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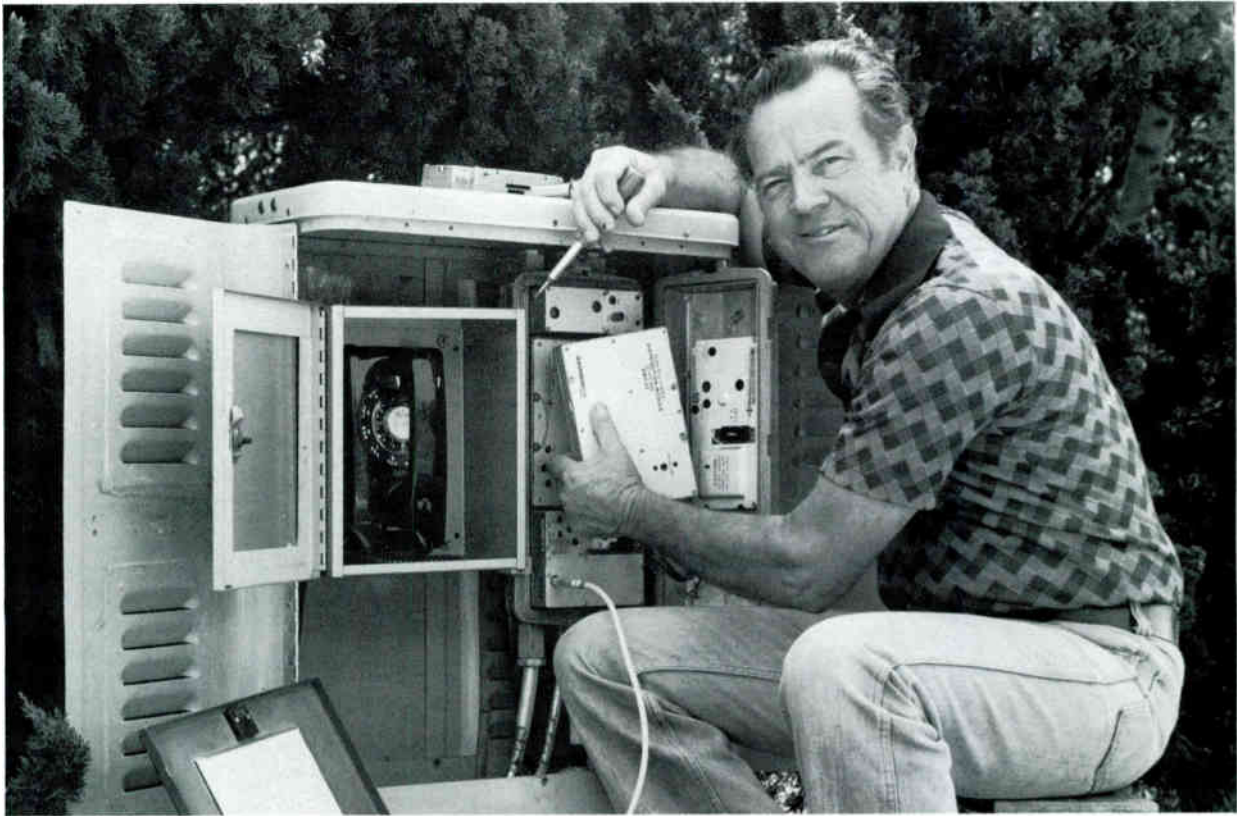
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“My original 20-channel system now passes 36 channels and will pass 54 next year - all without rebuilding!”*

Jonathan Lippitt, Signal Master - San Diego, California

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“When I get the upgraded units back, I plug them into my system. I have been replacing my trunkline amps in sequence, starting at the headend. My original shakey 20-channel system now passes 36 channels with flying colors. Last year, when we expanded our service from 12 to 23 channels, all we had to do was adjust a few equalizers.

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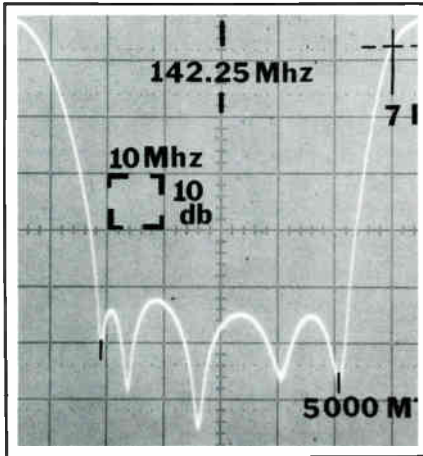
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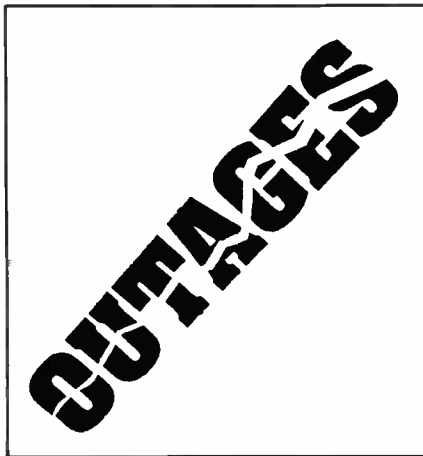
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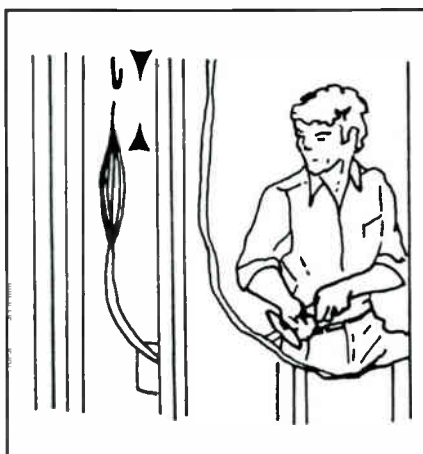
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See page 6



See page 18

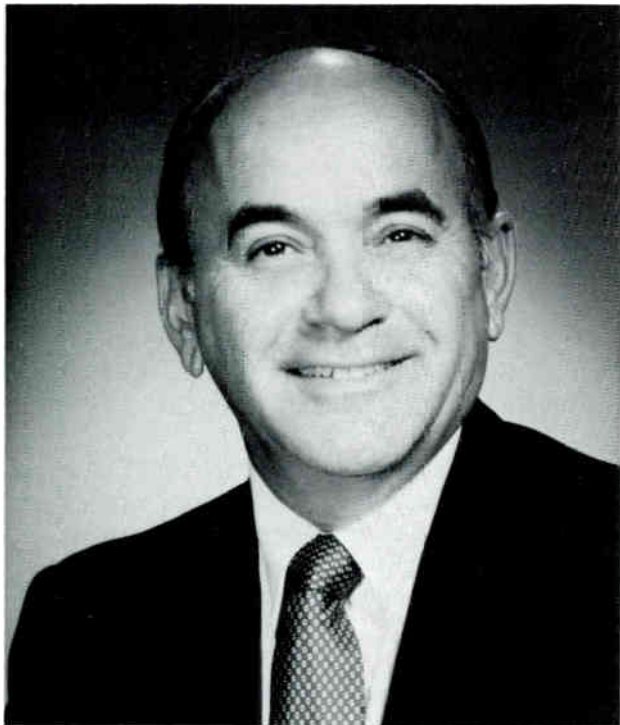


See page 34

- 4 CATA-TORIAL — *CATA President, Peter Athanas, asks the question "MUST CARRY — DOES CONGRESS REALLY KNOW WHAT THAT MEANS?"*
- 6 CABLE TECH'S FILTER COOKBOOK #14 - Quality "Insurance Filtering: Guarding Off-Air Antennas — by Glyn Bostick and Jean Dickinson, Microwave Filter Co.
- 10 CATA'S DECADE OF PROGRESS PERSONALITY — *many CATA members will recognize Woodie McHargue from all the CCOS meetings. As CATJ features Woodie this month, it is a tribute to the independent spirit and initiative that Woodie exudes; we're proud of his story and salute him and his family with this issue.*
- 18 O - U - T - A - G - E - S ! — *Frank Gates examines this great problem for cable television operators and gives some pointers on how best to approach this "headache".*
- 24 OPERATIONAL CONSIDERATIONS WITH CONVERTERS, SCRAMBLING, AND ADDRESSABILITY — *by Robert J. Dattner, Vice President, Media General Cable Television*
- 32 COUNTDOWN TO CCOS '84 — *Time is running short to register for Tan-Tar-A, Lake of the Ozarks, Missouri — July 16-18.*
- Subcard #3 LETTERS TO THE EDITOR
- 34 LET'S GO FISHING!! — *Engineering Director, Ralph Haimowitz, offers some advice on the frustrating job of pulling coaxial cable.*
- 36 ASSOCIATES' SHOWCASE
- 37 ASSOCIATES' ROSTER
- 40 CLASSIFIED

ABOUT THE COVER

In this issue, CATJ features helpful information about that dreaded word of words to the cable operator — **OUTAGE**.



Peter Athanas
PRESIDENT OF CATA

“MUST CARRY” DOES CONGRESS REALLY KNOW WHAT IT MEANS?

Once again the issue of the “must carry” rules has reared its ugly head on Capitol Hill. This time it does not look like a serious threat with regard to any legislation that would codify the FCC rules, but it is indicative of a way of thinking in Washington which needs to be corrected — and that is up to us.

First, the details of what is happening; As you all know, the FCC “must carry” rules require cable operators to carry certain so-called “local” television broadcast signals. These signals must be carried on the cable system regardless of whether they are viewable in the community or not, regardless of whether our subscribers want to see them or not, and regardless of whether they displace programs or channels that the subscribers do want to have the opportunity to view.

Now at first blush that set of rules would look like a blatant violation of the First Amendment rights of the cable operator, as well as an abrogation of his Fifth Amendment rights. The rules, after all, do require us to give up our property (the cable channels) to someone else without any compensation. Unfortunately, to date, we have not been able to get a Court to rule on the First and Fifth Amendment issues. The reason is that the FCC consistently gets cases (two in the last several months) remanded to it from the Courts for technical reasons — we never seem to be able to get to the Constitutional issues because the Courts will always avoid those issues if they can, as so far they have been able to.

In any event, it is becoming increasingly clear that the Constitutionality of the “must carry” rules will

eventually be tested — especially with regard to the FCC’s ability to impose such rules, and that has got the broadcasters worried. They know as well as we do that the rules are on very very thin ice! So there has been a long-standing effort by the broadcasters to get the rules codified by Congress. They use all sorts of interesting arguments, such as the one that says cable operators should not have control over what the public sees and therefore the “must carry” rules protect the public! This seems to miss the point of the First Amendment, because what they are really saying is that the government should have control over what the public sees! That, after all, is what the “must carry” rules are all about. The government is saying we must show our subscribers one particular religious video channel (the one that has a broadcast license) over another particular video channel (the one distributed via satellite). They are saying that we must subject our subscribers to the newscasts of the three networks — sometimes duplicated two, three, and four times rather than be able to show a diversity of news, such as that coming not only from the networks, but also from other independent news programmers and even our own local newscasts.

How can our Representatives and Senators support this blatantly protectionist, and anti-consumer legislation? Mainly, we believe, because they don’t understand it. The most recent effort in this regard has been the “must-carry” bill introduced by Senator Paul Trible, (R-Va.). Now we have to admit that there may be more to the introduction of this bill than meets the eye. Trible, after all, introduced it just one week before appearing at the National Association of Broadcasters convention. He admitted himself that it did not have much if any chance of passage this year, and we think he is right. But, other than a favor to the broadcasters, why introduce such a bill at all? Has anyone in Congress bothered to ask the Judiciary Committee whether such a bill would pass Constitutional muster? Do the Senators believe they could also pass a bill designating which columnists had to appear on page five of every newspaper in the country? And if the rejoinder to that question is that cable is different — that we are a “bottleneck” technology, there are two quick answers to that — first, there is more video distribution into the home today than ever before, and NOT, by a long shot, is all of it over cable! And second, if we are indeed a “bottleneck” then the last group who should be aided is the broadcasters since they are the ones who already have a lock on a technology (over-the-air broadcasting) that can completely bypass cable!

Enough is enough. We are tired of all the trite arguments about the public needing the right to protection from the big bad cable operator who is going to shut off the local signals! The fact is we are

businessmen and women. If our subscribers want to see something we will do everything in our power to make sure they get what they want. And if that includes local broadcast signals, as the broadcasters so loudly proclaim, then we will carry their signals. But if the subscribers do not want to see those signals — particularly the second, third, or fourth repeat signal of the same network, then we should have the right to give our customers what they, and we want — not what the government tell us we MUST carry. This is, after all, the United States, not the Soviet Union! Maybe all cable operators should get in touch with their Congressmen and remind them of that fact!

I get angry every time I think about the “must carry” rules. Who sanctified the broadcasters? Why is it that one CATA system member is in a position where he has a 12 channel system in an economically depressed area (where it is presently uneconomic to even think about increasing channel capacity) and he is REQUIRED by the government to carry 8 “must carry” broadcast stations! Seven of those are duplicating network signals! In addition, he carries one pay movie channel, C-SPAN, CNN, and CBN. The last three are the first “outside” programming his subscribers have ever been able to get. They love it. Now there are four new UHF broadcast stations nipping at his heels — two have already demanded “must carry” status, and he expects the others will shortly.

Of course he is fighting it at the FCC, and we may just take this case to Court. But if the “must carry” rules win out, his subscribers — the constituents of all those defenders of peace and freedom in Washington, will be forced to view all broadcast signals — the independent newscasts will be forced off the system by Mr. Tribble’s proposal. (I’m sure the network bosses in New York will like that idea, though). The subscribers will lose the religious programming they want to see because of Mr. Tribble’s proposal. Even the superbly educational programming brought to the public by the cable industry through C-SPAN will go in favor of reruns of the Gong Show!

Does Congress really want to enshrine the “must carry” rules in law? I don’t think so — they just plain and simple don’t know what they are talking about! Sure, it is an election year, and they have to be “friendly” to the local broadcasters — but it’s time we let them know that they should be even more concerned about the rights of their constituents. If you happen to be required to carry duplicating network signals on your cable system, or are required to carry signals that few if any subscribers want to watch instead of programming they are anxious for, why don’t you let them know what is going on in Congress, and let your subscribers give a real education to their Congressmen. □

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Quality "Insurance" Filtering: Guarding Off-Air Antennas

By: Jean Dickinson
Glyn Bostick
MICROWAVE FILTER
COMPANY, INC.

Summary

A large number of radio transmissions exist to impact CATV off-air reception quality. Routine installation of low cost, standard filters at the antenna improves general quality and reduces the chances of catastrophic interference.

Radio Frequency "Pollution"

Table 1 is a partial list of radio communications bands in current use. The combined users of these bands represent **hundreds of thousands** of radiating sources which can add some background noise to reception.

While their individual contributions are usually small, their cumulative effect can be substantial. Additionally, one or another can cause occasional catastrophic overload if near the channel frequency, or if very strong even though far removed from the channel frequency. A routine strategy of

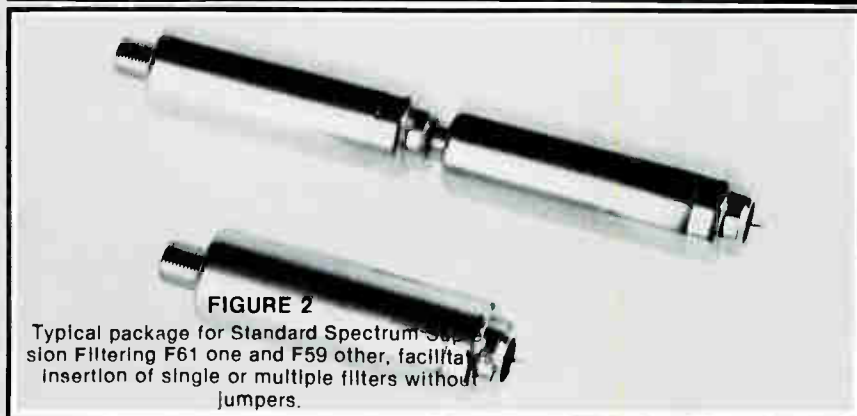
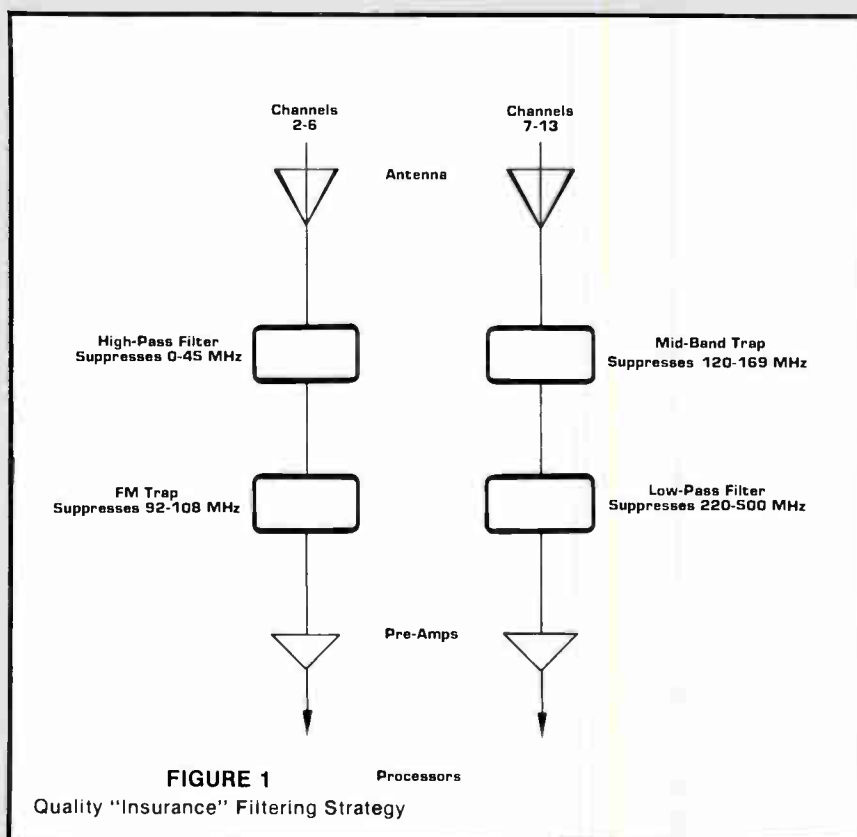


TABLE 1

Radio services which can impact off-air CATV Reception
(Partial List)

Frequency (MHz) **User**

SUB BAND

1.80 - 30.00	Amateur Radio, Regular Band
10.00 - 23.35	Aero Mobile Radio
10.68 - 31.50	Radio Astronomy
11.70 - 26.10	International AM Broadcast
12.42 - 22.62	Maritime Mobile Radio
13.56 - 40.68	Industrial and Medical Equipment
25.01 - 49.60	Industrial Mobile Radio
25.33 - 157.20	Armed Forces Radio
26.10 - 25.48	Remote Broadcast Radio
26.62	Aeronautical Radio: Ground to Ground
26.96 - 27.23	CB Radio (Low Band)
30.56 - 44.61	Commercial Mobile Radio
30.56 - 47.69	Public Safety Radio
35.22 - 43.58	Commercial Paging Band
35.19 - 43.69	Commercial Mobile Radio
50.00 - 54.00	Amateur Radio, 6 Meter Band

FM BAND

88.00 - 92.00	FM Educational Broadcasting
89.00 - 92.00	Radio Astronomy Radio
92.00 - 108.00	FM Commercial Broadcasting

MID BAND

108.00 - 117.97	Airport Navigation: VOR Locator
118.00 - 123.50	Misc. Airport Communication and Control
123.50 - 136.00	Aeronautical Radio, General Band
130.00 - 140.00	Radio Astronomy Radio
136.00 - 138.00	Space Research Radio
137.00 - 138.00	Space Operations Radio
143.90 - 148.15	Civil Air Patrol Radio
144.00 - 148.00	Amateur Radio: 2 Meter Band
150.80 - 161.57	Transportation Mobile Radio
150.98 - 173.20	Public Safety Radio
151.49 - 173.40	Industrial Mobile Radio
152.00 - 158.71	Public and Commercial Radio
152.24 - 158.70	Commercial Paging Band
156.80	Emergency Radio: Maritime & Aeronautical
161.62 - 170.15	Remote Pickup Radio (Broadcast)
173.40 - 174.00	Armed Forces Radio

SUPER BAND

216.00 - 220.00	Industrial Mobile Radio
230.00 - 240.00	Radio Astronomy Radio
243.00	Survival Radio: Maritime and Aero
225.00 - 420.00	Communications Radio: Govt. & Aviation

TABLE 2**STANDARD SPECTRUM SUPPRESSION FILTERS**

Filter Common Name	Sector Suppressed (See Table 1)	Approx. Suppression Range (MHz)	Loss Max. 2-6	Loss (db) 7-13
High-Pass	SUB	0 - 45	1.0	0.5
FM Trap	FM	92 - 108	1.5	0.5
Mid Band Trap	MID	120 - 163	0.5	0.8
Low Pass	SUPER	220 - 500	0.5	1.0

TABLE 3

CATV Off-Air Channels most likely affected by radio services, and appropriate protective filter.

External Radio Source Group	Most Likely CATV Channels Impacted	Protective Filter Indicated
SUB	2 - 6	Hi-Pass Filter
FM	7 - 6	FM Trap
MID	7 - 13	Mid Band Trap
SUPER	7 - 13	Lo-Pass Filter

TABLE 4

Appropriate "insurance" filters for CATV Off-Air antennas.

Off-Air CATV Channel	Protective Filters Indicated
2 - 6	Hi-Pass + FM Trap
7 - 13	Mid-Band + Lo-Pass

Partial List of standard, low-cost "insurance" filter manufacturers.

ARCOM
EAGLE COMTRONICS
PICO PRODUCTS
MICROWAVE FILTER
COMPANY, INC.

Next Time

We'll continue with applications of standard, low-cost filters in the cable system.

Acknowledgements

Sue Marr for spectrum photos, Dave Skeval and Steve McIntosh for

Product photograph, John Greatrex for line work, Carol Ryan - word processor, and Chris Bostick for filter cook sketch. □

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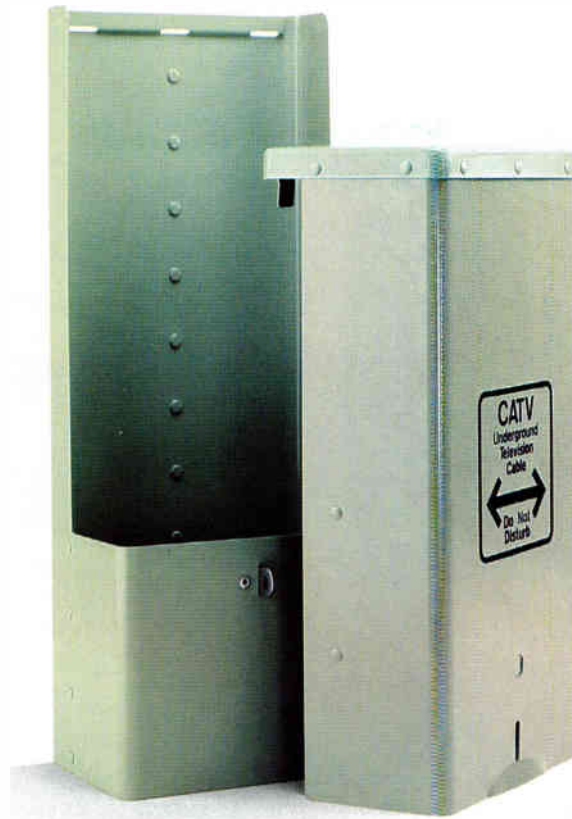
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AMOUNT ENCLOSED _____
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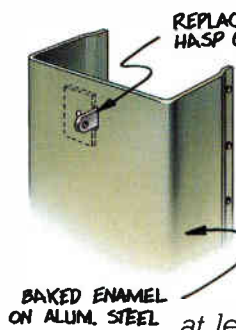
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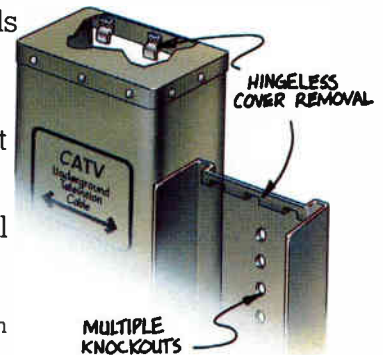
CWY pedestals are easier to service, too; the positive, secure, hingeless cover removal system allows the front cover and top to lift off as one unit, giving you full exposure of the pedestal interior.

And while other manufacturers bend out a piece of steel and call it a hasp, CWY pedestals feature tough, 11-gauge plated steel hasps that are rugged and fully replaceable.

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WOODROW M^CHARGUE

A Big Man in Small Systems

Woodrow McHargue's companies own and operate thirteen small cable television systems in Missouri and Iowa, serving a total of 3500 subscribers and he has proven that small systems can be a very profitable venture. Woodie's inspirational success story illustrates that big isn't necessarily better or richer. He has shown that hard work, determination and the use of numerous economical techniques pay off for a man who likes to be involved and in control of all aspects of his business operation.

Like many other independent cable operators, Woodie started out repairing television sets. He began doing this from his home on a farm near Princeton, Missouri, in 1954, farming full time and repairing sets part time. On April 1, 1961, he opened a retail store in Princeton where he sold Zenith TV sets and appliances, and operated a repair service.

Woodie was running the store when a cable television system was built in Princeton. He often recommended cable to his customers, but the absentee owner of the system was having trouble keeping good technicians, reception problems on the system were not taken care of promptly and, before long, Woodie says, "My television customers began berating me for advising them to take cable."

Caught in the middle, Woodie called the system owner who came right up from the city to see him. The

by Kathleen Sheldon

"I'm a workaholic. I am impatient with incompetent people. I'm a conservative because I deplore waste."

result of this meeting was that Woodie offered to work for a month on two neighboring systems owned by the operator. Their agreement was, says Woodie, that "at the end of that (time) I would give him a (monthly) price to do all the work except the tower, since up to that time I had not been on a tower more than fifty feet high. I told him if he wasn't pleased with the price, then that month wouldn't cost him anything."

At the end of the month a deal was made, and the cable TV office moved to Woodie's store where customers came to pay their bills and order service. After about six months Woodie did the tower work as well as connections, disconnections, plant maintenance, service and repair. He began to pay attention to the customer count, operating expenses and cash flow. He says, "The numbers looked good and the prospect of other

towns wanted cable seemed like an exciting opportunity." The owner of these systems was building other towns as fast as he could, so Woodie approached him about the possibility of joining him, but the man didn't want any partners. For the time being Woodie was watching for an opportunity to get into the cable business for himself now that he had seen the potential.

A break came when a route salesman for a television parts distributor told him about a cable system in a town about thirty-five miles away, that "had to be sold"

Woodie works closely with his office staff on records dealing with construction expense and overhead.

because it belonged to a telephone company and government regulations were forcing a sale.

Woodie didn't lose any time calling the telephone company which set a price on the system. The wife of the owner of the two systems he was servicing, helped him prepare a five year financial projection. Armed with the projection, a financial statement and a balance sheet from the telephone company, Woodie began to look for financing to buy the system.

He says, "I first asked my hometown banker and he said, 'Oh, you don't want a business over there; that's a real crooked road! Wasn't that a great answer from a banker? Well, I can tell you I have since had stranger answers.'" Next he approached the bank in the town where the system was located. The banker talked to him politely, copied Woodie's papers and said he would take it up with the "big boys" in the city. Woodie says, "A few days later I called him and he said they had decided there wouldn't be enough cash flow to pay out the system. I asked him if he had really studied my projections because I knew that it **would** pay out since the system was ten years old and I knew exactly what it would cost to operate. His answer was: 'Well, you know your projection was written in pencil and it didn't come out on the copy machine!' There is an example of the banker helping the borrower with his business!"

Of course Woodrow McHargue does not give up that easily. An intelligent, determined man, when an obstacle is put in his way, he figures a logical way around it. In this case he delivered a clear copy of the projection and, in response, received a letter from the banker stating that they would not loan him the money unless Woodie was willing to "collateralize" the loan with a mortgage on his farm. Says Woodie, "That slowed me up for a couple days. After a lot of thought, I decided to do it. My wife's reaction was, 'Do you mean mortgage the house where you live?' I said it certainly seemed that that was the only way, so she agreed."

That first system had 350 subscribers when Woodie purchased it in 1975, but today it provides service to 500 homes. Two years later he built a system for another operator which now has 580 subscribers. Following that he built three more systems, with a total subscriber count of 1,175. In 1979 he purchased a system with 900 subscribers, and last year he built a system with only 93 subscribers. In 1982 he and a partner started a second cable company which has six headends with 850 subscribers. They plan to build six more small towns.

How does Woodie make such small systems profitable? To answer this, he mentioned Oliver Swan, saying, "One of the most interesting people I have ever met was Oliver Swan. This meeting was made possible by CATA. Many of the CCOS attendees were skeptical of Oliver. I believed him because I had already



learned how to do such things as Oliver did, in other fields. His ability to innovate, his generosity in sharing all the money saving ideas that he had, with us made him an extremely important man to know. In the Oliver Swan tradition, I tried to save money in my construction costs. Every dollar saved in the cost of a cable system, translates into three dollars based upon a ten year payout finance plan."

Several years ago, after pricing a 400 foot cable television tower, Woodie decided to try to build his own. This interesting episode, which illustrates the Woodrow McHargue method of operation, is best told in Woodie's own words: "I looked at the tower I already owned and devised a jig that would hold the pipes in place 'til they could be welded. I made a deal with a friend that had a large auto repair shop. We set the jig in his shop. My sixteen year old son cleaned and painted the completed sections. We then dug the holes, put anchors in them and poured in the concrete."

Woodie continues, "After that we needed a tower fixture to assist in the erection of the tower. I devised one and planned to lift the tower sections by the end and set them on top of the previously erected sections. Well, the fixture had to be pretty tall to do that and it was just a little — well — limber! When the slack came out of the winch line and the tower section stood up and started to ascend, then Woodie's tower fixture bent down like a fine fishing rod and you should have seen that tower section jump up and down on the end of that winch line! It was obvious that this wasn't going to work so we decided to shorten the fixture and lift the tower sections by their middle. This worked fine."

It was so successful, in fact, that Woodie has had four of these nearly 400 foot towers in operation for more than five years. Recently he redesigned his jig for constructing shorter towers of 150 to 190 feet. Six of these are in use and several more installations are planned.

One Oliver Swan economy that Woodie has adopted is the manufacture of his own antennas. He says, "We now build our high band and UHF antennas and save about 75% over the cost of 'boughten' ones."



Maribelle McHargue provides the month-end cash reports for the cable systems; Woodie says this is her favorite pose!

Recycling used amplifiers and power supplies purchased from a large MSO is another of the ways Woodie has been able to cut construction costs. He not only installs this equipment in his own systems, but sells it to other small system operators. In addition to building and operating his own systems, Woodie's company builds systems for other operators and prepares strand mapping.

When Woodie bought his first system it had some very early type amplifiers, which, he says, he had neither the equipment nor the ability to repair. He learned that a larger system, a couple hundred miles away had both the equipment and a technician with the expertise to service the amplifiers. The manager of that system consented to let his tech, whose name was Larry Selby, work on Woodie's amplifiers. Larry wouldn't accept money for his help, so, to show his appreciation, Woodie invited him to attend CCOS '77. As they attended the various sessions there at Fountain Head Lodge in eastern Oklahoma, they talked about the exciting future of cable television and about their possible future together.

Several weeks later Woodie contracted to build a cable system in Iowa. He asked Larry to come in with him, and after they laid out plans that extended beyond the construction of this one system, Larry quit his job to join Woodie. Says Woodie, "In April, 1978 we completed the system and, to my dismay, Larry informed me that he was joining with the owner of that system we had just built and with another man to start seeking franchises in Iowa."

Disappointed, Woodie went on to build three more systems and to buy another. Meantime the franchise efforts of Larry and his partners were thwarted because of a rule in Iowa that the citizens have to vote for the franchise. A large MSO won the crucial franchise elections and Larry and his associates dissolved that partnership. During the next four years Larry and his remaining partner continued to build and operate some small systems in Missouri and Iowa. Then one day Larry told Woodie about an opportunity to build another small system in Eagleville, Missouri. Larry's partner wasn't available to help build this system, and so Woodie and Larry decided to do it together. Later Larry's partner offered to buy

out Larry's equity in the Missouri systems and dissolve the partnership. The outcome of all this was that Eagle Cable Corporation was formed by Larry and his wife Debbie and Woodie and his wife, Maribelle.

This new MSO, begun with two small systems two years ago, now has three cable systems in operation in Iowa, six in Missouri, and more in the planning stages. Woodie continues to operate Fayette Cablevision, Inc. and McHargue Supply, Inc. separately.

Woodie says he is pleased that he and Larry were finally able to put their talents together. He says, "I can honestly say that being associated with Larry has been the most fortunate move I made since I made the decision to 'mortgage the house where I live.'" He adds that Larry has a degree in electronics and his contribution to the operation cannot be measured. "We complement each other," he says, "and have both benefited from our association by being relieved of those burdens and responsibilities that the other usually better handles."

Both Woodie and Larry are dedicated to providing a full range of cable services to their customers. Satellite dishes have been installed in all of the systems except the very smallest which serves 24 subscribers, but Woodie says they will put a dish in that community before the end of the year and provide one basic satellite channel. The rest of the systems offer a mix of basic satellite services, Home Box Office and provide standard broadcast signals, including at least one channel of each of the three major networks and PBS.

A student of human nature, Woodie approaches life with a sense of humor and is quick to see the light side of a situation. He recalls, "One incident I can't forget . . . happened in the television store that took our calls in one of our system towns. A young lady about 22 years old came in with an older lady that I took to be her mother. She told Geraldine, who handled our service orders there, that she wanted to get hooked up to cable. Geraldine said, 'Oh! Did you get married?' The young lady replied, 'Yes, last night!' When the service order was being filled out, I walked outside the store. When the two ladies came out, I heard the newlywed exclaim happily, 'Oh boy, cable TV tonight!' That is when I began to realize the kind of business I had gotten into."

Woodie has been an enthusiastic member of CATA ever since he found and read his first copy of CATJ Magazine a few months after first becoming involved with cable television. He has attended all of the CCOSes and says that "all small cable operators will always be in debt to CATA for putting the machinery in motion to provide such splendid opportunities for



Woodie giving last minute instructions on an equipment check: "Do this right and you save a trip!"

the small cable enterprises. Undoubtedly the people in rural America will never know how much their lives have been enriched by this organization."

He points out that there has been a large move away from small system problems and promotion of cable in small towns, and he would like to see more emphasis on successful cable operations in towns of 350 to 950, population — not subscribers, in CATJ Magazine and at CCOS.

He says, "I fear that CATA may fall into the very trap Steve Effros has repeatedly warned us about. That premise that 'more is better' is serving as a deterrent to small system operators that might be willing to bring cable to smaller communities."

An articulate, intelligent philosopher, Woodie recognizes an opportunity, sets a goal and calls on all his inner resources as he works and thinks to overcome whatever obstacles are presented. He believes that any person can benefit oneself in the same way and "win and win big," as he has. While he says that perhaps it would not be as easy to get into cable television today as it was when he started, similar opportunities are still available. With his knowledge and experience, he believes he could move to another part of the country and build a successful cable business. He suggests that a young person who wants to get into the business would find the best opportunity to learn and grow by becoming involved with an independent operator.

Woodie himself, got into the cable business by observing the operation of another man, asking questions, watching for the right opportunity, and going after it. He learned the business with the most fundamental hands on training and by not being afraid to

ask for help, guidance and suggestions. In turn he has generously acted as a free consultant to several new young cable operators.

Two young cable entrepreneurs have grown up in Woodie's house. The entire family is involved in the cable business. Woodie's wife, Maribelle Harp McHargue now works full time in the cable office in Princeton, alongside three other full time office employees. Woodie's and Maribelle's oldest son, Gordon, who is 27, works for the cable companies in system maintenance and tower work. Their daughter, Valerie, worked in the office for years. Today she works for an accountant in Kansas City, but she and another young woman own one small operating cable system, have a second under construction, and a third one in the planning stages. Brian, who is 21 and also works in the family operation, has a cable system which began operation early this year and serves about 80 subscribers.

That house and 520 acre farm that Woodie was willing to put on the line in order to purchase his first cable system, was the very one where he had been born one Mother's Day, where he grew up with his half sister who was eleven years older, and where he, in turn, farmed and raised his own three children.

His parents taught him to read and print before he started school at the age of five. One year this rural school had a total enrollment of five students. Although he says he didn't have any spectacular accomplishments in school, he did receive the highest score in the eighth grade final exam which was given at the local high school for all students in the county graduating from rural schools.

He completed only two years of high school, but



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went on to take a correspondence course in Electronics Radio and TV Repair, and completed 81 course hours of college extension study.

When asked to describe himself, Woodie, who is six feet tall with black hair and greenish eyes, said, "I talk loud. I'm a workaholic. I am impatient with incompetent people. I'm a conservative because I deplore waste." He adds that he is intolerant of people who have positions of authority but have little or no practical experience, yet try to guide those who know what it takes to get things done.

Woodie is a friendly, outgoing person who is seen frequently at CCOS eagerly asking questions and comparing notes with other operators. He enjoys sharing tales of his own experiences and likes to give opportunities to others which is why he has helped others get started in the cable business. His own businesses have grown to the point where he could,

farm publications and to an electronic hobbist magazine which he has been reading for more than thirty years.

When he had the store in Princeton, he and his mother (who worked in the store and is also an avid reader) established a book exchange. People would bring in their used paperbacks and exchange two for one. This was a popular community service, and they had a constant stream of customers coming and going, trading books. These days Woodie often buys armloads of books at flea markets and garage sales and still trades books whenever possible.

When Woodie and Maribelle aren't busy with the cable business they like to travel and look in out of the way places for treasures to add to their collection of antiques. Maribelle, who is a very pretty, soft spoken woman, once had an antique business, but it has been put on hold in deference to the cable



Construction underway by Woodie and his crew

and perhaps should, be concentrating on management, and leaving the construction and service work to others, but given the opportunity and choice, Woodie prefers being in the field, doing the physical work.

To relax he reads from two to four books a week. He likes novels, particularly those by James A. Michener, and his favorite western author, Louis L'Amour. As far as Woodie knows, he has read all the published work of those two men. In addition, he enjoys non fiction books, especially ones on American history and biographies about successful Americans. These have been a big inspiration to him. "I've patterned some of my plans after . . . what . . . they've taught me," he says. He has read the biography of Henry Ford three times, and says that most successful men he has read about were "pretty good people, not the vultures they are sometimes made out to be." He reads all the "get rich books" and has read a number of books on real estate and is considering some real estate investments. In addition to these, he subscribes to all the weekly newspapers from the towns where he has systems which publish newspapers and reads these in order to keep up on news that effects him and on local events that he may want to be involved in. To keep up with the cable industry, he reads CATJ Magazine, Multi-Channel News and Cablevision Magazine. But that's not all. He subscribes to two

business. However she has enough stock on hand that, when the right time comes, she will be ready to go back into business. They are particularly interested in primitive walnut furniture. Maribelle has an affinity for antique oval walnut picture frames and has some very nice ones in her collection.

Woodie collects old tools of all kinds and is very proud of his collection of antique hammers. A special find recently was a tool designed to remove the nails from egg crate lids and to hammer the nails back in when the crate has been refilled. Woodie remembered the tool from his childhood, but hadn't seen one for years. He found this one at a garage sale, made the purchase and "danced all the way home."

Woodrow McHargue has made a place for himself in the cable industry, filling a very real need, and seems to enjoy all parts of his life. When asked if he wouldn't like to give up his own operation and go to work for a big MSO, drawing a big salary and overseeing cable service to a hundred thousand subscribers, Woodie laughed and said, "I bet you know the answer to that! — NO THANK YOU" He paused. Then he added "I might be flattered if the MSO was big enough and they offered me the job as manager, but that would be the only interest they could get out of me."

Woodie will keep right on figuring out money saving ways to make small cable systems profitable. □

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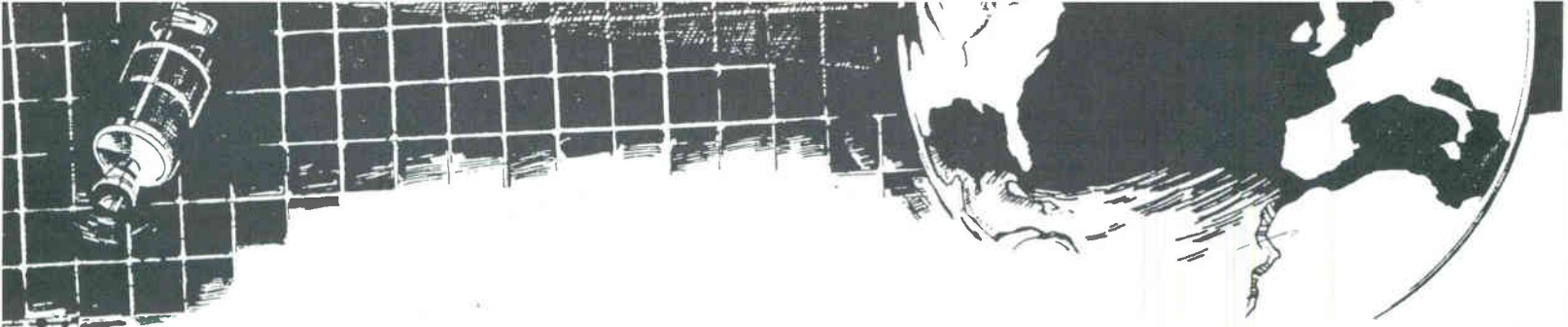
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OUTAGES

by
FRANK GATES

Let's Superbowl Sunday, end of the first quarter, the score tied in what has been correctly billed as the 'Greatest Game in Football History.' You have your TV volume up a little louder than normal and you almost feel like you are part of the thunderous crowd roaring at the kickoff as the camera follows the football high over the stands. Suddenly, like the flick of a switch, the screen goes to snow and the roar of the crowd turns into the roar of no audio.

As you grab the remote, you tell yourself that there must be a power

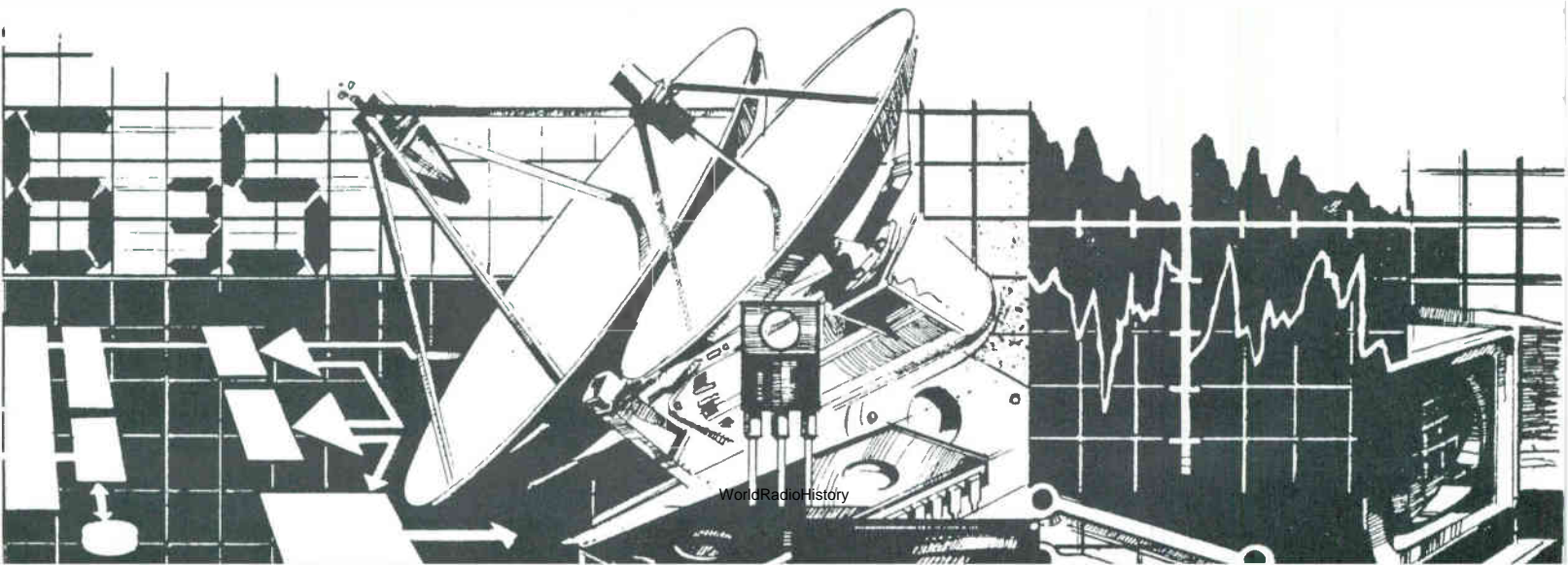
failure at the stadium or a transmission problem, it can't be the cable. Switching to the next channel and then another and then on through the entire band, you realize that you are experiencing one of our societies major disasters, the cable failure.

At this point most cable customers will switch back to the original channel and stare at the snow while they calculate how much they are paying each month for the privilege of this experience. They may do this for five minutes before they are on the phone dialing up the cable company.

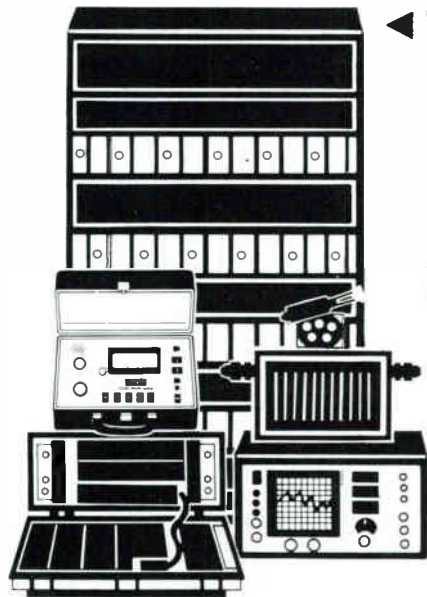
But you are not most cable customers. In fact, you are the technician that is "on-call" for the system that serves your own home. The system that just went down.

You send one of the kids into the bedroom to check pictures on that set while you switch over the A/B switch the off-airs. The other set is also off and the off-airs are fine. While you are grabbing the phone to get some addresses from the office or the service, your neighbors start arriving at your front door to inform you that the system is down. It is going to be a long afternoon.

(continued on page 20)



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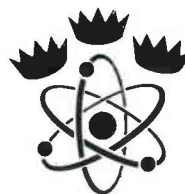
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OUTAGES

(continued from page 18)

OUTAGES

Outages seem to be a cable tv fact of life. Even the newest technology with redundant headends, standby power suppliers, and full vital sign systems, there are going to be times when some component in the system fails and brings the system down. A couple of years ago, the evening news interviewed a convention visitor at the Western Show in front of a manufacturer's booth that was demonstrating cable security systems. The newsperson asked the visitor if he would be willing to trust the security of his home to a cable system. With half a smile, this visitor said that the system that serves his home cannot be depended upon to get pictures to work all of the time, how in the world could they make security dependable? Unfortunately, that attitude is shared by a lot of customers who have experienced outages in their cable system.

Ongoing preventative maintenance is the overall most important action that can minimize these system interruptions. But once there is a failure, it is too late for preventative maintenance, the task at hand is to get the system running.

Back to the Superbowl game, as that technician gets into the van to go repair the system, the one thought that underlines everything else, is how long will it be off. Maybe the problem is an A/C breaker at the first power supply and I'll have it back up in ten to fifteen minutes, then back home to enjoy the second half of the game along with the other subscribers. Or maybe it's a lightning hit, and myself and five other techs will work until tomorrow before it's back up and spend the rest of the week fine-tuning converters all over town.

Regardless of the source problem that has caused the outage, just like preventative maintenance, there are several things that can be done well in advance of any outage to minimize the actual down time.

PREPARATION

The time to buy a raincoat is not during the storm on a Saturday night but last summer. The time to order replacement amplifier modules is not when you are on a pole with the burnt out amplifier in your hands but last time that your replacement inventory dropped below minimum. Both raincoats and replacement amplifiers seem to be expensive, low priority items until you need them.

"Stand-by" or "On-call" shift or duty, tend to become routine after a while, with more experience in the cable system and success in repairing outages leading towards more and more casual preparation. Without comparing operation and repair of a cable system to that of flying an airplane, it is interesting that every pilot, regardless of experience or age of the aircraft, are always required to complete a pre-flight check list. This ensures that every detail is covered on the ground before it can become a potentially major problem in the air.

If there were such a thing as a pre-outage check list, it would certainly include these areas.

TECHNICIAN

Does the technician have the skills necessary to repair all of the potential system problems? This includes not only those "normal" maintenance activities, but things like working on "unbreakered" 110 vac inputs to a power supply. If not, what contingency plans are in effect? Some answers to this problem would be placing the inexperienced technician on "Stand by" with an experienced technician and both respond to any outages, this will enable some hands on experience to take place without exposing the system to prolonged outages. There could be one technician on stand-by for the system with a different technician on for the headend.

There are many possible variations of covering the stand by period, but by simply being aware that some technicians are not always qualified for every repair, you are ahead of the game. In any case,

there should always be a backup technician available to respond if the assigned technician is unable to repair the system.

COMMUNICATIONS

Is there an updated and current telephone list available to everybody involved in operations? This should include everyone from the system manager to the warehouseperson. Many an outage has been unnecessarily prolonged because of wrong phone numbers.

How about pagers? Make sure that not only does everyone involved fully understand pager operation but do those technicians who rely upon the pager have any type of backup in case of pager failure? Does everyone "on" a pager know the geographic footprint within which the pager is operational? Remember, "The pager is not on call, the technician is on call."

Is the transceiver in the technicians vehicle fully operational? If not, maybe that vehicle should stay off stand-by until the radio is operational? While this might be an inconvenience (techs temporarily exchange vehicles) and "added" expense, poor radio communications during an outage can turn in to a major delay in repairing the system. Poor radio communications can become a major safety concern when a technician is working alone in the system.

EQUIPMENT

Does the technician carry all of the required test equipment? Is this test equipment fully operational? An RF meter with dead batteries or a faulty charge is as worthless as a VOM without test leads.

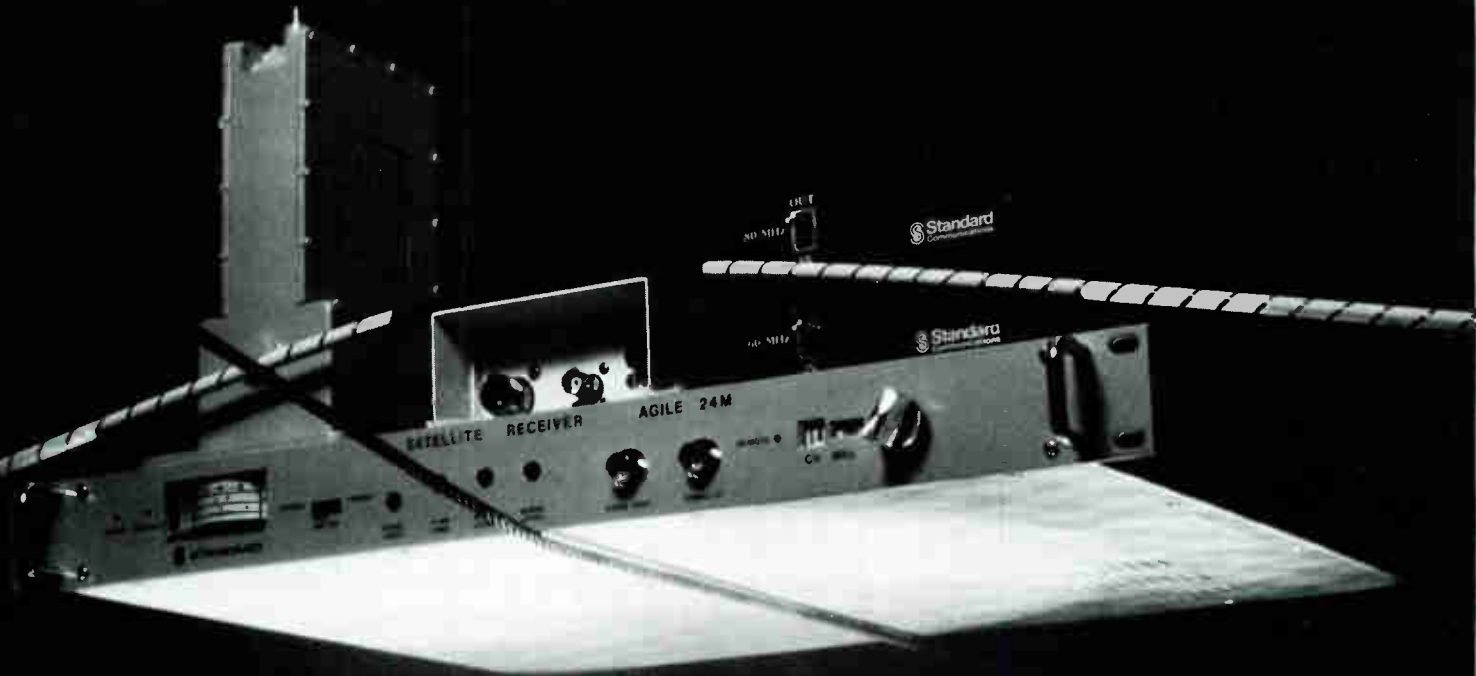
Are there adequate replacement modules, power supplies, fuses, connectors, cable, etc., on the vehicle to meet any need that might arise during an outage? Is this equipment operational? When was it last checked?

A hand tool kit should include everything that is necessary to replace equipment and splice cable. A wrong size crescent wrench can stop a technician from replacing a burnt up power combiner just as a

(continued on page 22)

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defective RF test probe can turn logical troubleshooting into a wild goose chase. Is all of the climbing gear in good condition?

Does the technician have a complete set of system maps? Are they current showing all as-builts? Some technicians feel that they know their system so well that they don't need to bother with these maps. These same technicians will probably admit that there have been times when a set of maps could have been real handy. At any rate, it is a good practice to have the maps available.

Does the head end have current block diagrams indicating correct level measurements and cabling? If a standby power generator is available, is there an instruction sheet showing where the generator output should be inserted into the head end? If the generator is not rated to fully operate all of the headend electronics, which pieces should be powered down? Is a current phone list posted? (Does the phone work?)

All stand-by personnel should always be aware of any ongoing construction projects or major system maintenance in progress. Many times, an outage is a direct result of work performed that day and with this information available, isolation of the problem becomes much easier.

Is the vehicle's spot light and beacon operational? Does the "Miners Head Lamp" have good batteries? (Does the technician have 'Miners Head Lamp'?)

Does the technician have all of the keys needed in the system? Pedestal locks, multi-unit security locks, headend locks, power supply locks, city and county gate locks, private communities, any of these can turn a minor outage into a major outage over a missing key.

PROCEDURES

Up until now, we have been reviewing very tangible things like crescent wrenches and maps. These things can spell the difference between continuing forward with the repair or being stopped dead on the tracks. There are some other areas that are just as critical as these but are more difficult to control.

The best technician will not be very effective if they do not respond to the call out in a timely manner, or do not respond at all! This can and will turn any outage into a major outage. It is essential that everyone on stand-by have a clear understanding of their responsibility towards responding to the call out.

Once that the technician is out in the field, it is very easy to get caught up in the excitement of the moment. The radio is blaring out more and more addresses, power is on and off, the storm is becoming more severe, telephone and power crews are everywhere, police have roads blocked, and that's when logical trouble shooting becomes very difficult at best. During all of this, there is a tendency to feel that the next amplifier will be the fix. One hour can very quickly turn into four and a minor outage turns into a major outage.

Often times during the outage, safety tends to become a secondary concern. When this happens, accidents (bodily injury and vehicle) are imminent. In an all out effort to get the system back up, shortcuts that present real hazards and normally would be avoided, become appealing. In rural areas, a technician could be injured and lie incapacitated for several hours unless there exists a real safety awareness among everyone involved. Urban high crime areas present similar problems. Many systems require that

every outage have two technicians working together at all times because of these conditions. Safety must remain the primary concern regardless of the demands of the outage.

All of these problems can be minimized through the use of very clearly stated outage procedures. These procedures should be thoroughly understood by all employees involved. Of course, not every instance or situation can be covered in these, but the individual responsibilities and actions can be outlined.

OUTAGE REVIEWS

Take advantage of past mistakes and prevent them in the future. There should be a thorough next day review of every outage by both the technical staff and management. This review should be performed in a very positive manner to try and identify errors and implement action to prevent reoccurrence, not in a negative manner which tends to crucify those who made errors.

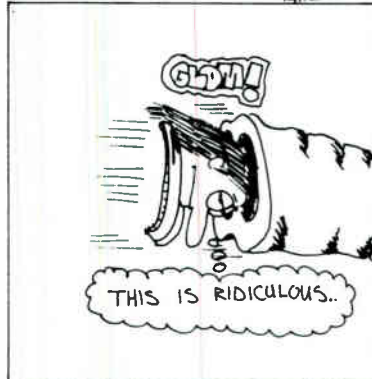
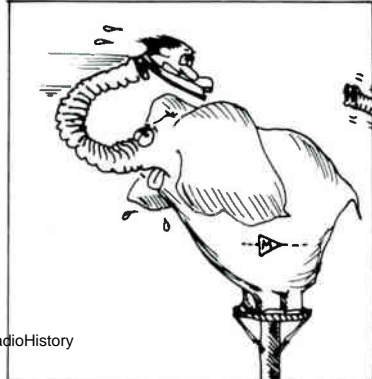
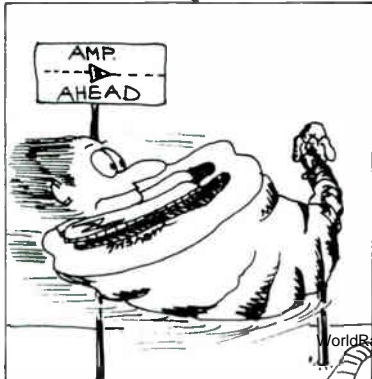
These reviews will ensure that the system has any required "permanent" repairs performed and is not left with anything "temporary" left waiting to go bad again. Additionally, you should be able to identify reoccurring equipment failures or geographic areas of the system that consistently have similar problems.

CONCLUSION

Although the preparation time involved may seem like a lot of repetitious work week in and week out, it is all worth it when during an outage situation the repairs go smoothly and efficiently.

There's a saying that goes, "A technician's job security is inversely proportional to the duration of the outage." □

410 JB ©1983 C. Grisham ... a continuing lesson in Cable TV signal no. 8



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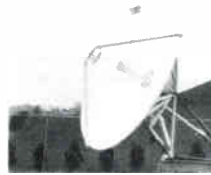
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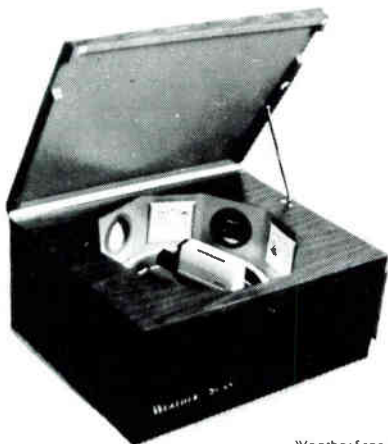


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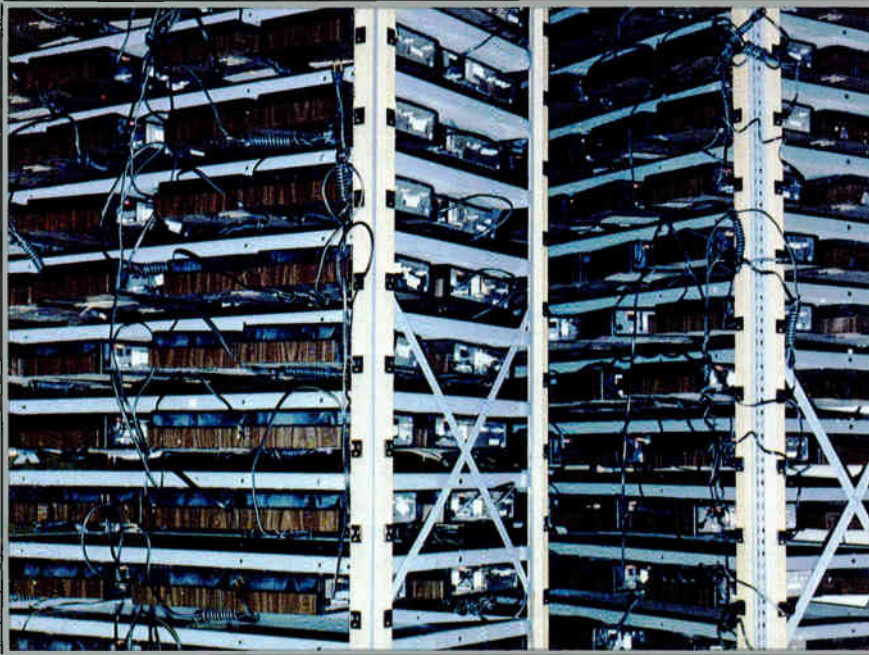
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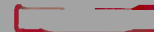
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Converter QC "Pie Racks"

a "burn-in" period takes some experimentation. We all know the infamous 'thousand hour' syndrome: burn the converter in for 1000 hours and it fails at 1001, one hour after installation. Good burn-in statistics do not seem to be available. We have experimented with 0, 2, 24, 48, and 120 hour burn-ins and have settled on 48 hours.

This period was selected more out of logistics than empirical evidence. We burn-in 400 converters at one time, testing 200 per day. This is facilitated by mounting them on pie-racks on wheels.



Scrambling

Scrambling requires headend encoding and daily testing: is the channel scrambled? Can it be descrambled? Is the depth of

TYPICAL PRE-ASSIGNING OF INSTALLATION WORK FLOW

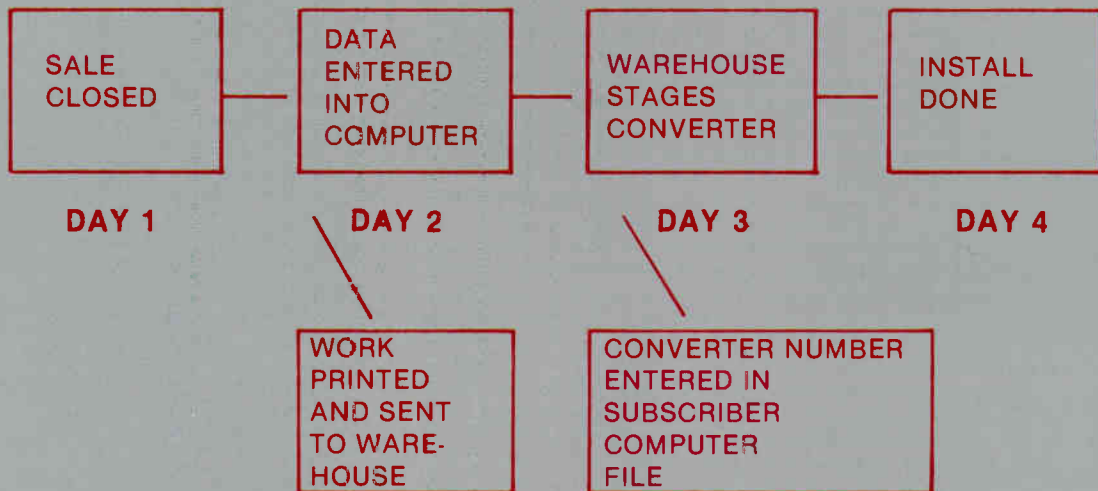


FIGURE I

scrambling set properly? Is the decoding data properly modulating its carrier? With addressable data streams, a new set of data parameters must also be checked. Testing some of these parameters at a TV receiver in customer service should become a daily chore. Technicians may also want to observe such testing either at customer service or in the warehouse each morning. It is usually a good idea also to observe all channels on a "basic-service",

non-descrambling converter each morning. (With a 100+ channel system this can take a lot of time!)

Intermittant scrambling problems are typical of the type of added complexity brought on by the addition of scrambling. Because the problem is intermittent, it is often difficult to pinpoint. (A wise old technician once said, "You can't fix something that ain't broke") temperature related and mechanical problems in both the encoder, (headend scrambler), and

decoder, (converter/descrambler), are both plausible factors. The video input level to the encoder can also change sufficiently to be a possible cause. Other possibilities include converter input levels, or a bad factory run of converters which chose to reveal itself after a period of use in subscriber's homes. The latter may be widespread and could be incorrectly interpreted as a headend problem.

Further complicating troubleshooting is the "marginality problem." More than one of the above factors may be a contributor to the final result. Each in itself may be barely within specifications, or within the limits of available test equipment and procedures, but in concert, the effect is unacceptable. These types of problems age technicians.

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Warehousing

Converters come with built in inventory control — serial numbers. Yet, for years it was not practical to track converters by number.

Addressability added a new dimension: the converters not only had a serial number, they had an electronic address as well. And the electronic address had to be inventoried in the headend computer in order to turn the converter on and descramble programming.

With all this new-found control, the issue became — what is cost effective?

In the early days of converters, we ignored the serial numbers and took gross counts. The installers attempted to record the serial number of the installed converter on the work order with varying degrees of success. Sometimes this information even found its way into the subscriber's microfich record.

With typical failure rates, converter box changeouts fell into another gray area and keeping the file up-to-date was rarely achieved.

Addressability, almost by definition, requires the electronic address be stored in the addressing computer. For security purposes it is desirable to store all inventoried converters in the "shut-off" mode.

"Global", the on-line data stream then addresses every converter in its known universe and, if it is connected to the cable system, it is told to shut-off. Without this control, a previously authorized converter connected to the system is as much a security risk as the non-addressable version if its address is not in global.

Converter changeouts must be monitored carefully by both the addressing computer and the billing computer. The disconnected converter must be told to shut-off should it accidentally reappear in a subscriber's home. The new converter must be properly authorized for the services billed. Billing software often still lags behind the hardware in this area.

During new installations additional control can be achieved by staging the converters. Preloading the proper converter, and assigning that serial number in the billing computer. This puts a burden on the installer to place the proper converter in the correct home. If 90% of your subscribers have the same level of service, this problem may stay hidden for many years. However, with the add "choice" capabilities of addressability, the problem will eventually surface and cause much confusion.

Similarly, pre-assigning converters can add as many as four days to the "sale to install period." (See Figure 1) This can lead to an undesirable situation where at-the-door cancellations increase or new subscribers are not-at-homes when the installer arrives.

It might seem easier to allow the installer to randomly pick a converter and read the serial number back to an installation clerk. This can be done at the time of install via a telephone or on the work order. In the work order situation a "standard" service is given away until the paperwork is brought back and entered into the computer.

Reading the serial number over the telephone to a clerk is very time consuming and can create an impractical manpower problem during peak installation periods. Both the number of installs per in-

staller and the number of clerks per field person can be adversely effected.

Converter change-outs can be a similar problem. It is of course impossible to accurately preassign converters for service calls since the possibility of a converter failure is rarely known in advance. One alternative is to preload some converters to a "truck status" standard service. All exchanges would then give away a specific

level of service until the work order was entered into the computer. This saves a computer operator on late night or Sunday service calls as well. However, subscribers will catch on quickly to a weekend of unpaid-for service.

We have also postulated computer telephone answering devices which would allow the installers and technicians to interact with the computer via a touch tone telephone while in a subscriber's



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Billing Computer



Zenith Addressable Computer

home. The jury is still out on this obviously expensive approach.

These and other security issues will probably be debated for some time. One key may be still more improvements in billing computer software.

Pay-Per-View

Is addressability a franchise pro-

mise looking for a market? Is the security of being able to shut off a stolen converter or change a level of service enough to justify the \$70 to \$100 premium? How much faith do we have in the reliability of such features?

Pay-per-view has been touted as the real reason for addressability: "a low-cost (?) way to make a one-way cable look interactive."

However, most PPV events so far have been disappointing. Some of the reasons might be:

1 High Cost - almost all of the events so far have been of the "block buster" category. The question is how well would a \$1 or \$5 event (movie, etc.) do?

TYPICAL PAY-PER-VIEW WORK FLOW

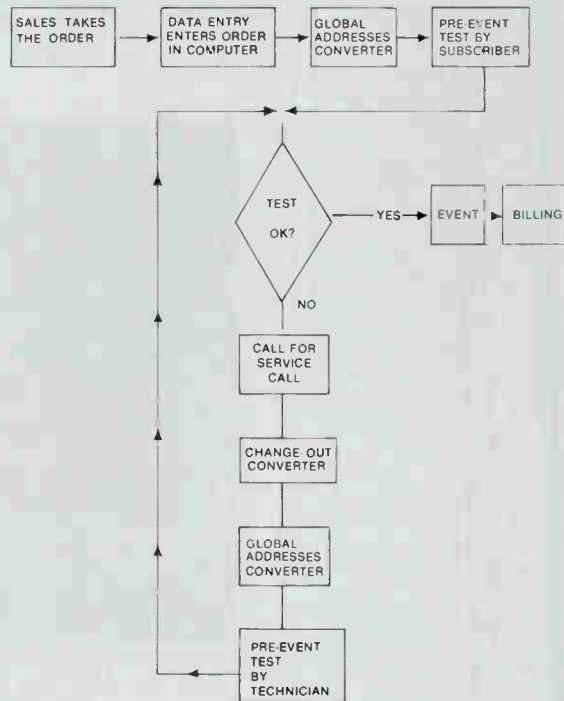


FIGURE II

2 Marketing - most cable operators are just now learning how to market for the long run. (i.e. churn) How do you market for a series of one night stands?

3 High Failure Rates - service technicians really find out about converter failures when you run a pay-per-view event. Some subscribers are so conditioned to converter problems that they demand a new converter just to play safe.

4 Lack Of Sufficient National Penetration - without a large enough market increased pressure is put on PPV penetration to off-set satellite overhead. How about some regional events co-sponsored with the local STV operation?

5 Order Taking Expense - it has not proven to be inexpensive to take telephone orders, especially of the last minute variety. Mail-in orders are less expensive, and less spontaneous. Impulse PPV is one of the remaining reasons for building two-way subscriber plant. One-way addressable, telephone orders are slowed by human intervention. Ordering in advance greatly reduces the

number of events that can be handled concurrently. One time events do not allow word of mouth promotion and limit "choice."

Service Repair

Addressability requires another level of advancement in repair personnel. Failure modes include the usual outside cable plant and drop as well as video scrambling and the data carrier. Scrambled video carrier levels cannot be accurately read on most signal level meters and data carrier modulation levels require at least a good oscilloscope. Both video and data skills will have to be acquired.

We recently had a failure of our Zenith addressable system which illustrates the complexity involved. The symptom was not an unusual one for addressable systems: the converters would not turn on in the subscriber's home. After failures on more than one installation and service call, it was obvious that the problem was not an installer mistake or a system or drop problem. The usual culprit in this situation is the leased telephone line between billing computer and headend computer, but the communications software in the billing computer confirmed that the line was functioning normally. A quick visual check verified that the scrambler was working and the video modulation levels were fine. The problem turned out to be more subtle than that.

Repeated tests of the converter in customer service were also fail-

ing. Standard operating procedure in our system is to use the data in the vertical interval of channel 81 to turn on the converters. (The Zenith system uses the vertical interval of encoded channels for communications from headend to converter).

While the headend personnel checked the video and data parameters of channel 81, customer service ran further checks of its own converter system. Sure enough, the customer service converter could be turned on and off using another scrambled channel (channel 76); the data board in the channel 81 encoder had gone bad.

Installations and converter repairs resumed normally using channel 76 while the headend unit was repaired. No great harm was done — the problem had been invisible to all but a few installations, and had been quickly corrected. It took a level of experience and team work to isolate and correct. Here again, the hardware is ahead of the test equipment.

Conclusion

Addressability offers many benefits, but it also adds a level of complexity which must be carefully considered in the planning and training of the operations staff. There are days when we mourn for the converterless systems which were so easy and inexpensive to maintain. But, those days have passed and we must plan, staff, and train to the levels now required by the new technology. □


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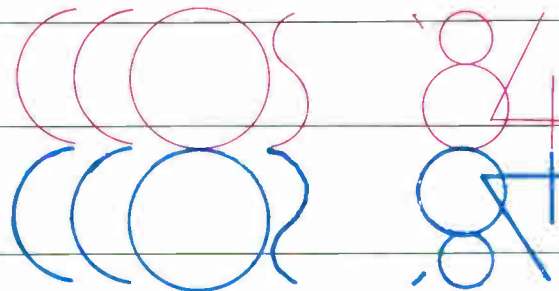
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The advertisement features a black and white photograph of a worker in a hard hat and plaid shirt operating the L-1 Cable Line Layer machine. The machine is a small, tracked vehicle with a hopper on top, used for laying cable underground. The background shows a residential yard with a lawn. Text elements include the product name 'L-1 CABLE LINE LAYER', a testimonial 'PROVEN 10 YRS', and a list of benefits such as 'EXCLUSIVE TRACK SYSTEM', 'MEANS NO LAWN DAMAGE', and 'ONLY 800 LBS. 24 1/2" WIDTH'. The contact information for WorldRadioHistory is provided at the bottom.

CCOS'84

to



*I*t's going to be a very special meeting, and the proof of that is that more people have already registered for this year's CCOS than ever before! We are going to have a compact — but very full meeting. The speakers that have been lined up for CCOS'84 will be covering more topics than we have ever attempted in the past as well — we will be running the gamut from “feed forward” technology and System rebuild and upgrade to signal leakage, status monitoring, addressability, FCC Compliance tests, legal updates on deregulation, copyright, pole attachments, buying and selling cable systems, auditing systems, setting up a program to deal with theft of service, program costs and options and much more!

As usual, CATA will stick with our informal, informational format. It will be relaxed, but it will also be a time for lots of information to pass back and forth from operator to operator — the folks who know the business best. There won't be a lot of “talking heads”, and there won't be any “government officials”. The idea is to foster active participation from all the folks who attend CCOS. This year we are going to try something

The Dates: July 16-18
The Place: Marriott's Tan-Tar-A Resort, Lake of the Ozarks, Missouri.
The Purpose: CATA's Tenth Anniversary Annual Cable Operator's Seminar

new to enhance that idea. Many of the experts who will be participating on panels will also be assigned a specific time in the “consultant's corner” right on the exhibit floor. That way all of you who are reluctant to ask questions of panelists when they are in front of a large group of folks will have an opportunity to deal with them individually. Of course we always urge that you ask your questions when the panel is going on, that way other folks (who usually have the same problems you do) get to benefit from hearing the question and answer too. But we realize, after many attempts at getting audiences to ask questions and having them all wait ‘till the panel is over before “rushing the stage”, that some of you simply have questions that are either too in-

volved, or too sensitive to be asked in an open forum. We are therefore catering to what we see as a real need for detailed information. The “consultant's corner” participants and times will be listed right in the CCOS'84 program you receive.

Another highlight of CCOS'84 will be a breakfast on Wednesday morning looking back at the last 10 years of CATA and looking forward to the future as well. You've already read about the beautiful location we will be in this year, and the opportunities for recreation are almost endless. But you won't be in on the fun and the information if you don't register soon! If you have not already gotten your registration packet from CATA, please call immediately! 703-691-8875. Also, if you have registered, and you are going to make travel arrangements, you should know that we have concluded a discount deal with TWA which will guarantee 35% off their regular fares, or their lowest special fare at the moment from wherever you are. Call TWA directly at 800-325-4933 and mention that you want reservations for the CATA convention — our special code number is 9911011. □

Letters

Mrs. Celeste Rule Nelson
Managing Editor
CATJ
4209 N.W. 23rd, Suite 106
Oklahoma City, OK 73107

Dear Celeste:

Most of your readers enjoy and respect the quality and professionalism of your publication. We all would like to see this fine tradition carried on in the future. As a small contribution to this objective, we would like to point out some serious technical shortcomings and take issue with claims made in the "Head End Start By Power" (Stand By?) article in your April/84 issue.

There is no need to dwell on the necessity of standby power in cable systems in general and, specifically, head end installations. However, applying a bandaid to a multifracture does not appear to be the best solution either.

After analyzing the real needs in this type of application the subject solution will certainly work, but has the following serious shortcomings:

There is no regulation, transient and short circuit protection in the normal or the standby mode. Therefore, the most vital protection for head end equipment is missing. In the event of a power failure the unit will transfer all right, but too slow for any data handling equipment or character generators. The depicted solution will transfer somewhere between 50 and 150 ms with commercial equipment doing it at 4 ms or less. The situation gets worse however, under "brown out" conditions with the transfer relying entirely on the drop out characteristics of a relay(s). This can lead to chattering, damaging the standby power supply and all the head end equipment. The DC switching solenoid is for intermittent use

only, and not designed for continuous operation. These devices should not be on for more than 5 minutes at a time. After the assumed total power failure, this unit will transfer to the inverter, supplying unregulated squarewave to the load. On some of the head end gear on the market this pure squarewave can create interference and hum bars on the modulators. This will happen particularly at low battery voltage with the inverter output dropping at approximately 20% from the nominal value. Since a 12V system has been chosen, standby time will be between 30 and 40 minutes maximum, which is totally inadequate for this type of application. During an extended outage the unit may go into a self destruct mode, since there is no low voltage cutout to protect the batteries and the electronics from the resulting potentially irreversible damage. On top of this, the materials and equipment used will not accomplish the necessary MTBF. The low efficiency of a 12V system is certainly detrimental to the original objective.

Regarding costs, the materials came to \$713.00. Adding two days' labor, plus freight, plus the cost for telephone calls, transportation and overhead, the actual cost approaches approximately \$1,100.00 - \$1,200.00. This appears to be false economy, since there is outstanding field proven equipment on the market which incorporates all the necessary features for under \$1,000.00.

In conclusion, it may be fun to reinvent the wheel, but let's not claim that it is a technical or economic success.

Sincerely,
Fred Kaiser
General Manager
ALPHA TECHNOLOGIES, INC.

Dear Fred:

Thanks for writing, and your points are well taken. We admit to a very serious error in the headline — it was indeed Stand By!

Your analysis of the situation was certainly correct, and we agree that such a situation would indicate false economy with the figures totaling as you suggest. We are very much aware of quality equipment available in the price bracket of under \$1,000.; however, we do have a lot of readers that are really into "doing it yourself" and accept that as part of their challenge with their cable systems, and their operation thereof. That's the way some of them want to operate and we are petitioned for "do-it-yourself" information constantly, but we acknowledge the shortcomings in this solution. I guess it must be "to each his own".

Dear Editors,

I've been enjoying your articles on the different aspects of day to day cable operations. We are in the cable business but are not satellite hobbyists. Please continue the fine articles that help us in our day to day activities and less satellite hobby type articles. Thank you.

Jim Lane
Mammoth Electric Cable TV
Mammoth Lake, CA.

Dear Jim:

We certainly appreciate your kind words and will endeavor to assist the cable operators in their daily operation and maintenance as you suggest. That was the original premise of CATJ when it was founded in 1974, and the CATA Board still offers guidelines for editorial along that vein of operation. Thanks for writing; it helps to know you're on target with your information.

It is a well known fact that you cannot please everyone with magazine content, and this was pointed out to us very succinctly by an anonymous complaint, even criticizing the schematics of the articles we carry. Because we don't know to whom to direct this answer, we will use this means to point out the credentials and experience of our writers and to explain that their schematics are not "dreamed up" by our staff, but are the results of materials furnished to us. There are times when we receive some very sketchy pencil copies, but after they are duplicated, copies are sent for correction and verification. If the Art Department receives no notice, we then have to assume they are correct as they were duplicated. They are artists — not engineers, so they have to rely on the examination of the authors. Again, we are sorry you are not enjoying CATJ, but if you had just included your name, we would have contacted you personally so that we could know what you had in mind to interest you more keenly in our magazine content. We don't mind constructive criticism, but again, without your name and address, we really don't know how to improve to please you.

EDITOR

Celeste Rule Nelson
CATJ
4209 N.W. 23rd, Suite 106
Oklahoma City, Oklahoma 73107

Dear Celeste,

I saw that you published my, "It's a self inflicted wound", letter in CATJ.

The possibility exists that someone is going to write in and say that the antenna that was damaged in Hawaii was not capable of being pointed directly straight up. I understand this is correct.

You see, two engineers were at fault! No antenna design engineer, in his right mind, should design a dish type antenna that can not be

easily pointed into what is known as the stow position from its normal operational condition. Antennas without this capability should not be installed in any location where winds can be expected to exceed the antenna manufacturers advertised survival wind speed.

The other engineer that didn't do his homework is the one that planned to install an antenna that had an advertised survival wind speed that was lower than what could be expected where it was to be installed.

I certainly hope that the engineer that has responsibility for that antenna has taken what I have been saying to heart. Because if he has, that antenna mount has been rebuilt so that it can be pointed to the stow position quickly and easily. Also he has installed a new wind anemometer at that location, just as all sensible operators have done in locations with the possibility of high winds.

If all of the antenna design engineers could have read what I said in my last letter, and this one, and have taken it to heart, several existing dish antennas, that are now in production, would have been redesigned for use in high wind locations.

Yours truly
Jon Lippitt

Attn: Mr. Steven Richey

Dear Mr. Richey:

First, let me say how much I enjoyed finding your series of articles on local advertising equipment.

We've been considering building our own switcher and thought we would try the one outlined in the December '83 article.

Most of the components are readily available, however I have not found anyone who is familiar with the switches. The article says to use 4066 Analog switches — could you provide me with a part number and somewhere that I could pur-

chase them?

I would greatly appreciate any further information that you could provide.

Sincerely,
Steven Goldsworthy
General Manager
Crescenta Valley Cable TV
La Crescenta, CA.

Dear Mr. Goldsworthy:

Thank you for your kind remarks concerning the Steve Richey articles on local advertising equipment. We have passed your comments on to him, with the question about the Analog switches.

The 4066 is a member of the standard 4000 CMOS family and is readily available in most parts outlets. However, DIGI-KEY CORPORATION has them in stock and you can contact them at (800) 346-5144.

Again, thanks for writing. Let us know if we can help you further.

Editor

Dear Readers:

I wanted to express my appreciation to those of you who have contacted me regarding the feature article in the May 1984 issue of CATJ; it was rather startling to pick up a magazine, generally familiar to me from cover to cover, and see it in print. The Art Department did a magnificent job of subterfuge during paste-up, as I was not allowed to look or peak over anyone's shoulder during that time. So indeed, it was a new experience for me to see it in living color!!

The staff's comments were heartwarming and words that I will always value. I will always treasure the friendship and good wishes extended to me by those CATJ readers who have called to tell me how much they enjoyed the article. Yes, my life has been full and interesting, and we're looking forward to another decade of progress and projects for which all of us here at TPI can be proud. Thanks for your comments.

Celeste Rule Nelson

□

WHEN WAS THE LAST TIME YOU BOUGHT SOMETHING THAT WOUND UP BEING WORTH A FORTUNE?

HOW ABOUT CATJ's LITERATURE IS IT TIME TO RESTOCK?

FCC WALLCHARTS: 1) FM TRANSMISSION WALL CHART - Basic introduction to FM transmission, helping you to recognize particular distortions or set up problems. 2) HEADEND/INTERFERENCE WALL CHART - has photos of off-air headend problems. Each is identified and solutions given to eliminate it. 3) FCC TESTS WALL CHART - Has more than 60 photos of typical plant problems. 4) CB INTERFERENCE WALL CHART - Solutions to CB interference.

NATIONAL STANDARDS FOR CATV SYSTEMS — GRAPHIC SYMBOLS, this Brochure of National Standards for CATV systems Graphic Symbols helps you standardize your grid and map preparation. Order one for each of your operators and engineers.

SIGNAL LEAKAGE LOG—For recording cable television signal leakages in the Aeronautical frequency bands (108 - 136 MHz and 225 - 400 MHz). Also used by cable system operators to record all system signal leaks and insure an effective on-going signal leakage and insure an effective on-going detection and correction program.

W.T.F.D.A. TV STATION GUIDE — Lists TV stations in the U.S., Canada, and Mexico and their call letters, network affiliations or programming format, station locations, effective radiated power and antenna height.

CATJ'S INDEXED VOLUME & SUPPLEMENTS: A compilation of the major articles since the inception of CATJ (May 1974 through 1979). Separated by subject matter. 1980 and 1981 supplements available.

Quantity

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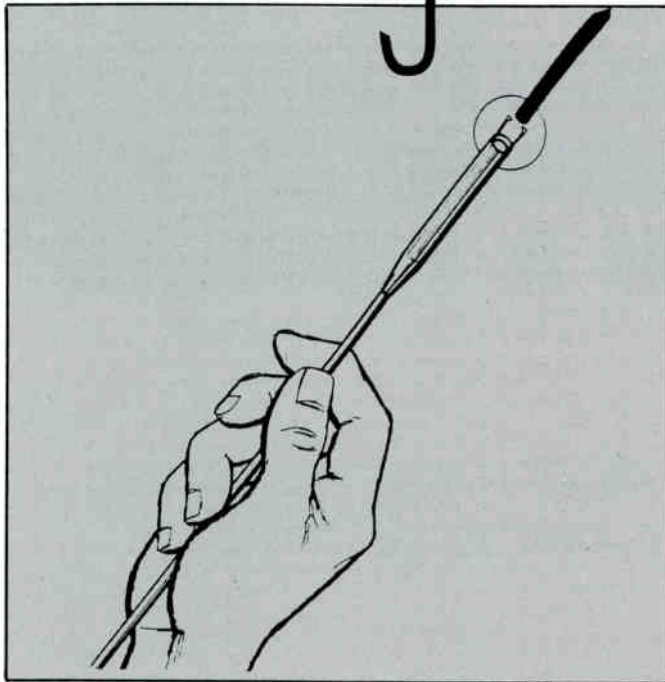
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Let's Go Fishing

by: Ralph A. Haimowitz
Director of Engineering
CATA



*KES Model
CD59-6U
Cable Puller*

Have you ever experienced the frustration of the cable installer in pulling coaxial cable through walls and partitions? Now there are two devices to help solve these problems. The first of these is:

#1 THE KES MODEL CD59-6U CABLE PULLER

The KES CP59-6U cable puller is an ideal tool for pulling drop cable through the holes drilled in outside walls or inside partitions. The ones we tested were approximately 18 inches long and are composed of a

stainless steel sleeve that fits over a bronze rod which has two steel gripper fingers at one end. The stainless steel sleeve pulls back on the rod about 2 1/2 inches to expose the spring steel fingers.

To use this tool properly, once the access hole has been drilled through the wall, you need to expose the gripper fingers by sliding the sleeve back on the rod. Then place the end of the drop cable between the gripper fingers and slide the sleeve forward to secure the cable between the gripper fingers. The handle end of the tool is then inserted into the pre-

drilled hole and pulled through from the opposite side of the wall. The tool pulls the cable through the wall. Once the cable has been pulled through the wall, the sleeve is pulled back onto the rod to release the securing pressure on the gripper fingers, and the cable is removed from between them.

We found, in testing the KES CP59-6U, that an occasional light spray of WD-40 helped to keep the stainless steel sleeve free and easy to slide back and forth on the rod. Two of the tools that were not sprayed and not used regularly had the stainless steel sleeve freeze on the rod and had to be "broken free" with a fairly strong twisting pressure on the sleeve. However, once free and sprayed with WD-40, the tools operated perfectly.

The KES CP59-6U has been tested over the past eight months in several cable systems to determine its usefulness and how well it would withstand the rigors of normal, everyday use in the field. The reports, in every instance, were highly favorable. The KES CP59-6U has proven to be a most helpful tool in making house drop installations, and not one of the units under test has been broken or damaged.

The KES Model CP59-6U Cable Puller is available from Klungness Electronic Supply, P.O. Box 885, Iron Mountain, MI 49801, (1-800-338-9292) at \$5.75 each.

#2 THE "FISH GRABBER"

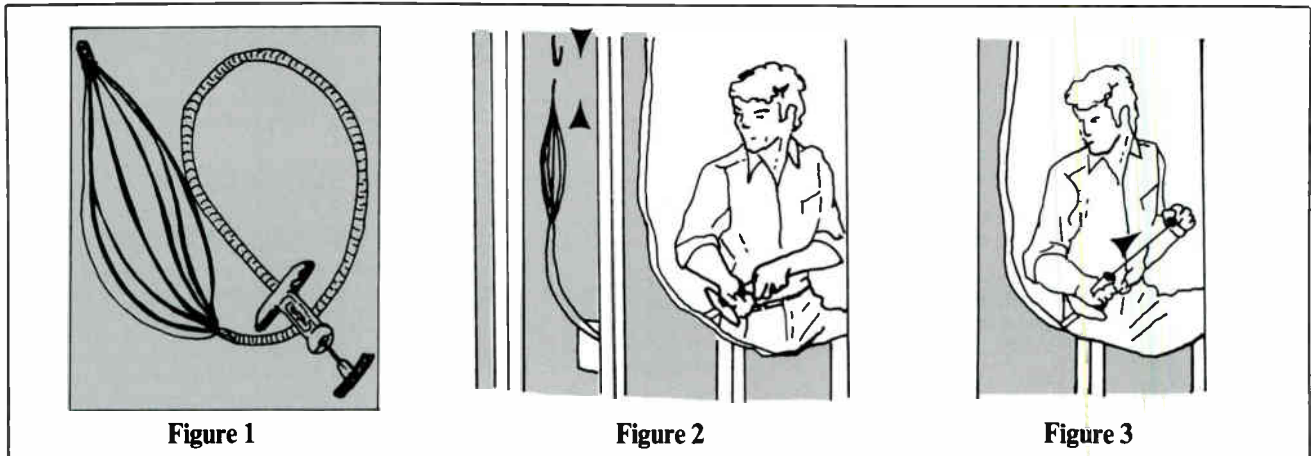


Figure 1

Figure 2

Figure 3

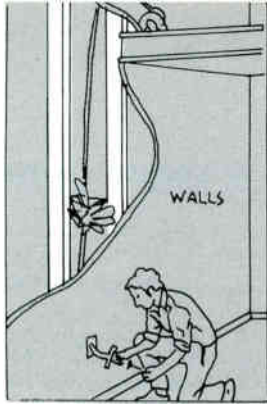


Figure 4

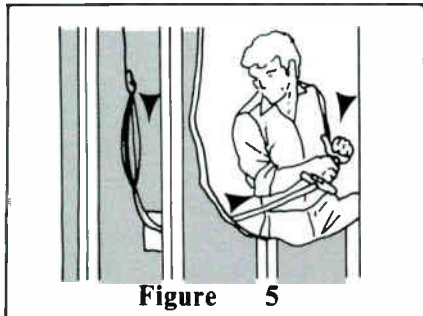


Figure 5

The second helpful device is:

"THE FISH GRABBER"

For those of you who have to "fish" wires and cables through walls, floors, and ceilings to wire buildings for cable television service, there is a handy device called the "Fish Grabber".

The "Fish Grabber" is approximately 5 feet long overall and is made with unbreakable Lexan handles, and a three foot flexible casing that is made of interlocked, chrome-plated steel that is wire reinforced. The "T" handle is attached to a 1/8 inch flexible steel shaft that feeds through the flexible casing, with the far end of the casing and the flexible shaft ending in hydraulically compressed fittings. Between the fitting on the casing and the fitting on the end of the shaft are six flexible "catch" loops made from high strength, 20 strand aircraft cables that have been sheathed in a teflon coated, abrasion-resistant nylon casing.

The cluster of flexible catch loops folds flat with the flexible shaft inserted all the way into the casing for insertion of the device into any concealed area such as walls, ceiling, and floors (Figure 2).

After insertion into the opening, pulling the "T" handle back out from the casing 8 to 10 inches causes the catch cluster to open like an um-

brella, providing a target of several hundred cubic inches for a standard type fish tape to grab on to (Figure 3).

Insert the fish tape into the concealed area from the opposite direction and simply catch on to one of the "Fish Grabber" loops, or reverse the procedure and maneuver the "Fish Grabber" loops to catch the hook on the end of the fish tape (Figure 4).

Once the "fish" is hooked, the catch cluster is collapsed by pushing the "T" handle forward, sliding the flexible shaft into the casing. Then the "Fish Grabber" is pulled back out of the opening in the concealed area, bringing the fish tape with it (Figure 5). Your cable can now be pulled in with the fish tape.

The "Fish Grabber" can be used in almost any instance where cable must be installed in concealed areas, including those where the space is very narrow or where insulation is used. The manufacturer provides easy to understand, detailed instructions for the tool under all conditions of use.

Occasional maintenance in the "Fish Grabber" will keep it in top notch operating condition. The catch loops can be straightened with side cutters if they become bent, and cleaning and oiling of the flexible steel shaft will keep the tool operating smoothly.

We found the "Fish Grabber" to be very helpful in wiring mobile homes for cable house drops where we had to fish the cable up through the floor at inside walls. We ran our fish tape through a pre-drilled floor hole at the proper location and pushed it toward the exterior side of the mobile home. Using the "Fish Grabber" from the outside edge of the mobile home where our ground block or splitter was located, and fishing for the fish tape hook with the "Fish Grabber", allowed us to make an easy catch and grab the fish tape. We then used the tape to pull our cable back through the floor.

The "Fish Grabber" is available from ComTec Industries, Inc., 226 Robbins Avenue, Rockledge, PA 19111 (1-800-523-0185), and costs \$44.95. □



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Showcase

C-COR ANNOUNCES PRICE REDUCTION ON FEEDFORWARD PRODUCTS

C-COR Electronics, Inc. announced that effective immediately the unit price on all of the company's feedforward products will be reduced by up to 30 percent. C-COR has stated that it can offer the reduction because the feedforward products are an extension of the existing amplifier product line; therefore, C-COR has been able to incorporate the same efficiencies in manufacturing feedforward products as the conventional amplifier product line. In addition, the feedforward Triple S (Sealed Signal Synchronizer) ceramic delay line (patent pending) represents further manufacturing savings. Furthermore, C-COR manufactures its own feedforward gain block, freeing the company from dependence on expensive external sources for that vital component. C-COR's feedforward products, which qualify for the 3-year warranty, offer the same high degree of reliability that the industry has come to expect from all C-COR products.

Commenting on the announcement, C-COR president I. T. Saldi said, "This is not a special sale or limited time offer. The price reduction has been made possible by the acceptance of our feedforward products in the marketplace and the resulting economies of volume production."

C-COR first introduced its ceramic delay line feedforward trunk stations and extender amplifiers in November, 1983. Since then, more than 25 MSOs in the USA, Canada and Europe have placed orders for C-COR's feedforward products. In addition, order backlog for feedforward products is healthy. C-COR's feedforward products, with three patents pending, represent a technological breakthrough featuring simplicity of design, unique ceramic delay lines, only six adjustment points and a solution to the problem of stability at temperature extremes. Applicable in both new construction and rebuild situations, feedforward products permit a reduction in the number of amplifiers required while providing higher quality performance. Older systems can rebuild with the higher-capacity, drop-in feedforward amplifiers without incurring the costs of total rebuild. Larger systems can often eliminate costly antenna/hub sites since feedforward amplifiers extend the reach of the cable system.

In addition to new pricing on the feedforward products, C-COR's April 16, 1984 Price List will incorporate minor adjustments on the pricing of other C-COR cable television and data transmission products.

C-COR designs and manufactures high quality electronic equipment used in cable television and other broadband communications systems. Principal pro-

ducts include a variety of amplifiers and other electronics equipment, including main line passives. Data products include split-band amplifiers, local area network amplifiers and modems. C-COR manufactures an off-premises addressable converter system — SCAT Series 10, designed to protect the cable system operator from signal piracy and equipment loss and to enhance operator flexibility. For more information, contact C-COR at 60 Decibel Road, State College, Pa. 16801 or call (814) 238-2461. ●

WPIX SATELLITE PREVIEW BEGAN APRIL 15 BY UNITED VIDEO

WPIX New York Alive, cable's newest entry for independent satellite programming, made an early debut beginning at midnight April 15th to give cable operators two weeks to preview and test the service without charge, according to **United Video**.

The transmission preview allows cable systems nationwide to adjust their satellite antennas for maximum signal reception and to preview programming. Official full-time transmission was earlier announced to begin May 1st explained Roy Bliss, UV's chief operating officer.

The signal is uplinked from New York to the Satcom IV Satellite and on Transponder 19, an 8.5 watt transmitter. Systems are encouraged to participate in the preview, Bliss explained, "We feel strongly that with WPIX's programming quality, many systems will want to add its programming after the preview. Plus, if there are any initial transmission problems, we would like operators to report them before the official turn-on, May 1." Bliss added.

United's toll free number for systems participating in the preview and reporting signal quality is 1-800-331-4806.

"Also encouraging is the fact that more than 50% of our commitments have come from systems who had not been getting WPIX via microwave. System operators are apparently looking for a strong, east coast station to fill a niche in their programming," he continued.

Some of the systems who will carry WPIX include U.S. Cable in Tri-County, N.Y.; Full Channel TV, Warren, R.I.; Reed's Cable TV in Wellsboro, Penn.; and out-of-region activity includes Puerto Rico.

WPIX is one of United's satellite services that also include WGN, the Chicago SuperChannel, The Electronic Program Guide, Zephyr Weather, Moody Bible, Seeburg Music, WFMT Fine Arts Radio and Satellite Music Network.

More information and details about WPIX and other United Video services are available by calling Bob Price toll free at 1-800-331-4806. ●

CWY Electronics Introduces State Lock

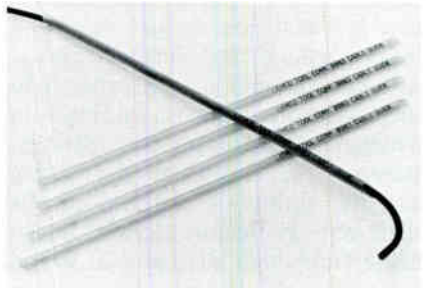
LAFAYETTE, IN — A new stake locking device from CWY Electronics hinders removal of the pedestal stake. The Model SL stake lock utilizes an arrowhead design, making it difficult to remove



once installed. The stake lock is simple to install, fits all CWY pedestal stakes and certain other select brands, is plated for durability, and comes complete with hardware. For more information on the Model SL stake lock, contact: CWY Electronics, P.O. Box 4519, Lafayette, IN 47903, or call toll-free: 800-428-7596. In Indiana: 800-382-7526.

LEMCO TOOL NEW PRODUCT MODEL-B983 DROP CABLE GUIDE

The Lemco Cable Guide is a solution to a clumsy and time consuming problem: getting the service wire through the wall.



After drilling a 3/8" hole, place the guide through the wall. The tapered end helps you locate the hole in the opposite side. The flared end prevents the guide from pulling through the wall. Feed the cable through the guide until it is well inside. Pull the guide from the wall; a slit is provided on the guide to remove it from the wire.

Additional information available from: LEMCO TOOL CORPORATION, R.D. #2, Box 330A, Cogan Station, PA. 17728, Phone: (800) 233-8713 (Toll Free) (717) 494-0620 (Pa. Collect).

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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

Associate Roster

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Clovis, CA 93612
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Dunwoody Rd., N.E.,
Atlanta, GA 30342
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(S9, Brokering &
Consulting)

BEI
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Olathe, KS 66061
800—255-6226
(M9 Character
Generators)

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

Cable-Text Instruments,
Div. of Telpar, Inc.
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Addison, TX 75001
214—233-6631
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* **Anixter Communications**
4711 Golf Road,
Skokie, IL 60076
312—677-2600
(D1)

**Ben Hughes
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Old Saybrook, CT 06475
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(M6, 9)

* **C-COR Electronics, Inc.,**
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SVC)

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Components)

Budco, Inc.,
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Tulsa, OK 74115
1-800—331-2246
(D9, Security &
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CableBus Systems,
7869 S.W.
Nimbus Avenue,
Beaverton, OR 97005
503—543-3329
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St. Paul, MN 55104
612—645-9153
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500 S. Buena Vista,
Burbank, CA 91521
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(S4)

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Perry, OK 73077
1-800—654-6481
(M9)

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1-800—526-4100 or
1-800—227-0700 (West)
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M5, 6, 7, 8, 9 Plastics)

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Emmetsburg, IA 50536
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**Electroline TV
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514—725-2471
(M4, 5, 7, 9, D7, 9)

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(M2, D1, S1, 8)

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(M9)

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(S9)

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602—245-1050

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(S29, Programming)

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904—769-2321

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D9—Other	M9—Other	S9—Other

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212—708-1600
(S4)

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(M1, 4, 9 Converters)

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(S9)

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In PA. 1-800—492-2512
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(D2, 3, 4, 5, 6, 7)

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

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

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

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

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

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

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

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

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

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

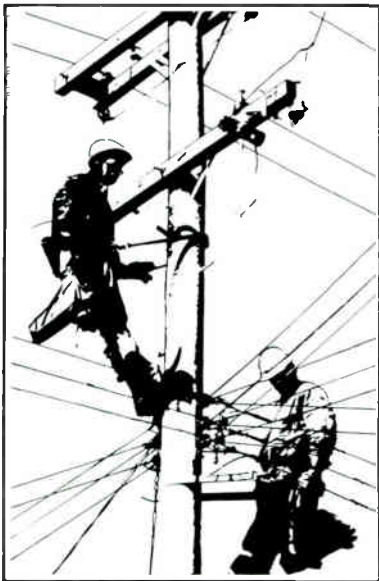
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San Angelo, TX 76901
915—655-6262/653-3363
(M2, 9 Towers)

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

United Video, Inc.,
3801 South Sheridan Rd.,
Tulsa, OK 74145
1-800—331-4806
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Microdyne's new system was introduced at the Canadian Cable Television Association show at the Capital Congress Center, Ottawa.

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