change, a feature usually found only on more expensive modulators.

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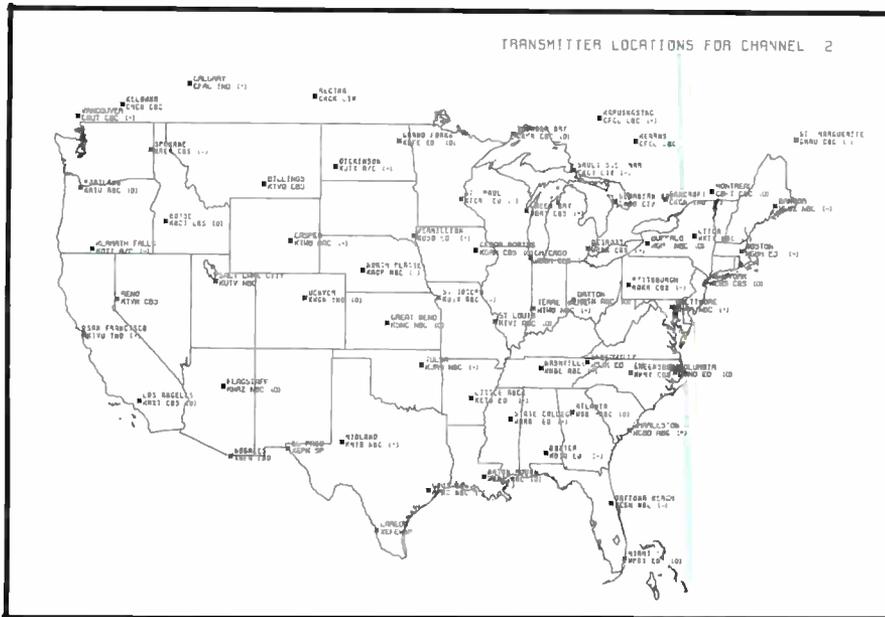
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Biro Engineering

BRINGS THE PUBLICATION OF THE CO-CHANNEL ATLAS

Steven I. Biro, of Biro Engineering, has been a long time reader and contributor of comments and ideas to CATJ. Mr. Biro contacted us about their new **CO-CHANNEL ATLAS**, which will assist the system technician in the speedy identification of possible co-channel offenders.

The **ATLAS** contains 12 computer drafted color maps. The Channel 2 through Channel 13 maps display all U.S. and major Canadian TV stations at their exact transmitter locations. After each map, a complete listing of the pertinent channel stations shows their technical and program parameters. Computerized co-channel calculations, antenna selection guides, and on-site testing tips complement the information package.



sample map and chart
for Channel 2

CHANNEL 2 TV STATIONS IN NORTH AMERICA											
U.S. STATIONS					CANADIAN STATIONS						
CALL	CITY	ST	NETWORK	POWER OFST	HAAT	CALL	CITY	ST	NETWORK	POWER OFST	HAAT
2 WDIQ	DOZIER	ALA	ED	100.0	- 693.0	2 CTAC	CALGARY	ALB	IND	100.0	+ 989.0
2 WERI	ANCHORAGE	ALAS	NBC	29.0	180.0	2 CBNA	HIGH PRAIRIE	ALB	CBC	5.0	- 208.0
2 RTAR	FAIRBANKS	ALAS	A/R	85.0	85.0	2 CFRN	LACLAIB/CHE	ALB	CBC	1.0	+ 126.0
2 WBAZ	FLAGSTAFF	ARIZ	NBC	100.0	0	2 CSBA	LLOYDMINSTER	ALB	CBC	116.0	+ 730.0
2 WJFA	MOGALES	ARIZ	IND	8.0	231.0	2 CHCB	KELOWNA	B.C.	CBC	8.0	3000.0
2 KETS	LITTLE ROCK	ARK	ED	100.0	+ 1780.0	2 CHCO	PRINCE GEORGE	B.C.	CBC	5.0	568.0
2 WWT	LOS ANGELES	CAL	CBS	87.0	3180.0	2 CBUT	VANCOUVER	B.C.	CBC	50.0	+ 2000.0
2 KTVU	SAN FRANCISCO	CAL	IND	100.0	+ 1971.0	2 CBFT	CHILLICAMP	N.P.	CBS	2.0	611.0
2 WDCN	DENVER	COL	IND	100.0	1090.0	2 CKCM	MORCTON	N.P.	CIV	56.0	+ 1013.0
2 WESH	DAYTONA BEACH	FLA	NBC	100.0	+ 1550.0	2 CBFT	DOMINE BAY	N.I.	CBC	2.0	110.0
2 WFTS	MIAMI	FLA	ED	100.0	+ 930.0	2 CKCR	BANCROFT	ONT	IND	67.0	+ 945.0
2 WSR	ATLANTA	GA	ABC	100.0	1035.0	2 CKOD	GEORGIAN BAY	ONT	DIV	108.0	+ 985.0
2 WISN	MILWAUKEE	WIS	NBC	60.0	60.0	2 CKPL	SAKAPUSWING	ONT	CBC	1.0	+ 363.0
2 WNCI	BOISE	ID	CBS	65.0	2660.0	2 CKPL	KEARNS	ONT	CBC	70.0	+ 737.0
2 WISN	CHICAGO	ILL	CBS	35.0	1368.0	2 CKCY	SABUL STE. MAR	ONT	CIV	108.0	+ 500.0
2 WJMO	FEARLE HANDE	IND	NBC	100.0	+ 950.0	2 CKPR	MURDER BAY	ONT	CBC	56.0	+ 1257.0
2 WISN	CEDAR RAPIDS	IA	ABC	100.0	1680.0	2 CKST	MONTREAL	QUE	CBC	100.0	+ 500.0
2 WISN	GREAT BEND	KAN	NBC	100.0	0	2 CHAU	PERCE	QUE	CBC	56.0	+ 1215.0
2 WBAZ	SAWYER ROCK	LA	ABC	100.0	1680.0	2 CHBT	RIVIERE AU TOR.	QUE	CBC	2.0	590.0
2 WISZ	BANDOR	ME	NBC	51.0	680.0	2 CHAU	ST. MARGUERITE	QUE	CBC	10.0	- 700.0
2 WISN	SALT HORE	MD	NBC	100.0	+ 1000.0	2 CHBO	HELYORT	SASK	CIV	12.0	+ 892.0
2 WBSH	BOSTON	MASS	ED	87.0	+ 1080.0	2 CKCR	REGINA	SASK	CIV	100.0	+ 670.0
2 WJBR	DETROIT	MICH	CBS	100.0	+ 1000.0						
2 WICA	ST. PAUL	MINN	ED	100.0	+ 1310.0						
2 WKAB	STATE COLLEGE	MO	ED	100.0	+ 1254.0						
2 KOTV	ST. JOSEPH	MO	ABC	100.0	810.0						
2 KTVI	ST. LOUIS	MO	ABC	100.0	1085.0						
2 KTVI	BILLINGS	MONT	NBC	100.0	670.0						
2 WJOP	NORTH PLATTE	NEB	NBC	100.0	- 630.0						
2 KTVI	RENO	NEV.	NBC	35.0	950.0						
2 WCR	BUFFALO	N.Y.	NBC	100.0	1000.0						
2 WCRS	NEW YORK	N.Y.	CBS	20.0	1917.0						
2 WNTV	UTICA	N.Y.	NBC	35.0	1380.0						
2 WROD	COLUMBIA	N.C.	ED	100.0	992.0						
2 WFTV	GREENSBORO	N.C.	CBS	100.0	1882.0						
2 KDIK	DICKINSON	N.D.	A/C	100.0	840.0						
2 KDFE	GRAND FORKS	N.D.	ED	100.0	1137.0						
2 WJH	DAYTON	OH	100.0	1000.0							
2 WJH	TULSA	OKLA	NBC	100.0	1330.0						
2 KOTI	FLAMING FALLS	ORE	A/C	18.0	1050.0						
2 KATV	PORTLAND	ORE	ABC	100.0	1560.0						
2 WDA	PITTSBURGH	PA	CBS	100.0	990.0						
2 WISN	CHARLESTON	S.C.	CBS	100.0	790.0						
2 WUSD	VERMILION	S.D.	ED	100.0	760.0						
2 WJCE	RASBIVILLE	TENN	ABC	100.0	1553.0						
2 WJLK	SHELBYVILLE	TENN	ED	100.0	1763.0						
2 WJPR	EL PASO	TEX	SP	6.0	1150.0						
2 WJLK	HOUSTON	TEX	NBC	100.0	1630.0						
2 WJCE	LAREDO	TEX	SP	2.0	590.0						
2 WJLD	WYLAND	TEX	NBC	100.0	1052.0						
2 KUTV	SALT LAKE CITY	UTAH	NBC	86.0	3060.0						
2 WJEN	SPRINGFIELD	VASH	CBS	100.0	2203.0						
2 WBAV	GREEN BAY	WISC	CBS	100.0	1205.0						
2 KTHO	CASPER	WYO	NBC	100.0	2000.0						

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- CALL** The call letters of the station
- CITY** The city and surrounding area served by the station.
- ST** State
- NETW.** Network affiliation.
- POWER** The effective radiated power in kW.
- HAAT** The transmitting antenna's height above average terrain.

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FILTERED EARTH STATION # 12

Terrestrial Interference Avoidance -

A Comprehensive Approach

By Glyn Bostick
Microwave Filter Co.

Last Time

We reviewed the steps leading to choice of antenna size, discussed features of the antenna which made it TI susceptible and listed some precautions to observe in selecting the specific antenna brand.

This Time

We'll now look at the other TVRO components and identify features that make them TI susceptible so that we can make sensible choices among equipment brands. Equipment choice is just one of the several project operations (to be discussed here) toward our objective of lowest TI at turn-on.

The Downconverter

It's not the purpose of this section to discuss the pros and cons of different types of downconverters: single, double or block. You will make this choice on the basis of operational and other needs. Rather, we will look at features that have some bearing on TI reception in order that downconverter type choice can make its contribution to low TI probability turn-on.

Some manufacturers are beginning to build in a TVRO band pre-selector filter just ahead of the downconverter. This filter has a 500 MHz passband, to pass transponders #1 through #24 (3.7-4.2 GHz), and suppresses out-of-band interference carries which could overload the downconverter. Suppression is typically 50 db on the most frequently seen offenders, 2 GHz and 6 GHz common carriers.

Give preference to those models with the preselector, all else being equal. While out-of-band overload does not happen too frequently (about one out of ten TI cases), arming the TVRO against it from the beginning decreases overall TI probability.

If you decide to use regular LNA equipment (separate LNA and separate downconverter), this decision is not extremely critical. Later on, if you have out-of-band trouble, you can place a bandpass filter in the LNA-downconverter line. However, if you opt for the LNC (combined LNA and downconverter) this later option is not available to you. So **do** inquire if the LNC has a built-in preselector.

RF-tight Equipment Cases

It is possible for poorly shielded equipment to receive TI interference directly into its circuitry. In the case of the "two box" receiver, with the downconverter mounted at the dish, incomplete RF sealing of the case can allow incident microwave interference to enter.

Needless to say, all such cases should be **all-metal**. If the case is formed (versus draw) the edges should be soldered shut or riveted. Additionally, cover screw spacing should not exceed 1½". At greater spacing, we have "slot receiving antennas" approaching a half wavelength (wavelength at 4 GHz is about 3"). Such slots, in a strong TI field have the ability to receive significant amounts of microwave energy and to dump it into the mixer, we may have TI symptoms identical to those caused by horn-received TI. The stages following the downconverter, IF stage, RF modulator or secondary receiver, in the case of block downconversion, process signals in the broad frequency range 5-1000 MHz depending on the receiver type. The atmosphere is saturated with a large number of equipments transmitting in this range, so we must take precautions against case ingress, even in these lower frequency ranges. **All-metal** cases is still strongly advised, but we can relax cover screw spacing to about 3".

Ventilation grillwork is also important in controlling ingress TI. Some early work on microwave mesh antennas indicates that the opening should not exceed about 10% of a wavelength. Since 4 GHz wavelength is about 3", this indicates that we should feel uncomfortable if the ventilating mesh on the downconverter exceeds ¼ opening. The grill should be firmly fastened (soldered, preferably) to the edges of the metal cut out in the case. In the case of housings formed from perforated metal, the formed edges should be soldered together over their entire length. The opening of grills for the lower frequency modules could be larger, but there seems no reason to: ¼ grill is pretty standard stuff and there's no real harm in being extra safe.

Power Leads

Power leads can be good pick-up antennas, from the highest to lowest frequency at which the TVRO processes the received signal: from 3.7-4.2 GHz down to the 5 MHz baseband frequency. **Ideally**, the 110v, 60 cps power to **any** equipment should be brought in through **shielded two wire** with the shield grounded at **both** ends.

Many times, for reasons of economy, regular power cord is used. In this case, the minimum acceptable practice is to bring the leads in through a bulkhead capacitor mounted in the case.

Some, maybe all, TVRO receiver components may be mounted inside the building, and will draw power from its wiring. Building wiring can be an excellent pick-up

continued

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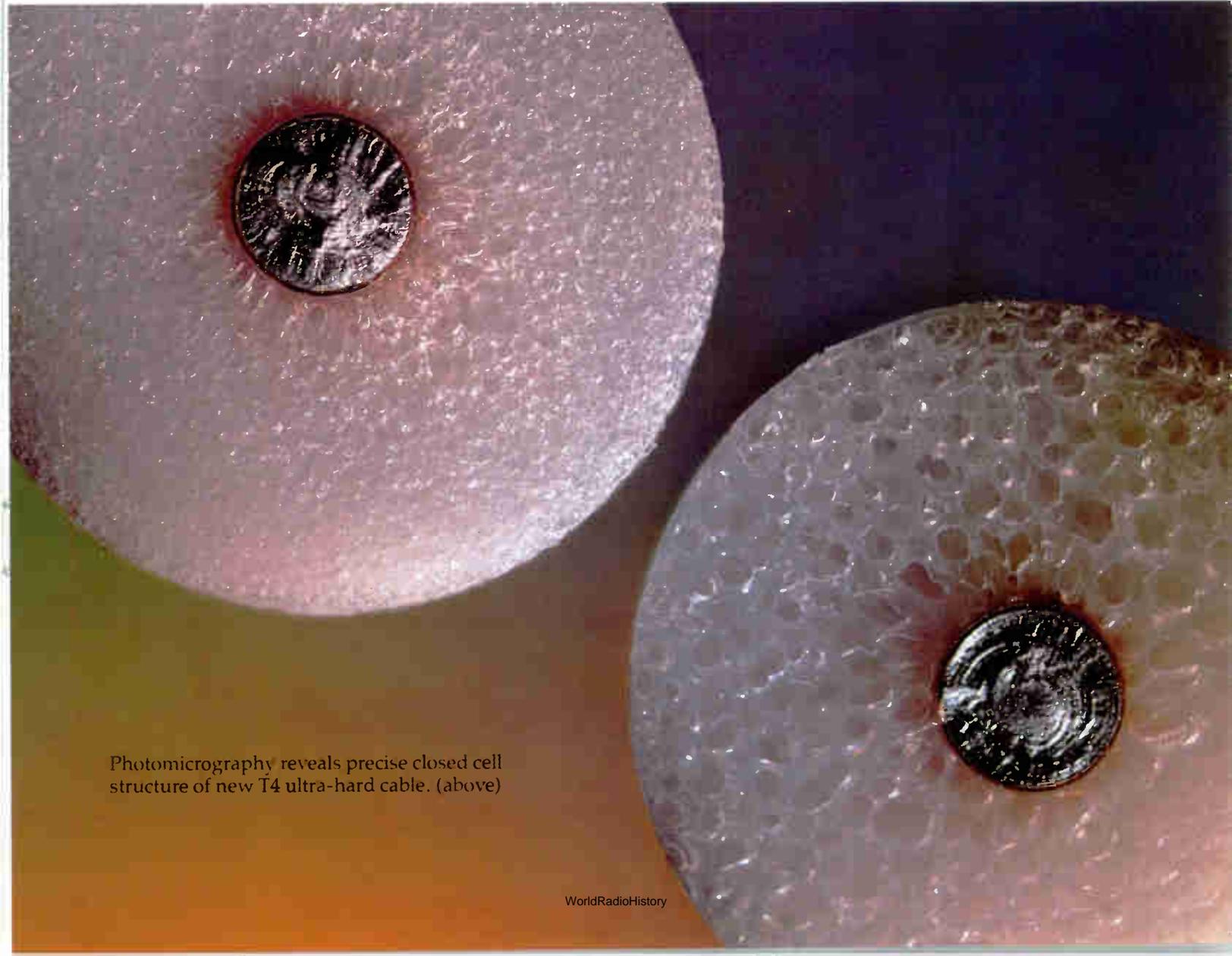
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Photomicrography reveals precise closed cell structure of new T4 ultra-hard cable. (above)

for frequencies in the 5-1000 GHz band and an RF power line filter, mounted at the wall plate is advised. But this does not obviate the need for a clean entry to each equipment case: the lead itself can also be an antenna and TI can be received and conducted into equipment, even though an RF power line filter is used.

You may not be able to find equipment satisfying all the above requirements. If not, choose the closest equipment and be prepared to beef it up as indicated.

Component Interconnection

It makes little sense to take the above precautions to prevent TI ingress into RF cases and pay no attention to interconnecting wires or jumpers: these can be important signal pick-ups for undesired signals, considering the very tiny magnitude of the desired signals we're trying to process.

In general, all interconnections should be made with **shielded** wire, one or two conductor, as applicable. This applies to leads for **any purpose**: RF transmission, tuning control, etc., right down to the TV set.

The LNA

The standard LNA has 50 db of gain and a rated noise temperature in degrees Kelvin. Its most important feature is the noise temperature. You computed the required noise temperature during the antenna-LNA selection process (see Part #11, CATJ, March 1983). The **important** precaution you must take when procuring the amplifier is to be sure you get the noise temperature you ordered. Remember that LNA noise temperature and antenna size are trade-offs against one another. If you come up short on LNA noise temperature, your received signal will be marginal: your G/T will be lower and your system will be more sensitive to TI.

You need to be aware of two facts:

Fact One: We have a **rapidly** growing and competitive market in TVRO components, including LNAs. "Everyone wants to get into the act". So we see some new LNA suppliers coming on stream constantly.

Fact Two: The **microwave** LNA art is an exacting one. It has not been completely mastered by **anyone**. For example, those different noise temperatures offered by any particular supplier **happened** out of the production batch. The manufacturer knew what he had only when he tested them. Some were standard 120°K and some were better: lower temperature. These lower temperature ones were fewer, were branded the exact low temperature tested and priced higher than the main batch which came in at 120°K.

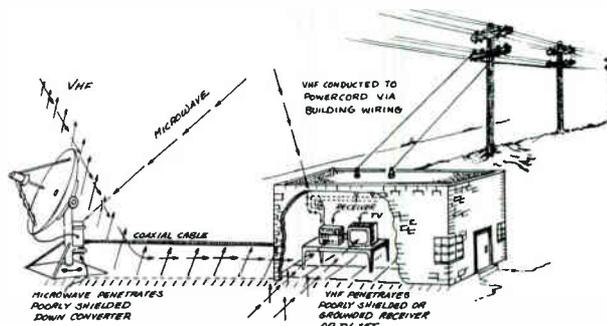
Taking these two facts into consideration, one would tend to favor the suppliers who have been at it a long time: they probably know more about this tricky art, have accumulated the costly capital equipment to do the job and have a reputation to protect.

Of some importance is the LNA or LNC decision. Because the LNC combined the LNA and downconverter in one package, it is not feasible to apply microwave filters (for the out-of-band or in-band telephone microwave carriers) should you encounter a heavy dose of TI. It is **possible**; one can place a waveguide filter between the horn flange and the LNC. Besides being mechanically awkward (easier for cassegrain types) any

loss of the filter at this position, directly affects the noise figure and, to that extent, reduces reception quality.

The RF Modulator

Choose the RF modulator channel to avoid conflict with a local broadcast station. Otherwise, the result could be co-channel interference, exactly like that you get on the catv system due to local broadcast, when you're trying to receive a distant channel of the same frequency.



The Feed Horn

We promised that we wouldn't engage in brand-versus-brand analysis. So we won't. But we will recommend that you consider the round horn (which propagates the TE₀₁ mode) versus the pyramid. Evidence is accumulating that the round horn (whether mechanically or electrically rotatable) results in better dish illumination efficiency. The distribution of its radiation over the dish surface results in somewhat higher gain. Hence, having chosen the **size** antenna from previous considerations, the choice of the round horn may add a little margin. But whatever you choose, **do** assure yourself that it is sealed against moisture. The accumulation of a little water can knock the reception level down significantly and make the system more TI sensitive.

Summary

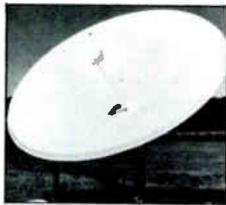
This installment, together with #11, armed you for the TVRO component selection process by pointing out the equipment features which co-relate with TI susceptibility. With these in mind you are in a position to reduce, to some extent, the probability of TI reception. The fact that this step reduces TI susceptibility only a modest amount is not important in itself. But **this** modest reduction added to the modest reductions to be realized in other project steps, to be discussed, adds up to substantial assurance that any existing TI at turn-on will be easily controllable with standard filters. □

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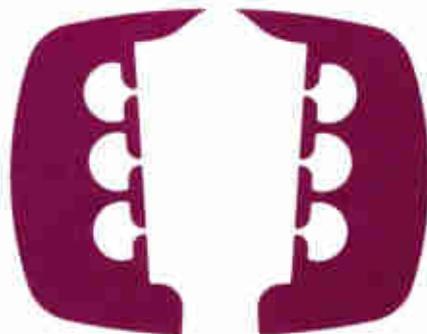
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TNN LAUNCH



**THE NASHVILLE
NETWORK** SM



THE NASHVILLE NETWORK launch was certainly an ambitious spectacular, and was carried off to the delight of people all over the country. The array of participating stars looked like a “who’s who” in country music, transmitting their excitement from the satellite feeds.

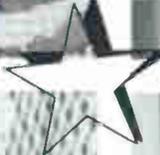
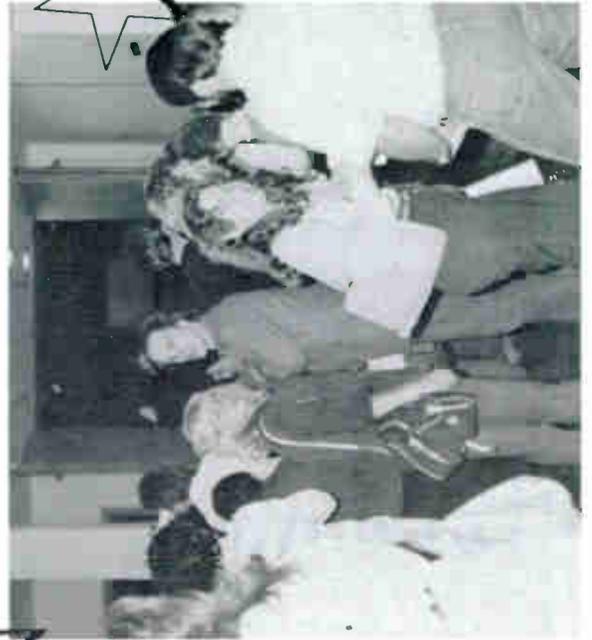
CATJ covered the Austin City Limits studio party, and it was a great evening! TEXAS style!!! We don’t know what was served at the other locations, but the Austin buffet table was laden with barbecued meats, potato salad, relishes, chili, assorted breads, and pie. The liquid refreshments were served in plastic cowboy boots with the TNN logo from various stations throughout the 6th floor of the building where the Austin City Limits studio is located on the University of Texas campus. The homey atmosphere and gracious and hospitality of the TNN staff made all the guests settle in for a happy evening as the launch party came on the air at 8 p.m.

When the time came for the Austin City Limits feed, the crowd was cheering enthusiastically and really into the swing of the party. Emmy Lou Harris and her band members had spent the earlier part of the evening visiting among the crowd and eating ribs and chicken with the guests. She certainly endeared herself to the crowd by her joining in to celebrate, so when she came onstage, the crowd was with her all the way. While she did only three numbers on the air, the crowd was delighted with her warm-up performance, considerably longer.

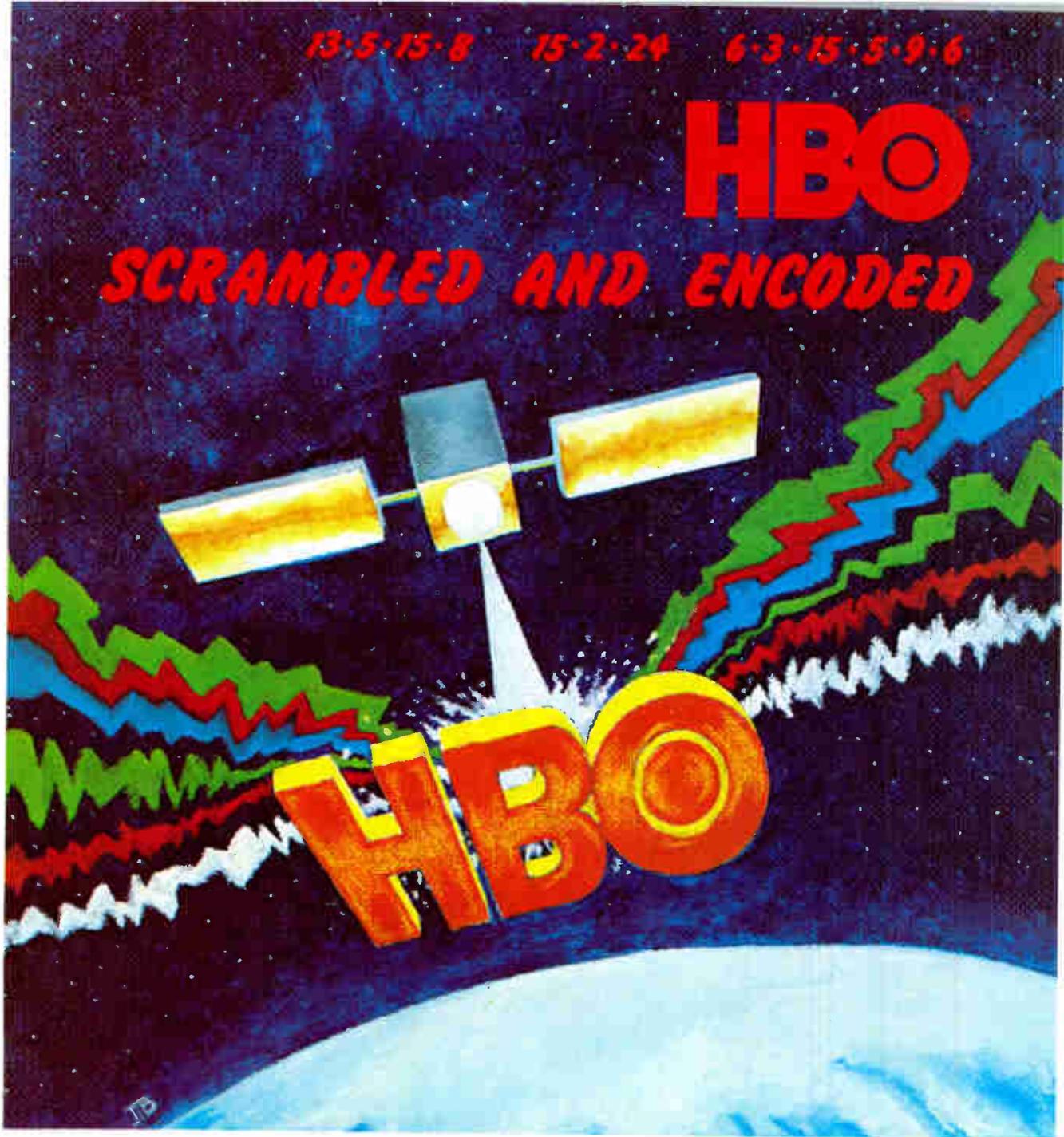
While the commercials aired after her performance, the set was quickly changed for the presentation of Bill Monroe and his Blue Grass Band — what a show they put on — professional “pickers” all the way.

When our portion of the show was over, the crowd stayed to continue the celebration of the launch, and what a launch it was!!!

Congratulations to THE NASHVILLE NETWORK, and we look forward to this tremendous programming. Thanks for a great evening at the Austin City Limits with Emmy Lou Harris and Bill Monroe, and the entire NASHVILLE NETWORK satellite feeds.



□



By: Ralph A. Haimowitz

In the September issue of **CATJ** (How Do You Like Your Satellite Signals? Scrambled!), we informed our readers of **Home Box Office's** early plans for scrambling their satellite signals. Since then, **HBO** has finalized these plans and is currently presenting this information to their affiliates through the media, direct mailout, and at the various cable meetings and conventions around the country.

The equipment that will be used for **encoding** and **decoding** the **HBO** satellite signals is manufactured by

M/A COM Linkabit Corporation. M/A COM Linkabit has been previously involved for a number of years with the design and manufacture of encryption equipment for government use. According to Klein S. Gilhousen of M/A COM, the encoding of the channel signal takes place over a number of video scan lines on a time rearrangement basis using Data Encryption Standards (DES) algorithm encryption certified by the National Bureau of Standards. The uplink signal would appear as a standard TV signal except that the horizontal sync pulse is

missing. The audio portion of the signal is digitized and encrypted, providing analog monaural signals, analog left and right audio, and digital left and right audio signals.

Paul Heimbach, HBO's Director of Engineering Planning, claims that the encoding and decoding equipment does not cause any degradation to the satellite signals. In fact, because of the method of encoding and digitization, some improvement of the present signal will actually occur. In the video portion of the signal, there was no amplitude variation on the waveform

monitor that we saw (at the Texas Show) with the time shift of the broadband video.

The output signal from the video receiver at the downlink site will be an unclamped composite video requiring discrete audio and composite video outputs. For those HBO affiliates whose satellite receivers are not equipped with an unclamped composite video output, M/A COM will provide a simple set of instructions to modify the receivers for this required output.

It will be virtually impossible for anyone other than authorized affiliates to receive the HBO signals once the signal security programming begins. The uplink encryption codes will be changing many times each minute so that only those compatible decoder units will be able to track the scrambling program. This prevents possible duplication of the equipment by any other electronics firm and eliminates the possibility of the home electronics genius building his own decoder. In addition, each decoder is programmable in that it must receive an authorization code to activate it.

Bob Zitter, HBO's Director of Network Operations, said that HBO will provide one decoder unit for each authorized affiliate receiver channel. New affiliates will also be provided a decoder unit when they subscribe to HBO for a while, but this practice will probably end at some point in time, and future affiliates may be faced with the prospect of buying their own decoder in order to receive the HBO signals. It should be pointed out, however, that HBO has not made any final decisions in this regard at the present time.

Spare decoder units may be purchased by affiliates from M/A COM at a cost somewhere in the neighborhood of \$2000.00 per unit. M/A COM is also working on a plan where affiliates can obtain a spare decoder under a three year lease for about \$75.00 to \$80.00 per month. Obviously, it would be advisable for the smaller cable system affiliates located close together in a specific geographical area to get together and buy, or lease, a spare

decoder to use for replacement in case one of their primary decoders should fail. Larger cable systems and MSO's will undoubtedly buy their own spares to prevent any outages of any duration. Those affiliates who do not make some arrangement for immediately available spares will be able to obtain a replacement for a failed unit within 24 hours of reporting the failure to M/A COM regardless of their location in the United States. These replacement units will be shipped to the affiliate from M/A COM by the fastest available air freight.

The procedure for affiliates who experience a decoder failure is to call a 24 hour HBO Hotline number to inform them of the failure of the primary decoder, giving the assigned equipment identification code of both the inoperative primary decoder and the spare decoder unit. Digitized authorization codes will then be transmitted via the satellite to activate the on-line spare and deactivate the failed unit. If the affiliate does not have a spare decoder available, a second call must be made to M/A COM to initiate shipment of a replacement which, when received, must be activated by calling HBO again to transmit the proper authorization code. This will prevent the unauthorized use of any decoder by someone who might get their hands on a M/A COM decoder for other uses such as SMATV systems or home satellite terminals.

Affiliates receiving the western HBO Satellite feed will receive their decoders by the end of the third quarter of this year with testing of the scrambled system to begin early in the fourth quarter. Initially, HBO will begin encoding on **scheduled dates and times** between regular programming, keeping a hotline open for phone calls of decoder problems occurring during the test periods. HBO will continue this process until the **"phone stops ringing"**. Once the system is completely tested and operational, full time scrambling will begin. This same procedure will be used for the east coast transponder affiliates beginning by **January 1984**, with expectation for total security scrambling to be in effect **nationwide by March or April**.

Other pay television programmers are moving rapidly toward scrambling their satellite signals. **SHOW-TIME** has a tentative target date of April 1984, while The Movie Channel, Spotlight, and others are in the process of establishing engineering requirements and selection of an equipment manufacturer to accomplish satellite program security in the not too distant future. Hopefully, each satellite programmer who is planning to scramble their service will insure that the equipment they use is compatible with that of the other services. This will alleviate the greatest worry that the cable operators have about equipment spares. Having one spare decoder on hand in case of a failure when your system carries more than one premium service is feasible. Having to have a different spare for each premium service because of equipment incompatibility at \$2000.00 per unit is an unjust burden on the affiliate, and in many cases, just **not economically possible**.

The cable industry is delighted to see that program security is finally about to become a reality to protect our product that we sell to the subscribers. **Congratulations** are in order to HBO and the other premium cable services who are taking this most important step. We hope that all of the other satellite services who charge the cable operators a fee for their product can see the necessity for scrambling their signals and that they will soon follow suit. If the cable operator has to pay for the programming, **regardless of the size of the fee**, he is entitled to the protection needed to be able to sell the service to the viewers. This can only be done through a signal security equipment package that allows only those who pay the fees for the service to receive the service, while preventing everyone else from getting it for nothing except the original receiving equipment cost!

The Title of this Article is based upon assigning numeric values 1 through 26 for the alphabet A to Z. The numeric cross reference gives us the alphabetic title MEOH OBX FCOEIF, which is HOME BOX OFFICE letter scrambled. □

LETTERS

Dear Ms. Rule:

I was a little startled to read the letter in your February issue from Paul Christie in which he cheerfully admits that he hasn't read either my article or Charles Gentry's response. Nevertheless he feels free to comment!

As to his accusation that I don't understand the meaning of the decibel I fully agree with him. The word "decibel" is an awful example of what is called a "homonym" — a word which is spelled and pronounced in one way, but has many meanings. After lecturing and writing about decibels for more than 30 years, I must admit that the understanding of all of the meanings of the word is beyond me!

His statement beginning "The decibel IS — —" is a little strong. He might have said "The word decibel is defined by (some authoritative source) to mean — —". We could however take what he says the decibel IS, and try a little game. Consider an ordinary 75 to 300 ohm transformer, such as is used to connect a cable system to a TV set. If it is a reasonably well-designed unit, measuring the ratio of its output power to its input power, taking the log of this ratio, and multiplying it by 10 (according to his formula) will indicate a loss in the order of 0.5 to 1 dB. If, as a second test, we measure the ratio of its output voltage to its input voltage, then multiply the log of that ratio by 20 (as he says we should do when dealing with

voltages) we will find, to our surprise that this passive transformer has a GAIN of a little less than 6 dB! Finally, if we reverse the connections, feeding the high-impedance terminals from a 300 ohm generator and measuring the voltage across a 75 ohm load, we will find (again according to his formula) that it has a LOSS of a little more than 6 dB! I don't know about the reader, but I think Mr. Gentry and I will stick with the Power Ratio!

As to the use of specialized "jargon" in any field, I'm vigorously opposed to it. Ideas are communicated much more readily if we all use the same language. We can't prevent every new man on the scene from inventing his own terminology, but we certainly shouldn't encourage it!

Finally I suggest that it would be a fascinating project to prepare a list, as complete as possible, of all the decibel-related terms that are in current use. A few minutes spent looking through reference books in my lab produced the following list: dB, dBm, dBmV, dBW, dBV, dB1, dB-with-respect-to-a-dipole (dBd?), dBc, dBmO, dBmOp, dB_r, dB_{rn}, dB_{rna}, dB_a, dB-above-the-threshold-of-hearing (the only meaning the general public recognizes). Then too there is that most regrettable fact that the initials DBS have become widely used to indicate a Direct Broadcasting Satellite. Now it is positively certain that no one will know what you mean when you say "dee-bees"!

It is possible that some of your interested readers might care to sub-

mit additional dB-related abbreviations or terms so that you could publish, for the first time, a comprehensive statement as to what a decibel "IS"!

Yours Truly
Kenneth A. Simons
Consultant
WAVETEK

Dear Mr. Simons:

Fascinating idea! We invite the CATJ readers to do just that and we'll compile the information. Many times, new people to the cable industry have asked for simple help. It seems we deal in so many initials as material is printed or conversations spoken. Consequently, we have been asked to conjure up a dictionary of cable terms — our Engineering group has talked about it. Would the readers like to have this basic information? Please contribute to the dB information; it should prove interesting.

Editor

Dear CATJ Reader James Reiger:

HELP!! We were very interested in the proposal of information in your note to us, but you failed to include the city and state where you are located, and I had no way to find you with only your street address. Please forward that information, and your phone number as well, as we'll get right back to you.

Yes, we are very interested in having the information you proposed.

Editor

Attention Chester Majka of Yarnell Cable TV!!!

Dear Mr. Majka:

You wrote us concerning your subscription and an Index Volume, but failed to include your address and location, so we are not able to check this out for you. Also, you didn't state whether you were verifying the purchase or the material has not been received. If you will call Diane Howard at the CATJ office — (405) 947-4717 — she will assist you with your inquiry. We can go no further without your location so we'll look forward to hearing from you so we can assist you.

Editor

□

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Interference Alert

On January 9, 1983 I was called out on a television interference complaint at a condominium that does not have cable yet. Upon checking, I found that there was a strong interfering RF carrier at about 178MHz, just below channel 7 color. At the antenna site this signal was about 25 dB below channel 7 video, but I was told that over the last several days it had varied greatly in intensity.

Using the tried and true triangulation method, we quickly narrowed the source down to either of two homes a short distance from the antenna. The next step was to turn off the utility power for both. The carrier continued, indicating that it was something on battery. After we gained access to the homes, it took only a short time to find the cause. A smoke detector which was powered from the central station



YOUR COLUMN

was causing it. When the fire alarm company changed the smoke detector, the problem was cleared.

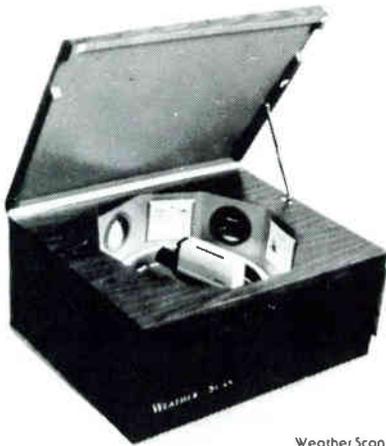
This unit was made by Chloride Pyrotector of 333 Lincoln Street, Hingham, Massachusetts, 02043. Since it was under warranty, I could not tear into it to find out why it did this. I looked at it closely and could

see no obvious reasons for it, but it has an extremely high gain amplifier, and if it is not bypassed and grounded properly, it could oscillate. There are no tuned circuits so the frequency of oscillation would be a result of stray capacitance, lead length, etc., and if it were to occur in other units, would probably be at a greatly different frequency.

This type of interference should not cause much problem to a cable TV system, but it could be a source that we could be blamed for. When I was at the A.R.R.L. conference, we had questions about carriers that, because of frequency, could not be blamed on cable TV, but we had no other explanation at that time. This is a possible answer, as I doubt that this is an isolated case. Have any of you run into this situation?

Wayne Sheldon,
CATA Engineering Committee □

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Washington Update

by Stephen R. Effros
CATAs Executive Director

COPYRIGHT OFFICE DOESN'T LIKE THE "CATA LOOPHOLE" BUT CAN'T FIGURE OUT A LEGAL REASON WHY

Would it surprise you to learn that the Copyright Office really doesn't like the cable industry coming up with novel new ways of reading the Copyright Act? They especially get upset when it seems like the Copyright Owners might lose some money on the deal. Well, that's what happened recently in the case of the Copyright Office trying to work its way out of the CATA Copyright interpretation which we explained to you in the last CATA Newsletter. Now all this gets very confusing so you're going to have to refer back to last month's Newsletter just to keep everything straight.

In brief, what we pointed out was that the Copyright Royalty Tribunal when it adopted its new

rules stated that any signal that was permitted to be carried under the Federal Communications Commission Rules as of June 24, 1981, could continue to be carried or could be substituted for another signal of the same type without incurring the 3.75% rate increase. Now the Copyright Royalty Tribunal, and the law itself, specifically define the types of signals that they talk about in the law, and there are only three types. There are network signals, noncommercial educational signals and independent signals. Therefore, we reasoned, since specialty stations under the Copyright Law are considered independent signals and since under the FCC rules specialty stations, at least 33 of them, were allowed to be carried long before June 24, 1981, we could substitute freely one specialty station independent for any other type of independent because the Copyright Law does

continued

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not distinguish between specialty station independents and other types of independents. You will remember that specialty stations are primarily either foreign language or religious or other special types of programming.

Now, admittedly, that reading of the law results, in effect, in the elimination of any payment of any increases in fees. However, that does appear to be consistent with the intent of Congress since Congress specifically indicated to the Copyright Office and the Copyright Royalty Tribunal that it did not intend to try to make a distinction in the value of different types of signals except within three classes — noncommercial educational, network and independent. In other words, they did not want anybody trying to say that WTBS was more valuable than WOR or that WOR was more valuable than some Spanish language station. In fact, the Copyright Law specifically went the other way and said all these stations have the same value within the three classes. We took advantage of that and the result was that, that reading of the rule would indicate that cable systems could freely substitute independent signals.

CATA intended to get a Court ruling on the so called CATA theory, and we hoped to get it before

March 15th so that everyone would know whether our reading of the law was correct or not before any liability was incurred by the continuation of carriage of distant signals. Unfortunately we're caught in a very strange legal bind, and here's what it is. The Courts will not issue declaratory rulings in cases where there isn't a so called case and controversy.

Now in this particular case, while we know there's a controversy, there aren't two parties willing to go into Court and fight both sides of the issue at this time. Certainly CATA would be willing to go in and say that we believe the law should be read the way we have defined it, but the Copyright Owners have indicated that they have no intention of suing anybody — they have no intention of joining the debate, if you will, before a Court until after cable operators have incurred the liability and not paid the higher fee next August which would be the first time that we would have to pay that fee. Thus, we're in the strange position of having to put our head in a noose before we can find out whether our legal position is correct because the Courts will simply not issue a declaratory ruling without both sides being represented in the issue. We are still working on ways of designing a case that a Court will accept, but at the moment



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we are not prepared to say where or what that case will be.

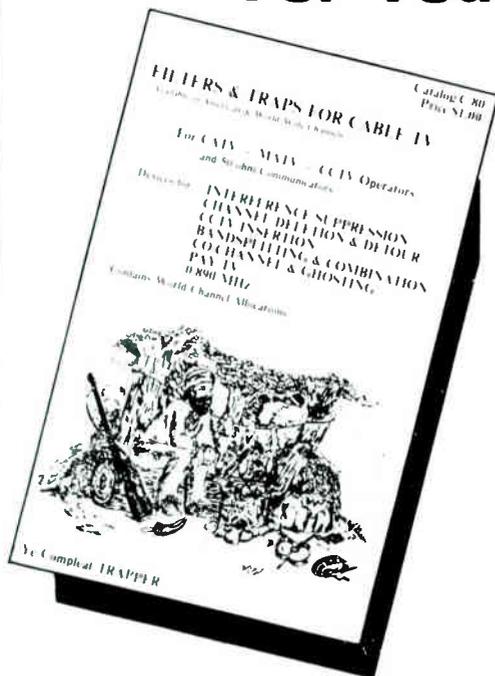
In the interim, the Copyright Office decided that it had better issue a Notice of Inquiry to look into the whole question of specialty stations and how they should be treated under the law as well as several other issues that were totally ambiguous under the Copyright Royalty Tribunal Rules. Some of those other questions included what do you do about programming that was carried on a late night basis prior to June 24, 1981, or a part-time basis, and now the cable operator wants to carry it full time. The carriage, of course, was permitted prior to June 24, 1981, and now expanding that carriage to full time would seem to also be permitted under the old fee schedule, not the new fee schedule. The Copyright Office needed to answer the question of how that was going to be handled as well as several other questions having to do with geographic area and prior waivers of the Commission's rules.

The Notice of Inquiry that the Copyright Office issued had a very short turnaround time. Comments had to be filed by March 1, 1983 and the intention apparently of the Copyright Office was to respond to those comments and answer the questions prior to March 15th so that cable operators would know what, in fact, the Copyright Office

thought the law was. It should be pointed out here that anything the Copyright Office says is purely advisory. The Copyright Office, since it does not have enforcement power, can only give its opinion on how the law should be read and how it should be enforced. It cannot enforce it itself and, therefore, eventually the whole question will go to Court no matter what. So, comments were filed on the 1st. It, again, shouldn't come as any surprise that the cable industry supported CATA's view of the specialty station rules and the Motion Picture Association and sports interests came out on the other side.

What was interesting about the comments is that those who disagree with our view of the rules could come up with precious little to indicate why or how the law could be read any way other than the one that we had indicated. In fact, most of their argument had to do with the so called "intent" of Congress. Now as we also made clear last month, the Copyright Office theoretically should have a problem with dealing with the "intent" of Congress rather than the words of the law since in every other instance where they have been asked to rule, they have insisted that it is their job to simply read the law and administer it — that it is not their job nor do they have the power to inter-

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pret the law, and thus we have wound up with rules that say that cable operators have to pay for signals that we aren't really carrying or that we are not allowed to pay for only the tiered portion of the signal and so on. Now, however, the Copyright Owners were arguing that the Copyright Office should look solely to the intent of Congress and not to the words of the law. Quite a turnaround.

They did make one other interesting argument, however. That had to do with the fact that the specialty station rule that was adopted by the FCC in February of 1976 did not really go into effect; that is, the effective date of the law was April 19, 1976. Now that has very little impact on anything, but for the fact that in the Copyright Law the Copyright Royalty Tribunal is given the authority to raise the rates or investigate the rates of any additional signals that the FCC may allow a cable operator to carry after April 15, 1976. So, in essence, what the movie people were saying was that there was no specialty station rule in effect on April 15, 1976, and, therefore, any rate increase could apply to a signal that was added after April 15, 1976. Of course, the hole in this logic is that while the law may have given the Copyright Royalty Tribunal the authority to increase or at least investigate whether they should increase the rates for any signals that were added after April 15, 1976, with regard to specialty stations, the Copyright Royalty Tribunal did not do that. As a matter of fact, they never even had an investigation as to whether they should raise those rates. Furthermore, when the Copyright Royalty Tribunal wrote its rules with regard to this 3.75% rate increase, they specifically put in the rule that they were talking about any signals that were not permitted to be carried prior to June 24, 1981. They did not use the April 15, 1976 date — they used the June 24, 1981 date.

Finally, another gaping hole in the argument is that while the specialty station rule went into effect at the FCC on April 19, 1976, in fact, cable systems have been permitted to carry foreign language stations since the FCC rules of 1972, and there are at least 11 of those stations that were permitted to be carried prior to April 15, 1976. Unfortunately, the motion picture folks and the sports folks did not mention that to the Copyright Royalty Tribunal. They just made it sound like the key date of April 15, 1976, as far as they were concerned, was a date that occurred before the effective date of the specialty station rules at the FCC.

Now we know this sounds complicated and given the facts behind it; first, that the Copyright Royalty Tribunal rules uses the date June 24, 1981, and not the '76 date; and second, that we were permitted to carry certain types of stations, 11 of them, prior to that 1976 date, it would seem that the argument given by the opposing side would have little, if any, effect. Of course, things don't

wind up being what they appear, particularly when it comes to Copyright, and in this case what ultimately happened was that the Copyright Office tried to take those arguments and make some sense out of them — to say that the cable industry was wrong in its interpretation of the law. Here's how it happened.

After the March 1st filing date at the Copyright Office there was a growing concern, since it was clear to most lawyers that there was no legal "out" around the CATA theory, that the Copyright Office would simply decide not to rule on the issues! This would be the easy way for the Copyright Office to accomplish what the Copyright Owners wanted; that is, force us to take off the distant signals without having to try to explain why our theory on the Copyright Royalty Tribunal Rules was wrong, and since there is nothing in the Copyright Office Rules that says they did, in fact, have to come out with a decision, it appeared that the easy way out for them would be to simply not rule. Thus, March 15th would come and go, the cable operators would still be left in the position of having to put their head in the noose before finding out what the legal position was, and a lot of operators would decide to take signals off rather than take the liability risk. However, seeing that, that was a potential move on the part of the Copyright Office, CATA, and many others in the industry, began to put extreme pressure on the Copyright Office through both the press and Congress insisting that administrative fairness demanded that the Copyright Office come to some decision, some conclusion, prior to March 15th, and that's what the Copyright Office did, or at least it appeared that that's what they had done.

At 4:30 on Friday, March 11th, the Copyright Office released a letter. The letter was sent to all parties who had filed in the Notice of Inquiry proceeding. The Copyright Office recognized that the key question in this Notice of Inquiry had to do with specialty stations, and after a few preliminary paragraphs they said the following, and we are going to quote it in full because it's impossible to explain in any other way. They said:

"Most of the comments concentrated upon the first issue raised in our notice, suggesting that the substitutability of nonspecialty independent stations for specialty stations (whether carried or not) constitutes the most important of the four issues posed in our notice of inquiry. It is the view of the Copyright Office that section 801(b)(2)(B) of the Copyright Act contemplates that cable royalty rates shall be adjusted by the CRT following any change after April 15, 1976 in the FCC distant signal rules to ensure that "rates for the additional distant signal equivalents resulting from such carriage are reasonable in the light of the changes effected by the amendment to such rules and regulations."

continued on page 46

CATA Announces New Seminars Schedule

CATA, under the direction of its Engineering Committee, chaired by Director Wayne Sheldon, has announced the first half of the 1983 schedule for the Basic and Advanced Technical Training Seminars. The Engineering Committee, working closely with CATA's Director of Engineering, Ralph Haimowitz, has designed the schedule in accordance with suggestions and requests received from cable operators over the country. In addition, the Southern Cable Television Association is again cooperating on the sponsorship of three of the first half of 1983 and three scheduled for the second half. The Southern Association co-sponsored two in 1982 and has selected appropriate locations to insure this valuable training, so

vital to the entire industry, be available to their membership.

There are some changes in both the Basic and Advanced curriculum as previously presented; both sessions have had an update to cover the additional technical areas where training is needed.

REGISTER NOW!

Following is registration and information that is self-explanatory. If you wish additional information, please contact the CATA Engineering Office (305) 562-7847. Take advantage of this opportunity to add to the experience and expertise of your technical staff and thus help your system become more efficient and better maintained. Use the

registration form **TODAY** to register for the seminar more applicable to your needs and location. CATA has arranged with the hotels for reasonable housing rates, and those hotels are listed with the addresses for you to make your **reservations directly with the hotel**. Be sure to list that you are registering for the CATA Seminar so that the discounted rates will be honored with your reservation.

Don't delay . . . take care of your registration today as each seminar is restricted to a certain number so that each attendee will have the full advantage of the equipment and laboratory facilities.

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(Monday thru Wednesday)

TOPICS

SIGNAL SOURCES
Broadcast TV
Satellite TV
Microwave Transmission
Local Origination

HEADEND
Antennas
Preamplifiers
Receivers
Processors
Modulators
Filters
Combiner

TRUNK SYSTEM
Coaxial Cable
Trunk Amplifiers
AGC/ASC
Two-Way Systems
Powering

DISTRIBUTION SYSTEM
Bridgers
Line Extenders
Distribution Taps
Splitters/Couplers

SUBSCRIBER MATERIALS
Taps
Drop Cable
Transformers

Grounding Blocks
Set Top Converters
Splitters/Couplers
Apartment Amplifiers

HOUSEDROP
Aerial Installation
Underground Installation
Tap Selection
Multiple Outlets
Bonding & Grounding

CONNECTORS
Connector Types
Cable Preparation
Proper Installation
Signal Leakage

FINDING PROBLEMS
Signal Level Meters
Common Cable Problems
Finding Faults

OPERATING PROCEDURES
System Maps & Symbols
Recording Information
Subscriber Relations

LABORATORY
Equipment Identification
Installing Connectors
Measurements With SLM
Troubleshooting

ADVANCED SEMINAR

(Monday thru Friday)

TOPICS

FUNDAMENTALS REVIEW
Decibels/dBmV
Formulas
Logarithms

OPERATIONAL REQUIREMENTS
FCC Technical Standards
FCC Forms and Records
System Records & Programs

SYSTEM PROBLEMS/FAILURES
Common Cable Faults
Sheath Currents
Impedance Mismatch
Radio Frequency Interference
Signal Leakage

LABORATORY
Days four and five are primarily devoted to hands-on test equipment sessions in the cable system laboratory where attendees actually perform the required tests and measurements.

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Bench Sweeping
System Sweeping
Proof of Performance Tests
Isolation
Return Loss Measurements

SYSTEM DESIGN CONCEPTS
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Active Equipment
Passive Devices
Grounding & Bonding
Powering
System Noise Limitations
Crossmodulation
Intermodulation
Hum
Reflected Signals

FREQUENCY SPECTRUM
Spectrum Conflicts
Channel Expansion
Frequency Restrictions

CATA CATV TECHNICAL TRAINING SEMINAR HOTEL INFORMATION

A block of hotel accommodations has been set aside for each seminar at the hotels indicated. Please make your own reservations directly with the hotel by completing and mailing in the hotel reservation form below to the appropriate hotel. For telephone reservations, be sure to include the information that you are attending the CATA CATV Technical Training Seminar to receive the special room rates as indicated.

BASIC

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BATON ROUGE, LOUISIANA 70802
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ARRIVAL: _____ DEPARTURE _____
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Oklahoma City, OK 73107

Get Your Registration In Today To Insure A Reservation.
Attendance is limited to 50 people at Basic Seminars and 40 people at Advanced Seminars to provide proper laboratory experience.

GENERAL INFORMATION

Registration is from 8:45 to 9:00 am on the first day. All other technical sessions begin at 8:00 am and end at 5:00 pm each day. Morning and afternoon coffee breaks and all of the required materials for the technical seminars are provided by CATA.

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Please reserve _____ seats at the _____ Basic _____ Advanced _____ Technical Training Seminar in _____
(Location: City & State)

ATTENDEES WILL BE:

WE _____ are CATA MEMBERS
_____ are not

Enclosed is a check in the amount of \$ _____ to cover registration fees.

The argument advanced in cable system comments that specialty stations never carried, even though "permitted," may now be replaced by non-specialty independent stations and paid for at less than the 3.75% rate is inconsistent with the intent of the Congress that the "additional" DSE's mentioned in section 801(b)(2)(B) of the Act shall be governed by a new rate. No royalties were ever paid for nonexistent DSE's for specialty stations never carried; therefore, carriage now of an additional nonspecialty independent station, whose carriage was not permitted under the FCC's former distant signal rules, presumably represents "additional distant signal equivalents" within the meaning of section 801(b)(2)(B), as to which Congress intended that the CRT should establish new reasonable rates. The CRT determined that the 3.75% rate would be reasonable for such additional distant signal equivalents."

Now, that's all they said with regard to the CATA argument. We invite you to read those two paragraphs as many times as you wish. You will not be able to make any sense out of what those paragraphs say. In fact, after long analysis by many lawyers in Washington the conclusion is that those paragraphs don't really say anything. While it would appear that the Copyright Office is saying that the CATA theory is wrong, when you read what they said, you find it is so totally inconsistent with anything having to do with what the law is that it cannot be interpreted in any sensible fashion. For instance, you will note that throughout their explanation of why the intent of Congress would indicate that we must pay an additional fee, they constantly use the April 15, 1976 date. They never mention the fact that the Copyright Royalty Tribunal Rules, which are the rules that they are suppose to administer, do not use an April 15, 1976 date; they use a June 24, 1981 date. That is never mentioned in the Copyright Office opinion. Further, if you try to follow their logic, what there is of it, if any, you will see what they are saying is that they believe that the intent of Congress was that the Copyright Royalty Tribunal must increase rates for any signal — additional distant signal equivalent, to use their terms — that was carried after April 15, 1976. Of course, in saying this they were very aware that the effective date of the specialty station rule was April 19, 1976. However, the fact is that since that time the Copyright Royalty Tribunal has not increased the rates for specialty stations, never had a proceeding to increase those rates and never suggested that there should be a proceeding to increase those rates. In fact, the law says that the Copyright Royalty Tribunal **may** increase rates, not that it **must** increase rates, and, therefore, the Copyright Office's interpretation at this point is totally suspect. If you want to get even more detailed, you will notice that if you take a literal reading of what the Copyright Office says, it would seem to indicate in that if a system has not

paid for distant signal equivalents in the past at the old rate, they would now not be able to pay anything but the new rate in the future. This, of course, ignores the fact that there are cable systems that were built after June 24, 1981, who have never paid the old rate and never can pay the old rate, according to this analysis, because they didn't carry distant signal equivalents at the old rate prior, of course, to the time they were built.

The bottom line on all of this, and again we invite you to try to make some sense out of the Copyright Office's reading of the rules here, is that the Copyright Office wanted to rule in favor of the Copyright Owners. They wanted to indicate that cable operators would have to pay the 3.75% fee regardless of what the rules actually said and, therefore, they came up with a letter opinion which they themselves, of course, have acknowledged does not have any authority, and furthermore they say that they can change their opinion at any time, but nevertheless they came up with the opinion that we would have to pay the higher fee without figuring out how they can justify it under the law. The letter is legal gobbledygook. It is an embarrassment to any lawyer who might consider it a legal document, or even an explanation of the law. The Copyright Office has clearly shown that it is a captive agency of the Copyright Owners and will do just about anything, including writing totally nonsensical letters, to try to achieve whatever the Copyright Owners want.

Thus, from CATA's point of view it is clear that it is not worth going back to the Copyright Office for more clarification since they have no intention of reading the law. We are, once again, seeking an appropriate vehicle to get into Court now that we can show a Court this type of letter from the Copyright Office and seek a legal opinion from a Court regarding the propriety of our view of what the law says with regard to the applicability of the 3.75% rate increase.

We still maintain that the 3.75% rate increase does not apply to specialty stations or to independent signals substituted for specialty stations, and we believe that the entire issue really has to go back to Congress if there is going to be any clarification other than a strict interpretation of the rules. Of course, what the Copyright Office has accomplished is the political result of refusing to answer the question and thereby forcing cable operators to either take off the signals or assume liability by continuing to carry additional signals after March 15th of 1983. We believe that this result alone should convince Congress to clarify the entire law, and it is entirely possible that we will seek such clarification from Congress as well as the Courts, but our first step will be an attempt to get a Court decision on the CATA theory prior to August of 1983 when the first pay period comes due under the new rate. Suffice it to say, we have no intention of stopping the fight. □

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201—679-4000
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**Broadband Engineering,
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Phoenix, AZ 85063
602—272-6855
(M3)

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

CableBus Systems,
7869 S.W.
Nimbus Avenue,
Beaverton, OR 97005
503—543-3329
(M1)

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

Cable Health Network,
2840 Mt. Wilkinson Pkwy.
Atlanta, GA 30339
404—436-0886
(S4)

Cable-Text Instruments,
Div. of Telpar, Inc.
P.O. Box 796
Addison, TX 75001
214—233-6631
(M9 Generators)

Century III Electronics, Inc.
3880 E. Eagle Drive,
Anaheim, CA 92807
630-3714
(M1, M3, M4, M5, M7, M8,
S1, S2, S8)

Capscan, Inc.,
P.O. Box 36,
Adelphia, NJ 07710
1-800—CABLETV or
222-5388
(M1, M3, M4, M5)

Channel Master,
Ellenville, NY 12428
914—647-5000
(M2, 3, 4, 5, 6, 7)

Comm/Scope Company,
Rt. 1, Box 199A,
Catawba, NC 28609
1-800—438-3331
(M3)

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

**Computer Video
Systems, Inc.,**
3678 W. 2105 S. Unit 2,
Salt Lake City, UT 84120
1-800—453-8822
(M9)

COMSEARCH INC.,
11503 Sunrise Valley
Drive,
Reston, VA 22091
703—620-6300
(S8, S9, Earth station
placement frequency
coordination)

ComSonic, Inc.,
P.O. Box 1106,
Harrisonburg, VA 22801
1-800—336-9681
(M8, M9, S8, S9)

DF Countryman Co.,
1821 University Ave.,
St. Paul, MN 55104
612—645-9153
(D1, S1, S8)

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)

Associate Roster

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

**Eales Comm. &
Antenna Serv.,**
2904 N.W. 23rd,
Oklahoma City, OK 73107
405-946-3788
(D1, 2, 3, 4, 5, 6, 7,
S1, 2, S7, 8)

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)

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

Elephant Industries,
P.O. Box 3626
N. Ft. Myers, FL 33903
813-995-7383
(M9)

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

**The Entertainment
Channel,**
1133 Avenue of the
Americas,
New York, NY 10036
212-930-4900
(S4)

**Franey & Parr of Texas,
Inc.,** (Formerly Doherty &
Co.),
One Turtle Creek Village,
Suite 524,
Dallas, TX
214-528-4820
(S9, Insurance)

**GTE Products Corp.,
Sylvania CATV Div.,**
1790 Lee Trevino Drive,
Suite 600
El Paso, TX 79936
1-800-351-2345
(D7, M1, M4, M5, M9,
Converters, S4, S8)

**Gardiner Communications
Corp.,**
3506 Security St.,
Garland, TX 75042
214-348-4747
(M9 TVRO Packages, S1,
S2, S8)

General Cable Corp.,
1 Woodbridge Center,
P.O. Box 700
Woodbridge, NJ 07095
1-800-526-4385
(M3)

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)

H & R Communications,
Rt. 3, Box 102G,
Pocahontas, AK 72455
1-800-643-0102
(M2, D1, S2, S3, S8)

Harris Corporation,
P.O. Box 1700,
Melbourne, FL 32901
305-724-3401
(M2, M9, S2)

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

Home Box Office, Inc.,
7839 Churchwill Way,
Suite 133, Box 63,
Dallas, TX 75251
214-387-8557
(S4)

* **Hughes Microwave
Communications Products,**
3060 W. Lomita Blvd.,
Torrance, CA 90505
213-517-6233
(M9)

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, D4, D5, D6, D7, D8)

**KMP Computer
Services, Inc.,**
703 Central Ave.,
Los Alamos, NM 87544
505-662-5545
(S4, 5)

Karnath Corporation,
2001 Westridge,
Plano, TX 75075
214-422-7981 or 7055
(S1, 2, 8, 9)

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, D8, S2, S8)

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

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

Lemco Tool Corporation,
Box 330A,
Cogan Station, PA 17728
1-800-233-8713
(M8, 9 Tools)

**Lindsay Specialty
Products, Ltd.,**
50 Mary Street West,
Lindsay,
Ontario, Canada K9V 4S7
705-324-2196
(M1, 2, 4, 5, 7, 9)

Magnavox CATV Division,
100 Fairgrounds Drive,
Manlius, NY 13104
1-800-448-5171 or
1-800-522-7464 (N.Y.)
(D4, 5, 7, M4, 5, 6, 7, S3, 8)

**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 Associates
Communications Co.,**
777 S. Central Expwy.,
Suite 1G,
Richardson, TX 75080
214-234-3522
(M9 Microwave Radio
Systems)

* **Microwave Filter Co.,**
6743 Kinne St., Box 103,
E. Syracuse, NY 10357
1-800-448-1666
(M5 Bandpass Filter)

Midwest Corp.,
P.O. Box 226,
Clarksburg, WV 26301
1-800-624-3845
(D1, 2, 3, 4, 5, 6, 7, 8)

Modern Cable Programs,
5000 Park St. N.,
St. Petersburg, FL 33709
(S4)

**Mullen Communications
Construction Co., Inc.,**
P.O. Box 1387A,
Green Bay, WI 54305
414-468-4649
(S2)

NCS Industries, Inc.
2255-E Wyandotte Rd.,
Willow Grove, PA 19090
1-800-523-2342

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.

1-800-492-2032 (PA)
(D1, 2, D9, Used Equipment S8, 9 repair service)

National Farmers Union Property & Casualty Co.,
12025 E. 45th Ave.,
Denver, CO 80251
303-371-1760
(D9, Insurance Service)

North Supply Company,
600 Industrial Pkwy.,
Industrial Airport, KS
66031
913-791-7000
(D1, 2, 3, 4, 5, 6, 7, 8)

Oak Industries, Inc.,
Crystal Lake, IL 60014
815-459-5000
(M1, M9 Converters, S3)

Octagon Scientific, Inc.,
476 E. Brighton Ave.,
Syracuse, NY 13210
315-476-0660
(M9)

Phasecom Corp.,
6365 Arizona Circle,
Los Angeles, CA 90045
213-641-3501
(M1)

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

M/A Com Prodelin, Inc.,
P.O. Box 100
Claremont, NC 28610
704-459-9762
(M2, M3, M7, S2)

Pyramid Industries, Inc.,
P.O. Box 23169,
Phoenix, AZ 85063
1-800-528-4529
(M7, 8)

Quality RF Services, Inc.,
825 Park Way, Suite 3,
Jupiter, FL 33458
305-747-4998
(M4, S9)

RMS Electronics,
50 Antin Place,
Bronx, NY 10462
1-800-223-8312
1-800-221-8857 (Poleline)
(M4, M5, M6, M7, M9)

Reuters,
1212 Avenue of the
Americas., 16th Floor,
New York, NY 10036
212-730-2715
(D9)

Rockwell International,
M.S. 402-101,
Dallas, TX 75207
214-996-5954
(M9, Microwave/Satellite)

S.A.L. Communications, Inc.,
P.O. Box 794,
Melville, NY 11747
1-800-645-9062
(D1)

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

Scientific Atlanta, Inc.,
3845 Pleasantdale Rd.,
Atlanta, GA 30340
404-449-2000
(M1, M2, M4, M8, S1, S2,
S3, S8)

Showtime Entertainment, Inc.,
1633 Broadway,
New York, NY 10019
212-708-1600
(S4)

Southern Satellite Systems, Inc.,
P.O. Box 45684,
Tulsa, OK 74145
918-481-0881
(S9)

Superior Electronics Center,
2010 Pine Terr.,
Sarasota, FL 33581
813-922-1551
(M4, S9)

TVC Supply Co., Inc.,
1746 E. Chocolate Ave.,
Hershey, PA 17033
717-533-4982
(D1, 2, 3, 4, 5, 6, 7, 8)

Teledac, Inc.,
1575 Taschereau Blvd.,
Longueuil,
Quebec, Canada J4K 2X8
514-651-3716
(M9 Character Generators)

Tele-Wire Supply Corp.,
122 Cutter Mill Rd.,
Great Neck, NY 11021
1-800-325-4868
(D1, 2, 3, 5, 6, 7, 8, 9)

* **Texscan Corp.**,
2446 N. Shadeland Ave.,
Indianapolis, IN 46219
1-800-528-4066
(M8 Bandpass Filters)

* **Theta-Com CATV**,
2960 Grand Avenue,
Phoenix, AZ 85061
602-252-5021
(M1, M4, M5, M7, M8)

* **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, M4, M5, Converters)

* **Toner Cable Equipment, Inc.**,
969 Horsham Rd.,
Horsham, PA 19044
1-800-523-5947
In Penna. 1-800-492-2512
also 1-800-523-5947 (PA)
(D2, D3, D4, D5, D6, D7)

Triple Crown Electronics, Inc.,
4560 Fieldgate Dr.,
Mississauga, Ontario,
Canada L4W 3W6
416-629-1111
Telex 06-960-456
(M4, M8)

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

Tyton Corp.,
P.O. Box 23055,
Milwaukee, WI 53223
414-355-1130
(M6, 7)

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)

Video Data Systems,
205 Oser Ave.,
Hauppauge, NY 11787
516-231-4400
(M9)

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

Vitek Electronics, Inc.,
4 Gladys Court,
Edison, NJ 08817
201-287-3200

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 347,
San Angelo, TX 76901
915-655-6262/653-3363
(M2, Towers)

Winegard Company,
3000 Kirkwood Street,
Burlington, IA 52601
1-800-523-2529
(M1, M2, M3, M4, M5, M7)

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

Showcase

DISNEY ANNOUNCES WIDE RANGE OF PROGRAMMING — OLD AND NEW — FOR THE DISNEY CHANNEL

The 1983 program schedule for **THE DISNEY CHANNEL**, launching on April 11, was recently announced by James P. Jimirro, President of Walt Disney Telecommunications.

"Our program day, consisting of 16 hours from 7:00 a.m. to 11:00 p.m., has been designed to appeal to all members of the family," said Jimirro. "We will be reaching out not only to children, but also to young and mature adults whose interests demand entertaining and enriching TV fare."

Included in the pay TV offerings will be full-length features and made-for-TV programs from the vast resources of the Disney library. "In addition," Jimirro said, "**THE DISNEY CHANNEL** will be offering the very best of outside motion pictures and short programs available from other producers around the world."

"But, the most important part of **THE DISNEY CHANNEL**," Jimirro added, "will be the new programs and series currently under development by The Channel: the dramatic and comedy series, the magazine shows for all ages and the special programs from Disneyland, Walt Disney World and, most ambitious of all, those emanating from EPCOT CENTER in Orlando, Florida. In addition, we are signing a number of tremendously talented performers and well-known personalities to host or take part in these new productions."

"Typical of the new shows is 'You And Me, Kid,'" continued Jimirro. "Slotted for mid-morning viewing, it will feature a studio host and guest celebrities who will lead parents and children through a variety of activities, sing-alongs and drama exercises using objects found in every living room, such as chairs, pillows and books. We hope that parents and their children spending time together will be the watchword of this show."

"Welcome to Pooh Corner," a show based on the A.A. Milne classics, will star characters from The Hundred Acre Wood who will be recreated in "articulated puppet" format with costumed live performers whose voices and facial expressions will be controlled by sophisticated electronic circuitry.

"A hallmark of our programming will be encouragement of viewer participation," claimed Peggy Christianson, Vice-President of Program Development for **THE DISNEY CHANNEL**. "We are striving for a new level of TV viewing," she added. "Television has always been a one-way medium which encouraged passive viewing. That is the reason most people talk, read or whatever while they ostensibly 'watch.' We want to break through

that by providing shows which encourage viewer involvement.

"A life-sized, three-dimensional game board is the framework for 'Contraction,' a show which will stimulate children's observation and retention skills with the help of clips from classic Disney animated films."

Other original shows will emanate from EPCOT CENTER, Disney's new information-oriented theme park at Walt Disney World. "EPCOT CENTER provides us with the most remarkable resource for quality television programming imaginable," said Jimirro. "World Showcase, a permanent world's fair, as well as our Future World pavilions on energy, communications, the land, imagination and transportation give us an inexhaustible platform for enriching entertainment," he continued.

"One of our new programs is inspired by the EPCOT CENTER 'American Adventure' pavilion," says Ron Miziker, Vice President of Programming for **THE DISNEY CHANNEL**. "This weekly series will offer Americans a unique opportunity to take a close-up look at themselves and each other, and will range throughout the United States. Our viewing families will explore and discover trends, lifestyles and unique regional traditions found in America."

Miziker is also developing a magazine-formatted program under the working title, 'Epcot Central' which will focus on a variety of human interest topics within and around EPCOT CENTER. Celebrities at EPCOT CENTER, unique individuals and their accomplishments, special events and examples of how technology will affect our lives will be featured in this daily, half-hour program.

Television and film actor James MacArthur has just been signed to host

another new show for **THE DISNEY CHANNEL** being developed by Miziker and award-winning producer Jules Power. The daily, half-hour program takes a fascinating and fun-filled look at the relationship of scientific phenomena to everyday life, and is designed to appeal to both a child's and an adult's sense of curiosity.

"Mousterpiece Theatre," a showcase for classic Disney cartoons will be hosted by celebrated media personality, George Plimpton. Plimpton will provide tongue-in-cheek commentary, analysis and insight into this daily half-hour of fun.

Other original shows slated for airing include "Mouserice," an exercise show featuring you-know-who, "Wish Upon A Star," where young viewers' dreams come true, and "Studio," a weekly forum for new and established talent to explore human interest topics, such as the never before filmed Ringling Brothers, Barnum & Bailey College of the Clowns.

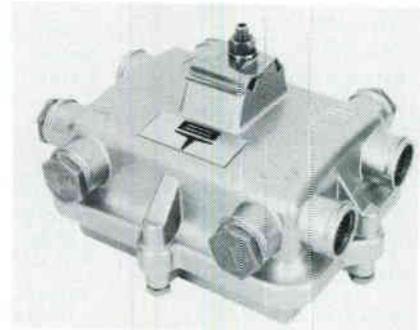
"Our commitment to viewer participation is further evidenced," according to Jimirro, "by **The Disney Channel Magazine**." More than a program guide, it will feature articles, stories and activities for the entire family. "More important," Jimirro went on, "it will give viewers a chance to become involved with The Channel itself by taking part in the fun at home . . . and by letting us know their likes, dislikes and preferences. It will also feature opportunities for viewers to strike up relationships with others who share similar interests."

"Our unique offering of programs will provide viewers with enriching shows exemplifying Disney's commitment to entertainment for each member of the family," concluded Jimirro. ●

NEW TRUNKLINE SPLITTERS INTRODUCED BY BLONDER-TONGUE

Blonder-Tongue Laboratories, Inc., has announced the availability of a new line of CATV-type trunkline splitters. The TLS series of power passing directional couplers feature a wide frequency range (5 thru 400 MHz) and excellent back-match at the tap port which make them ideal for two-way CATV systems while meeting FCC radiation standards.

TLS's are versatile, permitting pedestal or messenger strand mounting. They are constructed with a heavy gauge cast aluminum housing with an acrylic based finish for added anti-corrosion protection.



All TLS's have a tapered counter-bore in all entry ports, so that the connector gasket sets perfectly inside the entry port. This allows the metal shoulder of

the connector to make total metal to metal contact with the entry port, providing 100% RFI integrity. The seized center conductor posts will withstand over 100 PSI stress caused by thermal contraction.

For more information, contact Blonder-Tongue Laboratories, Inc. One Jake Brown Road, Old Bridge, N.J. 08857 or call (201) 679-4000.

**Blonder-Tongue Seminar
April 19, 20, 21**

MATV/CATV/TVRO Technical Seminar will be held in Seattle, WA in conjunction with Pacnor Marketing. Contact Chuck Fitzer (415) 449-0547.

ALPHA TECHNOLOGIES APPOINTS NCS INDUSTRIES AS SERVICE CENTER

NCS Industries, serving as the factory representative for Alpha Technologies in the North East is now an Authorized Service Facility to totally support today's rapid growing system requirements for Stand-by power.

NCS, being one of the largest independent service facilities, will stock all necessary parts and complete P.C.B. assemblies. Service to the growing number of Alpha Stand-by supplies in the region will be conducted from the facility located at 2255-E Wyandotte Road, Willow Grove, PA 19090.

ral's Polarotor I™ and Polarotor II™, and Ma/Com's Omni Apollo™ feed horns.

"This modification will make changing polarization much easier and quicker for the end user," Anderson said. "Even though our receivers have polarity control devices, and newer systems will operate more efficiently with the switch on the front panel."

Until the polarity switch modification is made, Anderson said the company will send instructions upon request to owners of the current receivers to explain how to make the change with rear panel wire interconnections.

Automation Techniques, one of the world's largest satellite receiver manufacturers, can be reached at their new corporate headquarters, 1550 N. 105th East Avenue, Tulsa, Oklahoma 74116, 918-836-2584.

BEN HUGHES COMMUNICATION PRODUCTS ADDS WARRANTY

Ben Hughes Communication Products Company, inc., 304 Boston Post Road, P.O. Box AS, Old Saybrook, CT 06475, has announced the addition of a **ONE YEAR FULL WARRANTY** on the SCT Stripping/Coring Tool product line. Ben Hughes Communication Products Co., Inc. is the first company of its kind to offer a full warranty on a Cable Preparation Tool.

are they even offered.

The Stripping/Coring Tool may be used manually or with an electric drill. No special adapters are required for use with a drill, just remove the T-Bar handle to expose the drill shaft. With the use of the **CABLE-PREP®** Stripping/Coring Tool the cable is fully prepared to accept a connector. No additional work is needed.

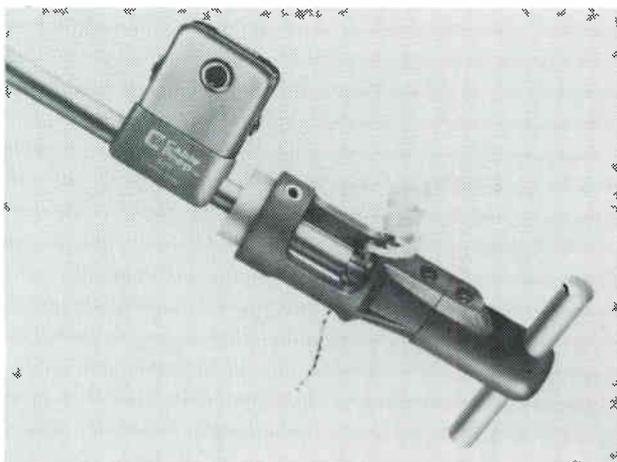
The **CABLE-PREP®** SCT Tool with the dual operation reduces the cable preparation time by over 50% for cost efficiency. The tools are available for all

NEW TOOLS FROM LEMCO TOOL CORPORATION

Lemco Tool Corporation has designed a new cable sizing tool to accommodate all standard size trunk and feeder cable.

The Model CTS sizing tools assure proper connector seating to the cable. Eliminates lost production with out-of-round cable. After the cable has been cored, use the sizing tools to correct quality or any irregular conditions in the aluminum sheath. Constructed of nickel plated steel and tapered to make insertion easy, the CTS sizing tool increases productivity and decreases system maintenance. A lifetime tool at an economical price.

Lemco is also announcing a 1/4" drive torque limiting tool which tightens equipment cover bolts with full ratcheting action. Eliminates cracked or loose covers on mainstations, amplifiers, splice cases and line extenders. The factory calibrated pre-set 60 inch-pounds, assures the proper tightness and will "slip" when additional torque is applied. Its unique reversing collar



The Stripping/Coring Tool cores and strips aluminum sheathed coaxial cable used in the construction of Cable TV Systems. Due to the high quality of the stripping/coring blade, which is manufactured from high alloy tool steel, no replacement blades are necessary nor

sizes of cable: .412, .500, .625, .750, .875 and the .860QR. They are obtainable through **CABLE-PREP®** distributors with a **ONE YEAR FULL WARRANTY**.

For more information, contact Ben Hughes at P.O. Box AS, Old Saybrook, CT. 06475 or call (203) 388-3559.



allows the loosening of bolts with easy one hand operation.

Additional information available from:
Lemco Tool Corporation
R.D. 2 Box 330A
Cogan Station, PA 17728
Toll Free: 800-233-8713
717-494-0620 in Pennsylvania

AUTOMATION TECHNIQUES INTRODUCES POLARITY CONTROL DEVICE

Automation Techniques is adding a front panel polarity control switch to its GLR-500, GLR-520, and GLR-560 satellite

receivers in order to allow polarity control from the receiver unit, announced Ted Anderson, ATI president.

Anderson said the current configuration of the company's receivers is not readily adaptable to the latest satellite systems which primarily feature Chapar-

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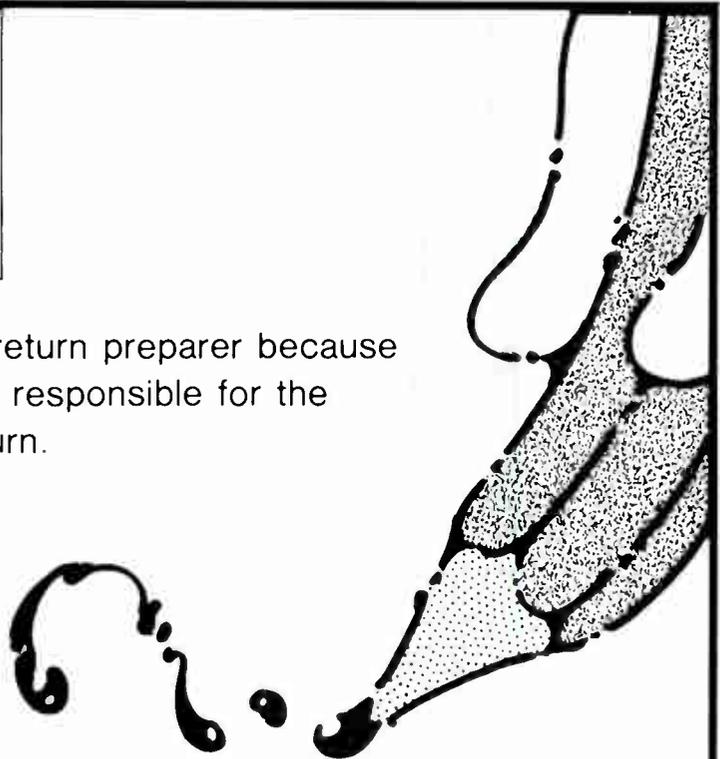
Excellent opportunity for system managers and
technicians for our systems in Colorado, Texas,
and Oklahoma. Need qualified personnel for
these Southwestern locations; good working
conditions and opportunity for the right people
who want to work and stay actively involved in
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