

who live there would welcome cable with open arms.

(7) *New Population Centers* — Man is always looking for new opportunities to turn a barren piece of ground into a home for a few thousand people. Some of the most "ideal" settings are often buried in canyons, behind hills, or along lake shores. Man made lakes are just naturally built where the land is *low*, and the water usually stops well below the top of the hills that make up the potential lake bed. *People naturally build homes along the shoreline.*

Several enterprising cable people in Texas have nice, 200 to 700 subscriber cable systems started along these lake-shore areas. Often you deal initially with not a county or city governing board, but rather with a land developer. The "franchise" you acquire may be more in the nature of a business license or con-

tract, and you may never cross *public* rights of way or have need for a normal franchise. But as long as the present FCC rules stand, if your area has or will have more than 50 subscribers, you will need to investigate the FCC Certificate of Compliance problems.

All of this goes without mentioning the usual arrangements with trailer courts, resort areas and even camp grounds such as KOA. A number of very nice small systems have been built in KOA campgrounds along the Florida coast and down into the Keys, by working out an arrangement with the camp ground owner. Campers that spend as much time on the road as off seldom have much more than a "camper-special" antenna there, and once the camper sits down for a night or week at a point where these ten foot high 2-3 dB gain affairs are well out

into the B service regions, TV service is anything but satisfactory.

The story here is that poor TV reception does not have to extend over a *full* community to make a CATV situation viable. If the impaired region is only a *portion* of a community, and the service you will offer *can* improve reception, there is no reason for you to treat the isolated "CATV opportunity" any differently than you would if a whole community was involved. As long as you seek a franchise *only* for the *portion* of the community suffering degraded reception, and the franchise you receive spells it out in terms of franchise area, even the FCC won't give you difficulty with a CAC, as long as you treat that proportional area in the same manner as you would otherwise treat the *whole* community, if *that* was the franchise region.

## BUILD YOUR OWN TEST EQUIPMENT A Modulation 'Stripper' For Counter Freq Measurements

### *Bite the Bullet*

After four years of FCC tests and harrassments 1976 is here and it looks like it is not going to go away. 1977 follows, as sure as the sun continues to rise. And up until now the small CATV system operator has had but four choices regarding FCC testing:

(1) Pay an "independent" outside "expert" from \$175. to \$2,000. to come in and perform the tests for you;

(2) Spend upwards of \$2,000. for the test equipment required to make the annualized tests;

(3) Sign up for the CATA test program at \$500. or \$600. per shot;

(4) Ignore the tests altogether and hope that either the sun quit coming up, or the FCC goes away (not necessarily

in that order!).

Facing facts (a fact being something we have to live with, like it or not), it appears *likely* that *some* form of testing is going to be with us. This is my *personal* opinion, one not universally shared, and probably shared by few small system operators. *If* indeed this *is* fact, then perhaps the time has come to approach the testing requirements with some degree of professionalism.

Testing takes test equipment. That is one of those facts we have to face. Yes, you can do quite a bit with the CATJ FCC test Compliance Wallchart, but can you go back and make repeat comparison tests time after time by using the wallchart and calibrated eyeballs? Of course

you can't.

Testing takes test equipment, and test equipment takes money. That seems to be the point where most people stop this "scrabble" game and go back to more interesting pursuits. Now money comes from subscribers and subscribers stand in line for our service only when the service is worth money. So it follows that if testing makes for better service and better service makes for more money, at some point there is an economical and viable trade off between spending *some* money for testing and getting *some* of that money back, ultimately, with more subscribers and happier subscribers.

You possibly are not yet convinced testing is a good idea.

How much money should testing cost? Inversely, what kind of testing are you going to do, and to what degree of accuracy should your test results be read?

I have approached CATV FCC testing as (1) a way to achieve better pictures a higher percentage of the time, and (2) a lesser evil than being the recipient of a nasty (and possibly expensive) visit from an FCC field van. At some point the cost of the test equipment washes out with the better pictures achieved, and at some other point the cost of the testing equipment exceeds the cost of the potential FCC hassle.

Suppose you could do *all* of your FCC required tests for say \$300-\$400 in test equipment that you do not now have on hand. Is that a good number? Now suppose that same equipment could be put to additional use every week of every month in your system, to achieve better pictures. If you still charge \$5.00 per subscriber per month, how many new subscribers would

you have to pick up to justify a new expenditure of say \$400.? The answer is fewer than ten.

That is what this "series" of articles is all about; test equipment. Test equipment you can build, on your own in your own shop, at your leisure pace so that your system can maintain better quality pictures, and so that you can also have the tools on hand to make FCC tests on your own, to prove compliance should the need ever arise. This will be a series of articles describing five separate but related pieces of simple test equipment. We budget the cost of the parts at between \$300. and \$400. for all five units. If you are not a builder but like the concept, we have excellent reason to believe there may well end up being commercial units available that perform the same functions as the units to be described, for possibly \$700. for the *complete* package.

The first piece of equipment to be described is a low-cost video stripper, a box that allows you to feed a single TV channel

into it, and then strip away or remove all of the video modulation so that what remains is a single (CW) carrier. Then, with a suitable frequency counter, you can proceed to measure the frequency of the video carrier for compliance with the  $\pm 25$  kHz tolerance permitted by the rules. We will, in the series, provide instructions for constructing your own 250 MHz frequency counter, but not this month.

In the second installment of this series we will construct a wideband noise generator source, which with a suitable (you already have this) signal level meter will allow you to check the flatness of the channel passbands in your system. In another installment we will describe construction on a wide band adjustable signal generator (CW) which, in conjunction with the counter, will allow you to accurately measure and mark the channel edges. Finally, we will show how to construct a calibrated dipole for radiation level measurements, along with a

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All other areas: contact Avantek, 408/249-0700.

**Avantek**

flat, broadband amplifier to be used in conjunction with the dipole to give signal level readings which you can measure on your SLM.

This series will not appeal to everyone. It is not intended to do so. There will be segments of the series which will appeal to you, and whether you construct the equipment on your own, or select a unit or two to construct, or simply read and learn how such devices work, you will, we promise, be better informed for the few months you spend with us as we wind our way towards the March 1977 FCC test deadlines.

### Stripper

This month's project is a simple device that will remove the modulation from the video carrier. You can make it as simple or as complex as you choose; what we will deal with here is the basic approach, and a set of instructions with the schematic to make the unit fly.

The heart of the unit is the RCA CA3012 IC; and IC package that was intended initially to function to only 10 MHz, but which function fine up to 220

MHz (and beyond) with a loss of gain.

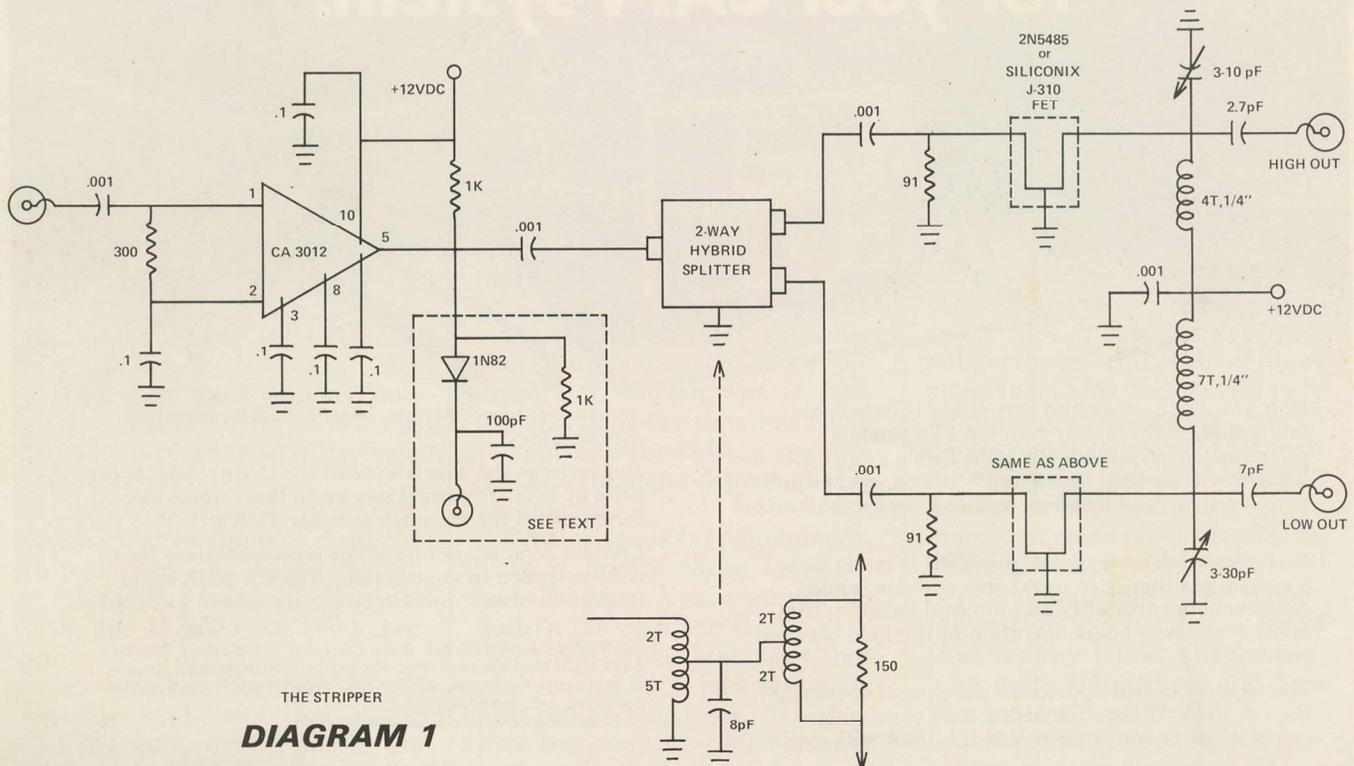
To use the stripper, you insert the output of your processor (with the audio level control turned way down, or with an adjustable trap after the processor/strip amp to trap the audio out) into the input of the stripper, and connect the field strength meter you already have to the output of the stripper. If you are plugging a low band channel into the stripper, plug your SLM into the "low output" of the stripper; if you have chosen a high band channel, plug the SLM into the "high output" of the stripper. Now adjust the 3-10 pF or 10-20 pF output tuning capacitor for maximum indicated carrier output on the SLM. Then replace the SLM at the output with the counter you have or will have, and measure your frequency.

You will recall that you do *not* need to measure the audio 4.5 MHz sub carrier on your system *unless* you are generating within your system the 4.5 MHz sub carrier. That is, for heterodyne and strip processing, there is no FCC mandate that you check or test the 4.5 MHz sub carrier(s). However, if you have a modula-

tor that does generate video and audio carriers for any Class I (i.e. off-air or broadcast) TV channel, you are required to measure not only the video carrier frequency but the audio (sub) carrier as well. Look again at diagram 1. Note that there is a portion of the parts layout appearing in a dotted-line box. This portion stays as shown in diagram 1 as long as you have no locally generated 4.5 MHz sub carriers. As soon as you have to check *both* visual *and* aural carriers, you will need to add the parts in the dotted box with those shown in diagram 2.

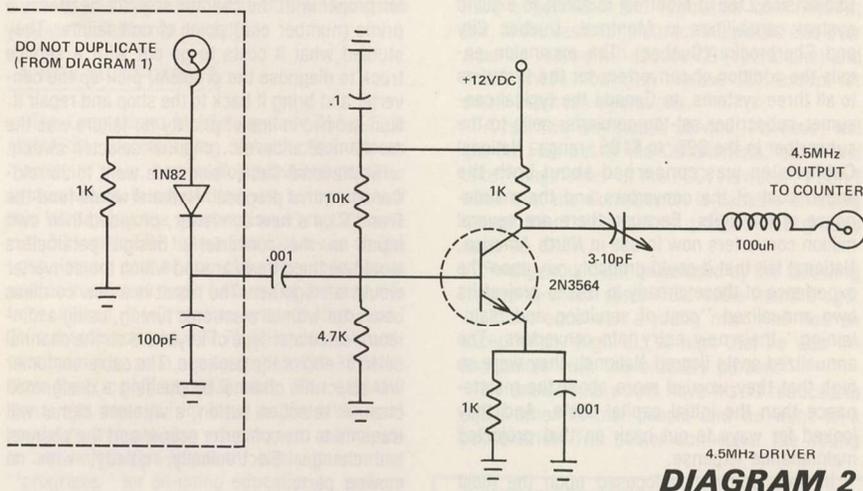
To measure the frequency of the audio carrier, turn the audio carrier level control back up (or alternately remove the external trap added, for the processor with no separate audio level control), and connect the frequency counter to the 4.5 MHz output shown in diagram 2. The counter *will jump about* under TV audio modulation, so *wait* until there is a totally quiet period on the audio (by monitoring a TV receiver) and then read the counter for the proper 4.499 to 4.501 MHz region which passes FCC spec.

Parts are called out on dia-



THE STRIPPER  
**DIAGRAM 1**

grams 1 and 2; the IC layout for the CA 3012 appears here as diagram 3. The CA 3012 is available at most RCA distributors (i.e. parts supply houses handling RCA line parts), and there is an exact replacement in the Sylvania ECG line (#726). This series will continue in the October CATJ.



## TECHNICAL TOPICS

### KLYSTRON SHORTAGE

Users of Raytheon KTR-2 microwave and some Collins microwave of the 1965-1971 or thereabouts era have a problem. It seems that the transmitting klystrons (**QKK1237**) are suddenly in short supply and new deliveries are not likely until January 1977.

Originally the QKK1237 units were to be cycled every 6 months or so and one could expect 12-24 months of service from them. They cost around \$850.00 when new. Then the prices jumped to around \$1,000., after 1972 or thereabouts. Lately, the prices have gone to \$1,600.00 each, if you can find them. At the present time Raytheon and Collins are out of the QKK1237 and are quoting 'next availability' as after January (1977). Obviously in a time of short supply (or no supply) people who have a few hoarded away are not about to admit it. But there is the chance that a CATJ reader may: (1) have an abundant supply, or (2) know of some firm someplace that still rebuilds the transmitting klystrons, or (3) know of some obscure source for the unit.

CATJ has several system operators filed away in a "Help Us" file folder who either need a replacement or two today or yesterday. Can anyone help? Contact CATJ's Editor In Chief Bob Cooper if you can help.

### INNOVATIVE CONVERTER R & D

During the past several years, the fortunes of the major equipment suppliers to the U.S. CATV industry have fallen into tough times. The closing of the Theta-Com line equipment production facility announced in late June is but the tip of an iceberg that extends in varying degrees throughout virtually all areas of CATV equipment production.

A number of people, some who know of what they speak, have lamented of late that the larger suppliers have cut way back (or even eliminated) new, innovative, research and development. And if you are a far-sighted person it does not take you long to figure out that if R and D of

new generation equipment comes to a standstill, sooner or later (and probably sooner) the appearance of such new equipment on the marketplace also comes to a halt.

In CATV as in virtually all phases of electronics, component R and D goes on constantly. New and better IC's, new and better transistors, new and better thin film filters (etc.) are being developed daily. But the adaptation of these new discrete parts into working CATV "appliances" is the responsibility of the CATV industry's suppliers. Alas, without R and D money, there are not the talented people available to develop new circuits and new innovative ways of making equipment smaller, less costly and less demanding on the operating voltage/current supplies.

So where are we today in innovation? At this time, we have probably lost no less than 12-18 months in the past three years. In other words like it or not, during the past 36 months while component technology and system technology in other areas of electronics has continued to grow, CATV has at best managed to keep up with no more than 1/3rd to 1/2 of the R and D it should have been doing parallel to the emergence of new components and systems.

Such are the consequences of cut backs in CATV plant gear sales, and the inevitable cut backs in operating capital for R and D. So what is likely to happen in CATV in the years ahead?

With the exception of areas such as test equipment and some headend or pay cable "appliances", CATV technology is likely to begin to run counter to the trend we have seen during the first twenty-five "serious" years of CATV development. Rather than leading in the development of broadband communications technology, we are apt to "follow". Whole generations of new components, IC's, transistors et al will be developed and passed over without as much as a look-see from CATV R and D facilities. This will hurt us tomorrow, it is already hurting us today. For without constant adaptations of our circuits and designs to the latest state-of-the-art technology, we will find equipment that was once being outmoded every five to seven years now

being outmoded in three to five year periods. Replacement parts, and replacement technology will be harder to come by, because we will be generations behind in component useage, rather than current.

Can the emphasis shift back towards innovation? Perhaps, if there is re-newed growth in CATV plant construction and our primary suppliers once again become healthy enough to re-staff their curtailed R and D facilities.

Or, perhaps there is another answer. System funding of R and D. The August CATJ contained a system designed scheme for producing an at-video microwave alarm system (see CATJ August, Page 26). This type of innovation would at one time have come from a supplier. Telesis had an operational problem which demanded a technology answer. Bill Ellis searched for a product to solve this problem, and finding none dipped into his own "special projects budget" to create the answer.

But, there is a fly in that ointment we well. The people who logically have the greatest need for new products and new innovations are the larger system operators, in particular those going into major market situations. And if one studies the annualized financial reports of these system operators closely, one finds that they too are in a period of very tight money. The systems who have money available are the medium to smaller systems, where traditional services largely do not require new, innovative equipment. They, the best candidates for innovative R and D funding, have the smallest need for such R and D. It is a vicious circle and the dog chases the tail, but never quite catches it.

Perhaps there is yet another answer. Any system or MSO passing large volumes of cash through its books (regardless of whether there is a profit at the bottom line) should be receptive to ways to cut operating expenses. You may not be making money, or you may be breaking even. But if someone can show you how the money you are now spending can be trimmed, while the job being done continues at the present level or even a more efficient level, you should listen. An example to point. National

Cablevision Ltee of Montreal is about to expand system capabilities in Montreal, Quebec City and Sherbrooke (Quebec). The expansion entails the addition of converters for the first time to all three systems. In Canada the typical consumer-subscriber set-top converter sells to the subscriber in the \$95. to \$105. range. National Cablevision was concerned about both the added cost of the converters and the maintenance of the units. Because there are several million converters now in use in North America, National felt that it could probably rely upon the experience of those already in use to **project** its own annualized "cost of servicing and maintaining" their new entry into converters. The annualized costs floored National, they were so high that they worried more about the maintenance than the initial capital costs. And they looked for ways to cut back on that projected maintenance expense.

In their study they focused upon the most frequent cause of converter failure in the hands of the cable subscriber, and they found that the remote control head cord, that links the conver-

ter proper with the channel selector head was a prime (number one) point of unit failure. They studied what it costs to go out with a service truck to diagnose the problem, pick up the converter and bring it back to the shop and repair it. Number two in line of priority for failure was the mechanical slide/etc. channel selector switch.

So National Cablevision Ltee went to Jerrold-Canada with a proposal. **National would fund** the R and D on a **new** converter, provided their own input on the converter's design parameters would be the criteria around which the converter would fall together. The result is a new cordless converter with all electronic tuning, using a miniature calculator type of keyboard on the channel selector end of the package. The cable customer will select his channel by pushing a designated channel selection button, a wireless signal will transmit to the converter proper and the channel will change. Electronically, quietly, with no moving parts.

National Cablevision Ltee is reported to have spent upwards of one million dollars in funding this R and D. The converters to be manufactured

in Canada by Jerrold-Canada will be available in the spring of 1977. They will have a customer price tag of \$150. (that is the price a cable customer will pay for the unit if bought outright), and they will be marketed in Quebec by National, as an adjunct to their own internal use of the converter in their own three large systems.

Will this National/Jerrold converter be available in the United States? The bets are that sooner or later it will find its way across the border and into the United States. The Canadian's can take real pride in their own innovative approach to a problem which should have attracted the attention of suppliers here in the United States. In all fairness to those suppliers, however, the problem probably **has** attracted their attention, but finding a loose "million dollars" to fund it was quite another matter. It is important to note that National Cablevision Ltee assumed this somewhat unorthodox stance of being an R and D "funder" because it looked carefully at the bottom line of its projected P and L's, and set out those items where the cost of business seemed too high. From that simple, straight forward "good business judgement" approach came ultimately the decision to fund a converter. Perhaps other systems would do equally well to take a hard look at their own "bottom lines", and at the cost-items that go into their operating overhead. Cost cutting through innovation is hardly new in business, but it is a fresh approach for the cable industry. **There may be hope for renewed R and D efforts yet!**

#### CARS BAND CHANGES

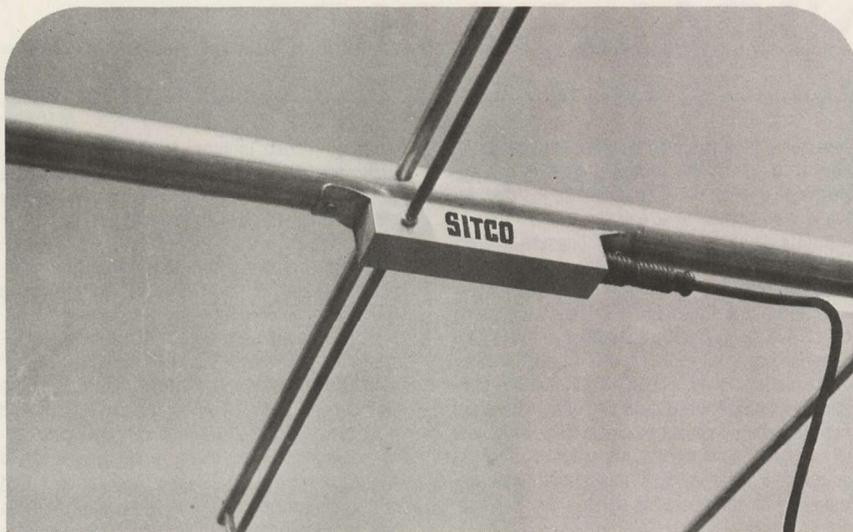
As reported in the June CATJ (pages 30-34), the FCC has been considering some "editorial changes" in the Part 78 rules governing operation of CARS band (relay) stations for CATV.

In mid-July, the Commission released an announcement codifying the expected changes, as follows:

(1) **Section 78.69** previously required CARS band operators to log the date and time of the beginning and end of each period of transmission of each CARS band transmitter. This rule has now been amended so that unattended (i.e. remote control) CARS band stations are no longer required to keep "logs" of station transmitter operations.

(2) **Section 78.109** has required that a CARS band licensee who sought to change out one brand or model of type accepted transmitter with another brand or model must **first** obtain Commission approval for the change. Under the amendment, you may change out your CARS band transmitter without prior Commission approval **provided**: (A) there is no change in the power delivered to the antenna, (B) there is no change in the type of modulation, and (C) there is no change in the form of emission which results in the new transmitter occupying more bandwidth than was initially authorized. A licensee may now make such changes **without** Commission approval, **but**, you are still required to notify the Commission under 78.109 (b) that such a change will be made (i.e. you notify the Commission so that they may in turn up-date their own records, but you do not need to file any **formal** applications **before** change-out nor do you need to wait for Commission response, provided the equipment you change-out to is approved under the requirements of 78.107 (b).

(3) **Section 78.109** formerly required that prior to a change in the CARS band transmitter's



## MAKE THE CHANGE

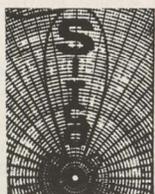
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**control system**, that a formal application to the Commission for approval to make the change was required. Under the new rule change, all that is required is that you give the Commission ten day advance notice if you plan to modify the (remote) control system. Any such ten-day notice must include a full description of the control system including a showing as to how the new (remote) control system will comply with the requirements of 78.51 and 78.53 (78.51 covers remote control operation and 78.53 covers unattended operation). The Commission is "retaining" the right to notify you, after study of your ten-day notice, not to make the change or to suspend the change when in their view your proposed system will "not be in the public interest, convenience or necessity."

(4) **Section 78.113** has required CARS band licensees to make frequency measurements on CARS band transmitters no less frequently than once per month. By change, these measurements are now required when a transmitter is initially installed (i.e. such as when a replacement unit is installed, or for a new installation), when any maintenance to the transmitter may result in a change of frequency of the transmitter, and annually. The "and annually" part is a replacement of the prior "monthly" requirement.

Using the vehicle of the notice of the rule changes, the Commission also addressed itself to two other questions. By editorial addition, the rules governing towers, painting, lighting et al are now incorporated into Part 78 (they were previously cross-referenced to Part 17). This means that when you obtain a **new** copy of the **new** Part 78, everything you need including tower information should be there in one spot. Additionally, the Commission addressed itself to the matter of changing polarization of the CARS band transmissions. Apparently a number of systems had asked if they could rotate the polarization (i.e. from as-licensed horizontal to new-polarization vertical) **without** Commission approval. **The answer is no.** The rationale behind this is that a change in polarization is in effect a change in the geographically related assignments in the CARS service from a real or potential "interference" standpoint, and that if you are going to make a change that may upset "their allocations" formula, it needs their approval first. So keep your hands off the feed on your dish unless you have Commission approval to "rotate."

#### **EARTH TERMINAL SHARING**

The Commission has ruled that bona-fide non-profit, cost-sharing arrangements for CATV earth terminals **will be allowed.**

The criteria under which applications for "shared facilities" will be studied are identical to those found in the CARS Band rules, section 78.11. Section 78.11 allows joint-use of (CARS Band) facilities when there is a written contract between the parties, and when said contract spells out that any capital contributions to the project by second (third, etc.) companies are on a "cost-sharing, non-profit basis, prorated on an equitable basis among all cable television systems being supplied with television programming."

Anyone interested in going into a joint-earth terminal program should first familiarize themselves with the requirements of 78.11, and then proceed to draw up their joint-use earth terminal program so that the capital contributions for the terminal satisfy these requirements. The first such formal approval for such a cost-shared

system was approved by the Commission at Hayward, California on July 2.

#### **A NEW MUST-CARRY?**

The Long Island Mobile Amateur Radio Club (LIMARC) is completing construction on an "amateur" (i.e. ham-radio) **television repeater** system which it is expected will be operational this fall serving the greater New York City area with 500 watts ERP from a 300 foot tower on the Long Island end of the city. The repeater is unique in amateur-radio because of the **way** it is to be utilized. It will receive amateur "fast-scan" TV transmissions on 427.75 MHz and rebroadcast them (i.e. as in a repeater) on 439.72 MHz. Now the (really) unusual part. The LIMARC group has arranged for local (to the NYC area) amateurs who are **also** educators to participate in an "interactive-terminal" basis to conduct "programs" for on-going education in matters pertaining to amateur radio and communications in general. For example, through an inter-active (that means two-way in the sense that people "watching" can ask questions of the "course-conductor" at any point) terminal being installed at the Hall of Science at Flushing Meadow viewers will be able to communicate with the instructor conducting a course on CB TVI problems. Other course-uses planned involve amateur-radio license preparation courses, on-going education courses in rapidly advancing technology such as micro-computers and so on. Some of the inter-active terminal locations scheduled include the Industrial Arts Department of the Syosset School District, Bishop McCormack High School at Oyster Bay, Pace College in Manhattan, City University of New York, High School of Automotive Trades in Brooklyn and so on.

The inter-active terminal concept is being followed primarily to insure that there are readily available (public) "viewing points" for the system, which will be programmed in the inter-active mode largely in the evening hours starting this fall. During other periods of the day, the repeater will be utilized for ham-to-ham ATV (amateur TV) "contacts".

Tuning in the 439.75 MHz signal is very simple; take a Blonder Tongue (or other consumer-tuneable UHF to VHF converter) and pad down the three "cavities" in the tuner to allow it to tune down an extra 40 MHz from where it normally tunes-in channel 14. After you decide the signal is usable and perhaps even useful for your CATV system, we feel certain you could order a standard BT, Jerrold (etc.) U to V converter (crystal controlled) to place the ATV station on your system on an available channel.

Because the station is **not** a broadcast signal, it would **not be** a must-carry or even a Class I signal. But its unique "programming" might provide a very interesting "alternate choice form" to subscribers nonetheless. Those operating CATV in the New York City area can obtain additional data on the new **LIMARC** service by contacting **E. Edwin Piller (W2KPKQ), 80 Birchwood Park Drive, Syosset, New York 11791.**

#### **10-4 OLD BUDDY**

"I just finished reading your 10-4 (et al) in the July CATJ and noticed CATA is interested in the CB problem and is participating in the PURAC program with the FCC.

What PURAC needs to do to reduce interference (spectrum pollution) is to come up with a two-way radio service for the public, that will

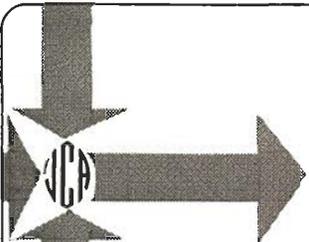
have supervision and regulation built into it; but, at the same time attract the public and over a period of time will reduce CB (operations) and finally phase it out (i.e. replace CB), except for small business operations.

A real two-way public service, I believe, will get the FCC out of the CB dilemma; but it will take 'imagination' at the FCC. However, I don't think that the Commission is capable of using 'imagination' unless it is pushed like groups such as CATA.

Finally, you might be amused by the following tongue-in-cheek piece I did some months ago:

'There once was a young man who had an exceptionally high IQ; so high that he was incompatible with the ordinary person.

He decided he would have his IQ reduced to equal other normal people and he went to a psychiatrist. The doctor connected the young



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man to a machine.

Presently the doctor was distracted by a telephone call, and the call turned out to be a long one, during the course of which the young man was left connected to the machine.

Suddenly the doctor remembered the young man, threw down the telephone and ran to the young man jerking him loose from the machine. 'Can you hear me?' the doctor shouted.

'10-4 old-buddy' responded the young man.  
G. M. Howard, Esq.  
Communications Counsel  
Dallas, Texas 75209

GM —

CATA/CATJ's Bob Cooper is deeply involved in the FCC's PURAC group regarding CB TVI, presently serves on two committees within the PURAC operation. A Cooper 'White Paper', being prepared at Committee Request, will define all of the known CB-to-the-world interference problems as CB relates to electromagnetic spectrum compatibility.

In the CB area, on July 27th the FCC adopted a new rule making expanding CB channels from

23 to 40. The 17 new channels begin near 27.235 MHz and work upwards to 27.405 MHz. This means that the second harmonic region will now move up to 54.810 MHz (remember channel 2's visual carrier is centered at 55.25 MHz) and the third harmonic region will move from its present 81.705 MHz upper-frequency-end (for CB channel 23 times 3) to 82.215 MHz. With channel 6 assigned from 82-88 MHz, this means that when the new channels become effective (the effective legal date is January 1, 1977), there will be new CB TVI problems affecting channels 2, 5 and now 6.

At the same time, at a late July PURAC gathering, Cooper and an E.F. Johnson company representative discussed CB TVI problems with TV channels 9 and 13. Channel 9 TV is the recipient of 27 MHz 7th harmonics and channel 13 gets zapped with CB's 8th harmonic. Under the terms of the new FCC CB channel expansion, a CB'er who causes TVI is going to be required to install on his CB transceiver (i.e. transmitter) an external TVI filter. We'll have a full report in the October CATJ.

## FCC HAMS IN CATV

"This is relative to your June 1976 CATJ report 'Hams in CATV-II'. You indicate there 'apparently there are no FCC types who are also amateurs'."

Pardon us for bursting the bubble. In the FCC there are several amateurs engaged in a 'first-line' of CATV enforcement. Plus, there are several dozen amateurs in various other staff positions (including one Bureau Chief and one Chief Engineer!).

Specifically, Cecil Ellington (K4RZO) is the supervisor of the Eastern FM-TV-Cable Enforcement unit, and he is active on VHF amateur bands. Tom Toenjes (W0TVI) is the supervisor of the Central FM-TV-Cable Enforcement Unit and he is active on numerous bands. I am the former supervisor of the Western FM-TV-Cable Enforcement unit, and am now Assistant Engineer in Charge of the San Francisco FCC office. I am active on VHF.

In addition, the majority of the District Office and Monitoring Station Engineers in Charge are licensed amateurs of many years standing. Not to mention the staff engineers, technicians, and clerks who are amateur operators. In fact, there is still a 40-meter CW 'FCC Net' for present and retired FCC personnel.

As for why they were not listed in the original article... I guess they were just to modest to write!

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## CIRCULAR IS COMING

Although it has been almost one year ago that CATJ first looked at the circular or multi-mode polarization question for beyond-the-horizon off-air signals, and reported on tests then underway in Chicago (Illinois) and Modesto (California), it is apparent that broadcasters are just now gearing up for massive entry into the circular polarized antenna game.

In recent months JAMPRO antennas in California has been advertising "circular polarized UHF and high band TV transmitting arrays" noting that when the FCC approves them, JAMPRO will have them ready for delivery. But a single company does not a trend make. However, it is of interest that the August issues of the various broadcast oriented engineering magazines have burst forth with circular polarized transmitting antenna advertisements from two large well known antenna manufacturers; RCA and Harris. RCA sports a trio of circular transmitting antennas, one each design for low band V, high band V and UHF.

Harris, in a marketing technique reminiscent of the "buy our one-way amplifier now and you have plug-in capability for two-way later when you need it" ploy is advertising a CP antenna that radiates a horizontal wave front today but "with minor field modifications you are ready for circular polarization when approval comes from the FCC."

In the meantime, we have yet to hear any further rumblings from CATV antenna manufacturers who are proceeding on their own with CP receiving antennas. Could it be that when CP transmission comes that there will be no off-the-shelf CATV circular antennas to take advantage of this new technology?



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