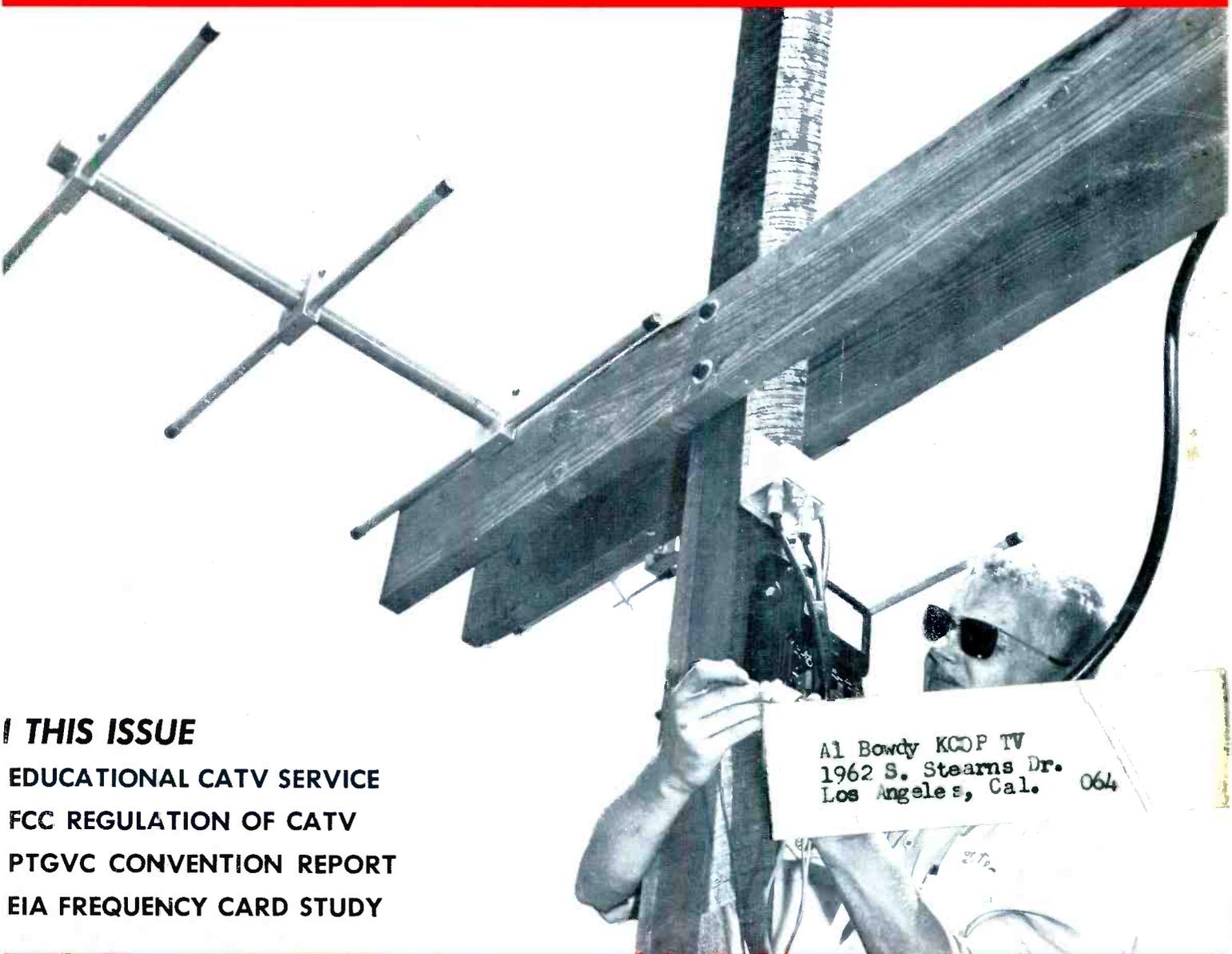




January 1964

# TV & Communications



## THIS ISSUE

EDUCATIONAL CATV SERVICE  
FCC REGULATION OF CATV  
PTGVC CONVENTION REPORT  
EIA FREQUENCY CARD STUDY

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## LOEVINGER DISSENTS IN FCC PROPOSAL FOR CATV RULE MAKING

When the Federal Communications Commission last month issued its notice of proposed rule making affecting CATV, Commissioner Loevinger issued a statement declaring that, "The commission assumes here, as it has elsewhere, that the burden is on the CATV operator to demonstrate by evidence that his operation should not be subject to limitation in favor of the local television station."

The Commissioner claims that the FCC approach to the matter is "wrong in principal" since "limitations should not be imposed upon the operation of enterprises unless and until some need has been established that is related to the public interest." Loevinger's dissent adds that, lacking evidence to the contrary, "the presumption should be in favor of free and competitively untrammelled enterprise, rather than regulation."

The details of the Commission's proposal to adopt new rules governing CATV systems using microwave are presented in a special report beginning on page 13 of this issue.

## COURT ACTION BLOCKS FCC FILING FEE PROGRAM

A "stay" has been granted by the Seventh U.S. Circuit Court of Appeals in Chicago, requiring a 60-day delay in the Commission's execution of its plans to collect filing fees. Ten petitioners had asked the court to nullify the FCC decision or grant an injunction against its implementation pending judicial review.

Acting at the last minute, Circuit Judges Elmer J. Schnackenberg and Roger J. Kiley stopped the fee schedule program from going into effect "for 60 days from this date (Dec. 31) pending the hearing on petitioners' application

for an interlocutory injunction restraining the enforcement of said Commission order."

On Jan. 2, the FCC issued an announcement stating that, "Pursuant to a stay imposed Dec. 31, 1963 by the U.S. Court of Appeals for the Seventh Circuit, the Commission announces that its application filing fees scheduled to become effective Jan. 1, 1964, have been postponed until further announcement."

"Under the Court's opinion, the Commission's schedule of filing fees may not become effective for 60 days, pending consideration of a further stay until disposition of a joint petition for review which has been brought in the Court to set aside adoption of the fee schedule by the Commission."

Meanwhile, Chairman Henry of the FCC has completely rejected the request by Chairman Walter Rogers of the House Subcommittee on Communications and Power that the FCC "suspend its plan to assess license fees and other charges for services until further action from Congress." Congressman Rogers, in reply, declared that, "this is a perfect example of government agencies not directly answerable to the electorate of this country attempting to take over the legislative powers not given to them by Congress."

Petitioning parties have alleged that the Commission has exceeded its authority in deciding to assess license fees. According to the petitioners, the FCC action is based upon a statute, which, if it actually does authorize the Commission's action, is invalid as an unconstitutional delegation of legislative authority.

## PAY-TV GROUP FIGHTS BACK

A damage suit has been filed in the U.S. District Court of Los Angeles, California, by Subscription Television, Inc., against a dozen

movie chains, five special theatre interest organizations and three individuals. The STV firm seeks \$117,000,000 in triple damages, charging violation of federal and state anti-trust laws. STV alleges that theatre groups attempted to hinder the purchase of stock in Subscription Television, Inc.

## COLLINS MICROWAVE FOR UAR

Television will be available for the first time to most of the Egyptian people when the Collins Radio Co. completes a 500-mile microwave link from Cairo to Aswan along the course of the Nile River.

An agreement between Collins and the United Arab Republic calls for an initial installation of microwave equipment from the Egyptian capital to the ancient city of Luxor, about 375 miles up the Nile. Price of the contract is more than \$1.5 million.

The UAR's Ministry of Culture and National Guidance said it is Egypt's intent to extend the system southward to Aswan in sufficient time to provide live television coverage of the High Aswan Dam Festivals in 1966. At present, television programs are available only in the Cairo and Alexandria areas.

## TV&C ASSUMES SUBSCRIPTION RESPONSIBILITIES OF VCJ

Communications Publishing Corporation has agreed to fulfill the subscriptions for Video-Communication Journal by mailing copies of this monthly, TV & Communications, to persons who have been receiving VCJ. Horizons Publications, Inc. suffered a serious fire in mid-December and has discontinued active publishing operations. Address changes and new subscriptions should be directed to: R. Corona, TV & Communications, P.O. Box 63992, Oklahoma City 6, Oklahoma.

# TV & COMMUNICATIONS

Published By COMMUNICATIONS PUBLISHING CORPORATION — P.O. Box 63992, Okla. City 6, Okla.

## Editorial

### FIRE STRIKES "VCJ"

On December 18, fire swept the offices of Horizons Publications, publishers of "Video-Communication Journal." Through a technicality, the insurance company denied liability. Consequently, it was impossible for the magazine to continue in operation. The loss to the communications and electronics industries served appeared to be a substantial one — since "VCJ" was the only monthly in its precise fields of endeavor.

However, with the encouragement and generous assistance of several manufacturers, a number of former "VCJ" staff members were able to initiate a new monthly publication to fill the void. *TV & Communications* will make every effort to bring you useful technical and management information as well as keeping you up to date on the happenings in the television distribution and communications industries.

Whatever the degree of success to be realized by *TV & Communications*, we want it understood that a major part of the credit should go to the manufacturers and suppliers.

### FCC & CATV IN AUSTIN

Many FCC actions in recent months have demonstrated unusual leadership and insight. But recent FCC handling of CATV matters in Austin, Texas, leaves us somewhat less encouraged.

The Commission has ruled that TV Cable of Austin will be required to observe the non-duplication ruling with regard to programs aired over local station KTBC. TV Cable has argued that non-duplication should be waived since they are competing with another CATV system, Capitol Cable Company, which enjoys a close relationship with the LBJ Company's KTBC. Until recent weeks the owners of TV Cable felt that the Commission would decide in their favor.

We shall be watching the Austin CATV story with interest . . . to learn how this drama will end.

S.M.S.

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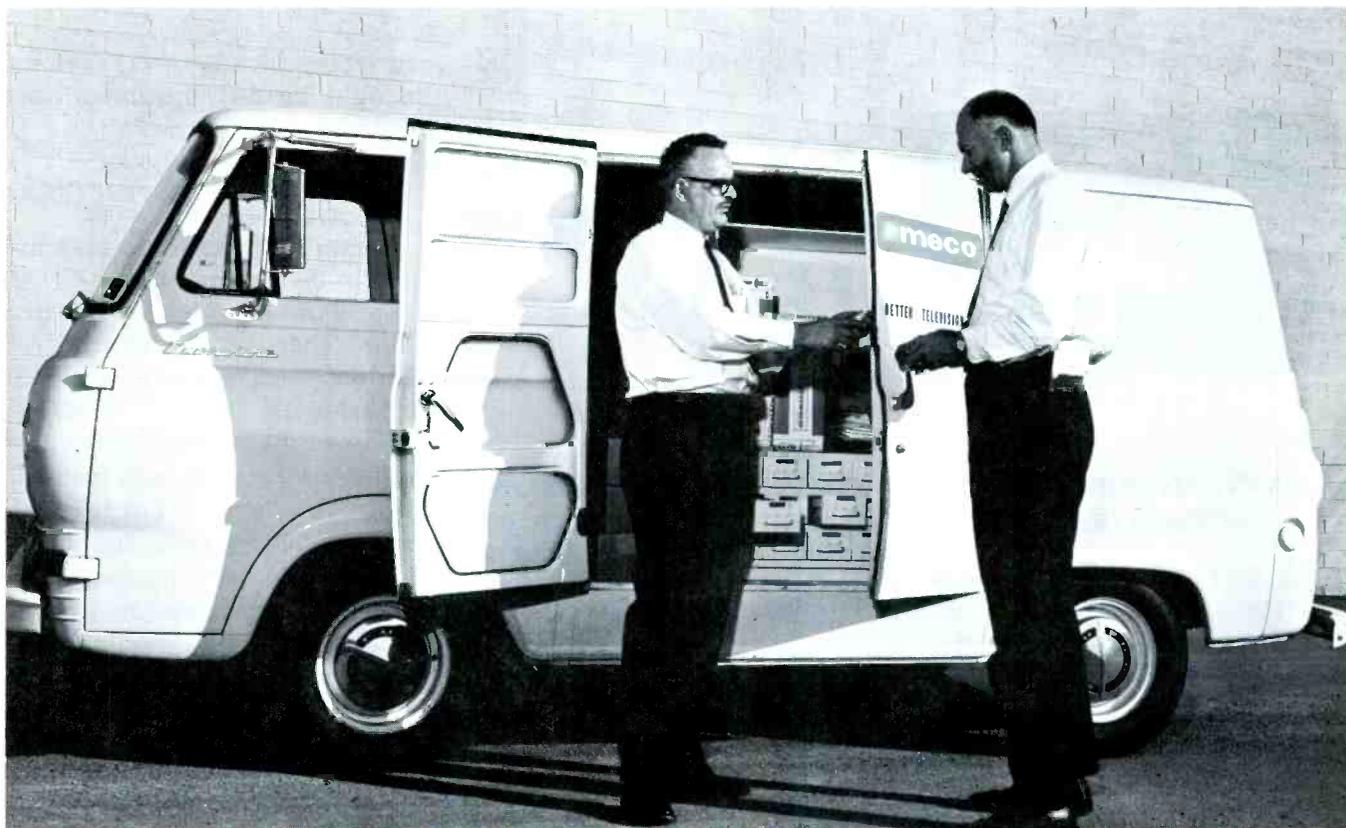
**EUROPEAN BUREAU:** News items, subscription orders and advertising inquiries may be directed to Gordon J. King, Esq., 6 New Road, Brixham, South Devon, Great Britain.

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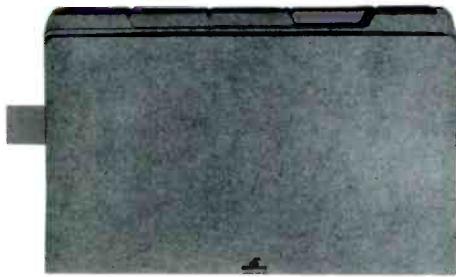
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*\*Watch for announcement of more salesmobile offices soon*



# FCC Briefs

## CATV, MICROWAVE ACTIVITIES

The U. S. Supreme Court has denied the writ of certiorari submitted to the high Court by **Carter Mountain Transmission Corp.** The writ had requested a review of the adverse decision by the U. S. Court of Appeals for the District of Columbia in the Carter Mtn. case.

The landmark Carter Mtn. case has established with legal precedent the FCC's authority to deny an application for common carrier microwave designed to serve a community antenna television operation where the Commission determines that operation of the CATV system is not in the public interest.

In the Commission's proposed rulemaking with regard to CATV, the **NCTA** has requested additional time for the filing of comments. General Counsel Robert L'Heureux has petitioned the Commission to amend the notice of December 11, to give interested parties until March 16 for filing comments, and until April 6 for reply comments. The Commission has set the deadlines at January 22 and February 12, respectively.

Ed. Note: Commission has extended deadline for filing comments to February 24. Reply comment deadline has been extended to March 16, 1964.

NCTA is asking additional time "in order to complete studies now in progress on the possible effect of delayed non-duplication on CATV."

The Federal Communications Commission has advised the **International Telephone & Telegraph Corp.** that the Commission feels it is "neither appropriate nor practical" for the FCC to grant any sort of assurance that ITT's future applications to acquire landline interests would not be affected or delayed by reason of the fact that a subsidiary of ITT was a licensee in the miscellaneous common carrier service.

The FCC further pointed out that "any further acquisition of interests in a domestic landline telephone company by ITT might result in action concerning its eligibility to utilize miscellaneous common carrier frequencies. Thus, should ITT or subsidiary thereof file an application for authorization to acquire a wireline telephone company (in the continental United States), the fact that an ITT subsidiary is a licensee in the domestic public land mobile radio service may, in the context of the entire matter, be a pertinent factor for us to consider in passing upon that application."

The Commission told ITT that under the FCC policy of not licensing landline carriers in the MCC service it might condition such a grant on the condition that the firm surrender its frequencies in the MCC service or dispose of the MCC operations. However, the FCC did emphasize that "Geographical juxtaposition of the landline and radio common carrier facilities is of crucial importance in determining eligibility." Where the facilities are

not contiguous the FCC says there "should be no impediment to eligibility."

## GENERAL ACTIVITIES

Commissioners responded favorably to the unusual request of **Mid-Ohio Towing, Inc.**, of Ironton, Ohio. The operator of the "Alton Zephyr" had petitioned the FCC to set aside its June 12, 1963 revocation of the marine radio license of the towing firm and, instead, to apply the "small forfeitures" penalty. This was the first time the Commission had received such a request. The license had been revoked due to repeated failure to respond to violation notices.

Last month, however, the FCC granted the special request, pointing out that the licensee "claimed that failure to reply resulted from its assuming that the radio serviceman employed to service the radio equipment had taken care of the matter, and sought mitigation on the grounds including extreme financial hardship and possible loss of its contract upon which its livelihood depends." The company had contended that Mid-Ohio's President and sole stockholder, Frank Dupuis, would suffer a \$13,500 "monetary out-of-pocket penalty" if the license was lost.

**Two-Way Communications Co. of Kansas** has filed a motion for enlargement of the issues in the FCC's consolidation hearing on applications of **Two-Way and Tri-State Communications Co.**, for radio common carrier facilities in the Liberal, Kansas, area. Ralph Heng, doing business as Tri-State, is planning a new RCC system, while Two-Way of Kansas is seeking its second channel and a change of location and equipment. The filing in early January asked the Commission to include an issue on Mr. Heng's "specific character qualifications", "ineptitude issue", and a "real party in interest issue".

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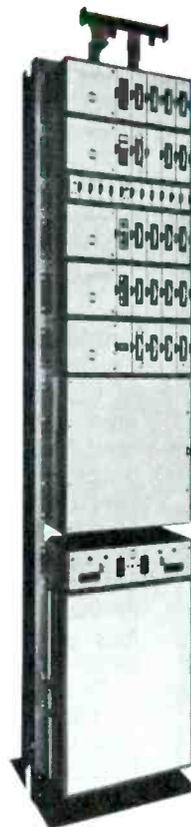
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	500 mw	15-25 mc



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# FOCUS

Spotlight on Current Industry News

The appointment of **Malcom M. Ferguson** as Chief Engineer of Community Operations Division of **Jerrold Electronics Corporation**, has been announced by Joel P. Smith, Manager of the Division. Mr. Ferguson will have the responsibility for the technical aspects of Jerrold's Community Operations Division. The Division is concerned with a number of CATV systems in which Jerrold has proprietary interests



This is actually a reunion with Jerrold. Mr. Ferguson was previously associated with Jerrold Electronics as Chief Technician for systems in Key West, Florida, and Ukiah, California. In the interim for 4 years, he owned and operated Diamond TV, Tyler, Texas — service shops for TV, radio, community TV systems and broadcasting engineering. Prior to this, he was associated with Tyler TV Cable Co., Tyler, Texas, one of the nation's largest cable companies, for 6 years as Chief Technician for the system. Malcolm is an enthusiastic ham, holding amateur radio call W5QAT.

**Richard J. Doyle** has been named manager of **General Electric's** West Coast communication equipment warehouse assembly plant in

Redwood City, Calif. The appointment was announced by William Torbick, West Coast regional manager for the G-E Communication Products Department who has marketing responsibility for G-E mobile radio and telecommunication equipment in western states.

As manager of the West Coast warehouse center, Doyle will be in charge of equipment shipments, inventories, final test procedures, service parts and order service on communication products assembled in Redwood City.

The Telecommunications Division of the **Secode Corp.** has announced the appointment of **George Blesing**, formerly with ITT Kellogg in Chicago, to cover a midwestern area out of the Kansas City District Sales Office. George had been manager of the ITT Kellogg field services for the Mobile Radio Department.

Secode also announced that **Robert Brook** has joined its field engineering organization. Mr. Brook has been involved in mobile radio sales for several years.

**Dennis E. Coggin**, a veteran advertising and public relations executive, has been named Executive Secretary of the **Special Industrial Radio Service Association**. Mr. Coggin will succeed **Wayne V. Black** who will accept a post with the law firm of **Keller & Heckman** in Washington, D.C. The firm serves as General Counsel to SIRSA.

**Milton J. Shapp** told the Financial Analysts of Philadelphia that "many significant changes" have been made since he reassumed the presidency of the company in June. He disclosed that Jerrold has now built up the largest backlog in its history, totaling \$6,103,000, as against \$1,651,000 at the start of the fiscal year. "We will have an increased rate of shipments during the second half, and still expect

our backlog next March to be even higher than it is now."

Mr. Shapp said that expenses have been "significantly reduced" and that Jerrold's goal is to reduce its normal annual operating costs by \$1 million from the level of June, 1963, "without sacrificing productivity and without affecting the company's ability to develop and expand profitable lines of endeavor."

He reported that Jerrold Electronics has received a total of \$3 million in orders for community antenna TV installations since June, "reflecting our increasing endeavor in this area."



**John P. Duff** has been appointed Public Relations Manager for **Jerrold Electronics Corporation**, **Robert H. Beisswenger**, Vice-President and General Manager announced today. Mr. Duff, for the last three years, has been a writer and communications coordinator with **Philco Corporation—Lansdale Division**. Previously he spent five years in the Advertising Department of **John Wood Company**, Conshohocken, Pa. During the last two years of that time, he held the post of Assistant Advertising Manager.

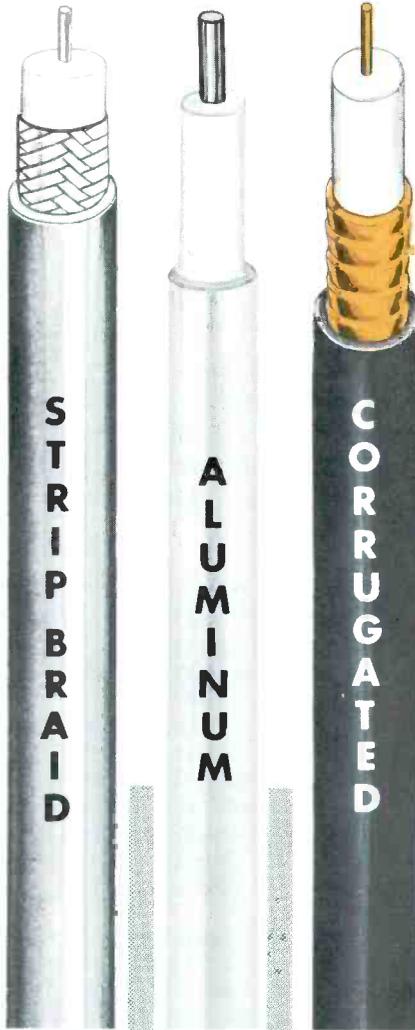
A new CATV group composed of Philadelphia investors and known as **American Cable System, Inc.** has purchased **Tupelo (Miss.) Community Antenna, Inc.** The new firm, headed by **Ralph Roberts**, has also taken over a franchise for West Point, Miss., and is supervising installation of a cable system in Laurel, Miss., for the **Lancaster Corporation**. **Frank G. Haley** will continue managing the Tupelo system, while supervising other operations as a vice-president of **American Cable**.

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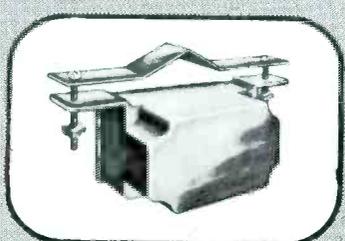
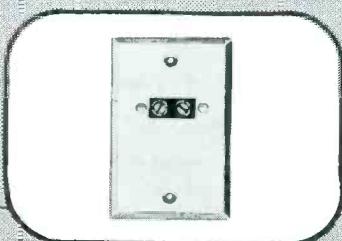
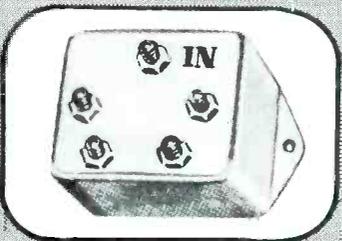
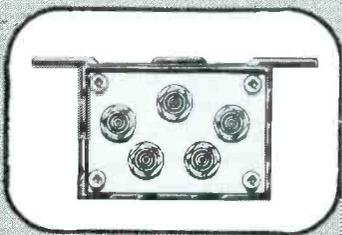
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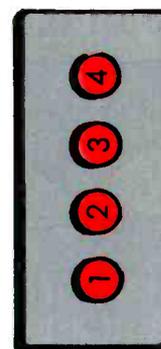
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# PUSHBUTTON LEARNING THROUGH CATV



by  
**Norman Livingston**  
TuTorTape Laboratories  
777 Lexington Avenue  
New York, New York

Every CATV subscriber's home could become a classroom. A new development called the TuTorTape Educating System has been conceived to bring the new art of programmed instruction in to every CATV subscriber's home, as well as creating a new mode of FM and TV educational station operation. This "Educating System" was founded by Theodore Granik, Peabody Award Public Service Producer, who is sponsored by Reader's Digest, and others who are concerned with the nation's advancement in education.

This latest advancement in educational aids, shown in Figure 1, has been conceived and designed by people who are acutely aware of the many problems which confront professional educators. TuTorTape was designed to free the teachers for creative work, and to take the place of individual tutoring in a society plagued by shortage of qualified teaching personnel.

Here is how Programmed Instruction works. Many times, students arrive at an answer to a question without fully understanding their own reasoning. The TuTorTape system plugs this basic hole in the learning process. Each time a student answers a TuTorTape multiple choice question, the machine explains

the proper approach to arriving at the correct answer. Should the student arrive at an incorrect answer, the machine explains, in detail, where proper reasoning was not used, and then gives the correct answer. In this manner, no TuTorTape student ever misses a question. Right or wrong though his answer may be, his reasoning is explained and the proper information rendered before he goes on to the next question/multiple-choice answer sequence.

This is programmed instruction. The student is active, rather than passive, as he must push buttons in response to questions, and his learning is in steps and reinforced or remedied, depending upon whether he presses a correct or incorrect button.

As stated, this automatic tutoring technique keeps the student alert and active, and he cannot skip or skim through the information. The voice on the TuTorTape courses is deliberately selected to be both professional and engrossing to assure effective self-instruction. The recommendation that the student take the course over again, even though he now knows the right answers, is proposed to all students, since behind each of the four buttons is fresh knowledge, which further assures his mastery

of the subject.

TuTorTape Laboratories, with the help of leading educators, has prepared courses running the complete gamut, from elements of bridge through an introduction to electronics, using existing text material.

TuTorTape training courses, planned for programming over CATV Systems, can be taken at the leisure conveniences of the student, at home. In some areas, it may be prepared for the accelerated re-training of the industrially idled in the government's rehabilitation program. In this manner, the federal government may effectively send the country's finest instructors directly into the home, over the existing CATV cables.

The physically handicapped and the blind will benefit in untold scores of ways from the development of TuTorTape's system of Programmed Instructions via a CATV educational installation. Talking books and tapes have worked wonders. But now, with the Educating System, a sophisticated, and yet, simple to operate teaching machine, an entire subject may be taught to one who is totally blind, and without the use of Braille or standard linear tape procedures. The handicapped need not travel during inclement weather. Classrooms in

kc, 52.5 kc and 67.5 kc. This is accomplished most simply and effectively over a CATV system. In an over-the-air multiplex system, an FM broadcast station will be required to limit its deviation ratio based upon the broadcast standards set by the FCC. This may result in about a 10 to 12 db drop in apparent audio level. This is not a significant drop in level, as may be evidenced by the many stations which broadcast compatible stereo in the current state of the art. This loss need not be taken or considered in TuTorTape's CATV adapter.

Operated over power line wires, the four track play back and the modulation technique will be similar to the circuit arrangement for operating over the air. However, the modulation will drive a carrier current transmitter, which is capable of broadcasting four carriers, between the power line and ground potential of possibly 22.5 kc, 37.5 kc, and 52.5 kc and 67.5 kc, with the limited modulation required for clear and reliable speech transmission

and reception to overcome normal power line noise in this frequency range.

The transmission will be capable of broadcasting over a reasonable distance over normal power lines, but will operate well below the FCC Lambda over two pi rule. The receiver, which connects to the power line, will be a broadband, low pass amplifier and speaker assembly, working in conjunction with a four channel selectable synchrodyne receiver circuit, so as to provide reliable and acceptable audio quality.

Actually, in a CATV system, schools could be wired together by coaxial tap-offs and signals could be distributed over the power lines to the classroom for lectures, such as American Heritage series, which are common to all schools and all grades.

CATV, over-the-air and over wire power line, systems will record on IBM tapes (which may be advanced by the push-buttons) the performance response of the student. The recorded data will be decipherable into a scoring mark by

a supervisory IBM center which will provide integrated data for student grading and record improvement in learning. Actually, the system provides each student the luxury of a personal tutor, at home, under the guidance of the local teaching body.

This development, which is ready for CATV systems now, with programmed instruction available in many fields, will be another plus for CATV operators and subscribers, as both will benefit from this advancement.

The CATV operator will have no investment in this system, unless he so desires. He will receive an additional income for providing this extra service to his subscribers. TuTorTape will furnish all the equipment necessary to adapt this development to his existing equipment. The CATV subscriber will have the unusual benefits of programmed learning, in the comfort of his living room, where he can trade in an uncomfortable seat in the classroom for an easy chair of learning.

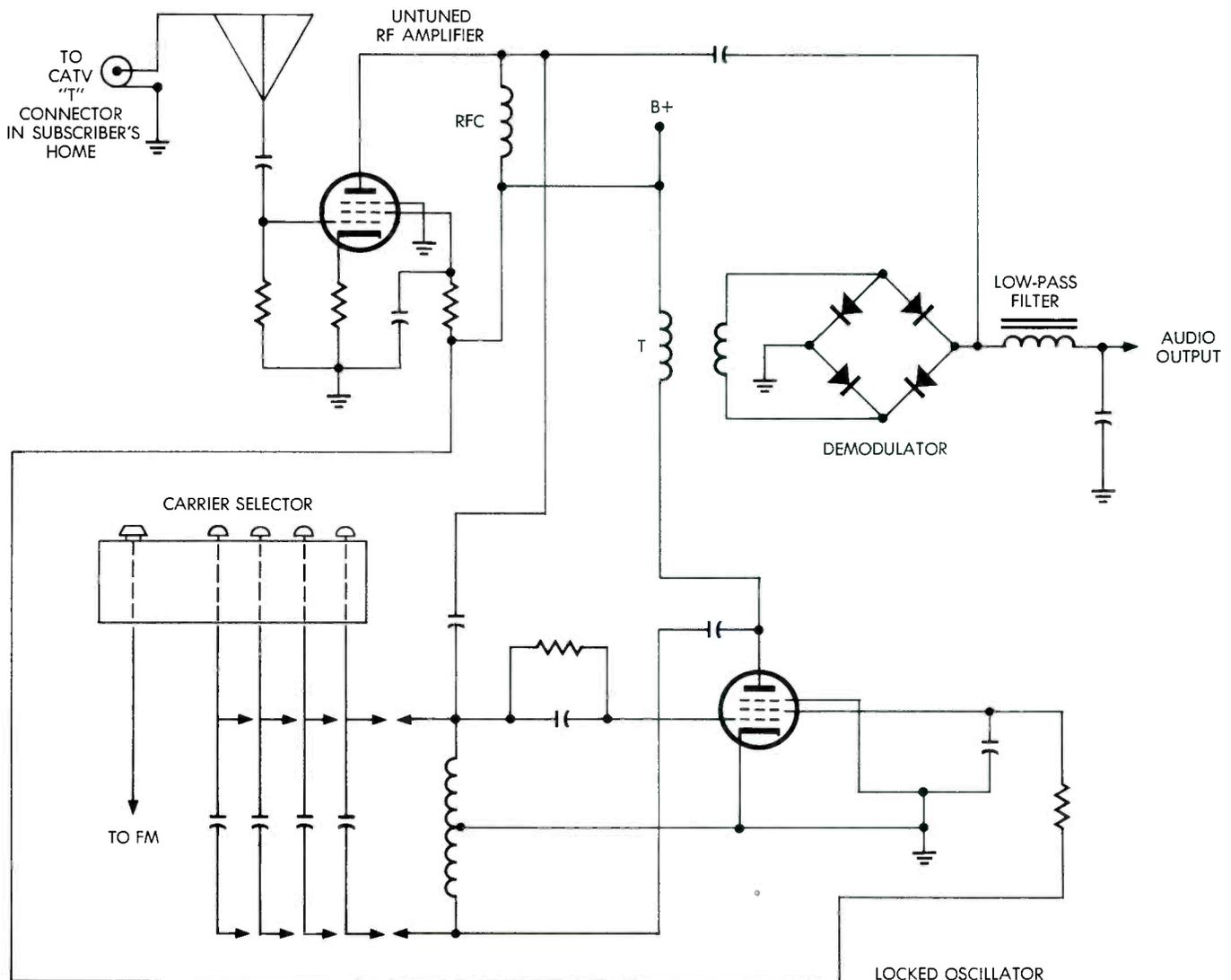


FIGURE 2.

the home will be operative to all in areas of rigorous climate.

In mountain environments, classroom programmed learning may be on a scheduled basis. As will be explained later, the student presents an IBM tape,



**Eight-hour tape cartridge feeds system at head-end.**

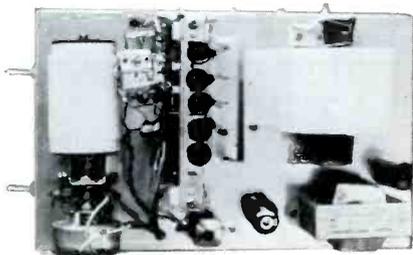
which records his attendance as well as providing data that indicates his response to the programmed instruction of each subject.

TuTorTape's educasting teaching has a tremendous potential as a teaching instrument and teaching format, and is an exciting new approach to self-teaching in our advancing, competitive and complex society. And CATV operators may play a large part in providing the transmission lines and equipment to bring this new learning technique into private homes.

*This system actually converts each CATV system into a programmed learning center, without adding wiring and without disturbing the normal operation of the CATV system.*

The following describes how the system technically operates over the air and through power line distributions, as well as for CATV installations.

The Educasting system, shown in Figure 1 is adaptable to any FM broadcasting station or rural transmitter, as part of a TV station, or CATV system over an FM or TV channel. The source of the program material is the four-track learning material over the TuTorTape play-back magnetic tape unit. The four tracks may have multiple choice questions recorded for a single course, or they may be two separate courses on each channel pair where the program learning has been recorded on only two channels per course, or it may be a single course with one channel pair set for fast learners, and a second channel pair, with greater elaboration, for slow learners. These tapes feed the signals to a four channel modulator, which shall be circuited to the FM transmitter, or the FM strip of the CATV head-end amplifier, so that the FM carrier is



**CATV 4-Track Modulator**

multiplexed with four special channels which cannot be intercepted by a standard AM or FM receiver. The system is so designed, that an educative FM receiver and a special synchrodyne adapter, with four push buttons which

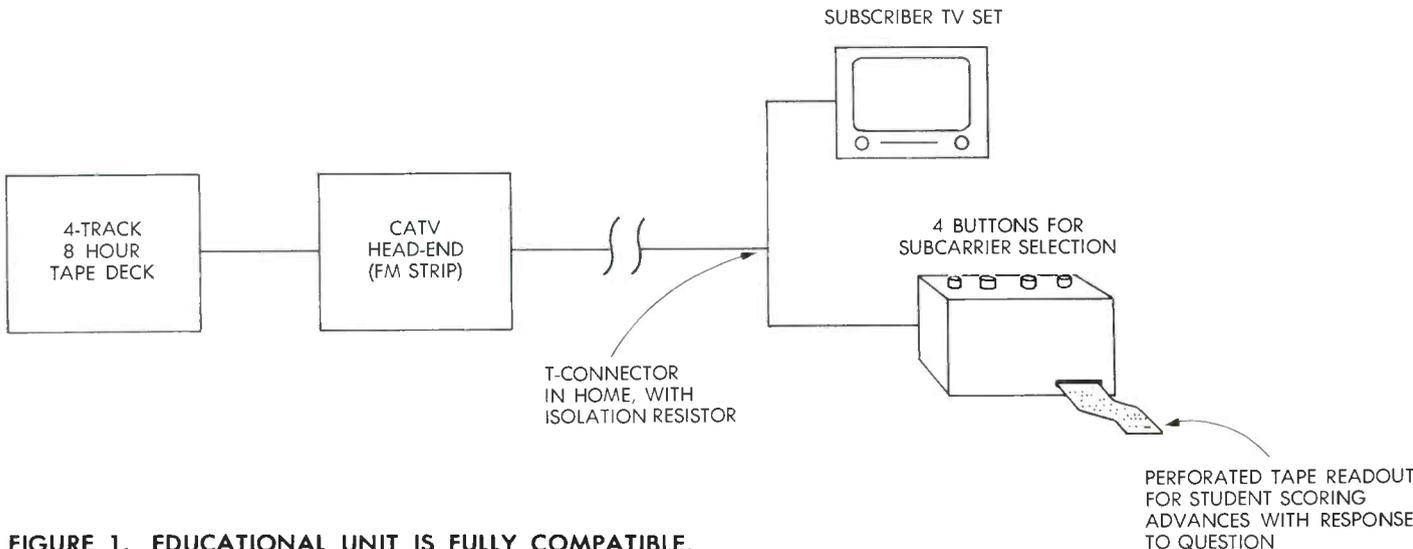
controls the resonant circuits of the general synchrodyne circuit may be alternately incorporated in the broadband of the FM detector circuits. *This unit may tap on to the CATV outlet, with a T fitting, without upsetting impedance.* By pressing the proper button, the desired one of the four supersonic signals transmitted may be selected by the



**Author Livingston and the FM receiver console.**

synchrodyne circuits. The application of the synchrodyne receiver principle was to realize extreme simplicity, reliability and maintenance-free operation. The synchrodyne principle is similar to that of a superhetrodyne, except that the local oscillator is frequency locked to each of the four subcarrier frequencies.

This locking feature is vital to this principle, as the synchrodyne is an efficient technique for locking on to supersonic carriers or subcarriers with minimum parts, as is shown in Figure 2. Actually, the output subcarriers from the broadband FM detector may have the four subcarriers as possibly 22.5 kc, 37.5



**FIGURE 1. EDUCATIONAL UNIT IS FULLY COMPATIBLE, SIMPLE TO INSTALL.**



LEADS AGAIN IN TRANSISTORIZED EQUIPMENT

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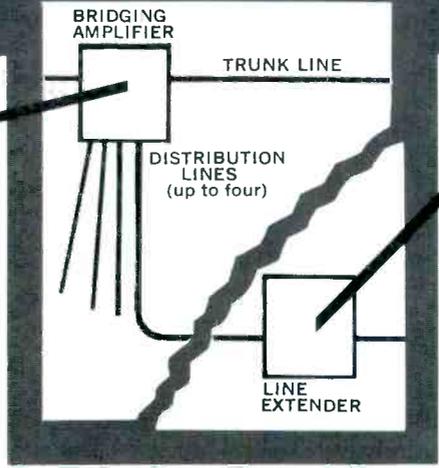
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\* Eight Channels



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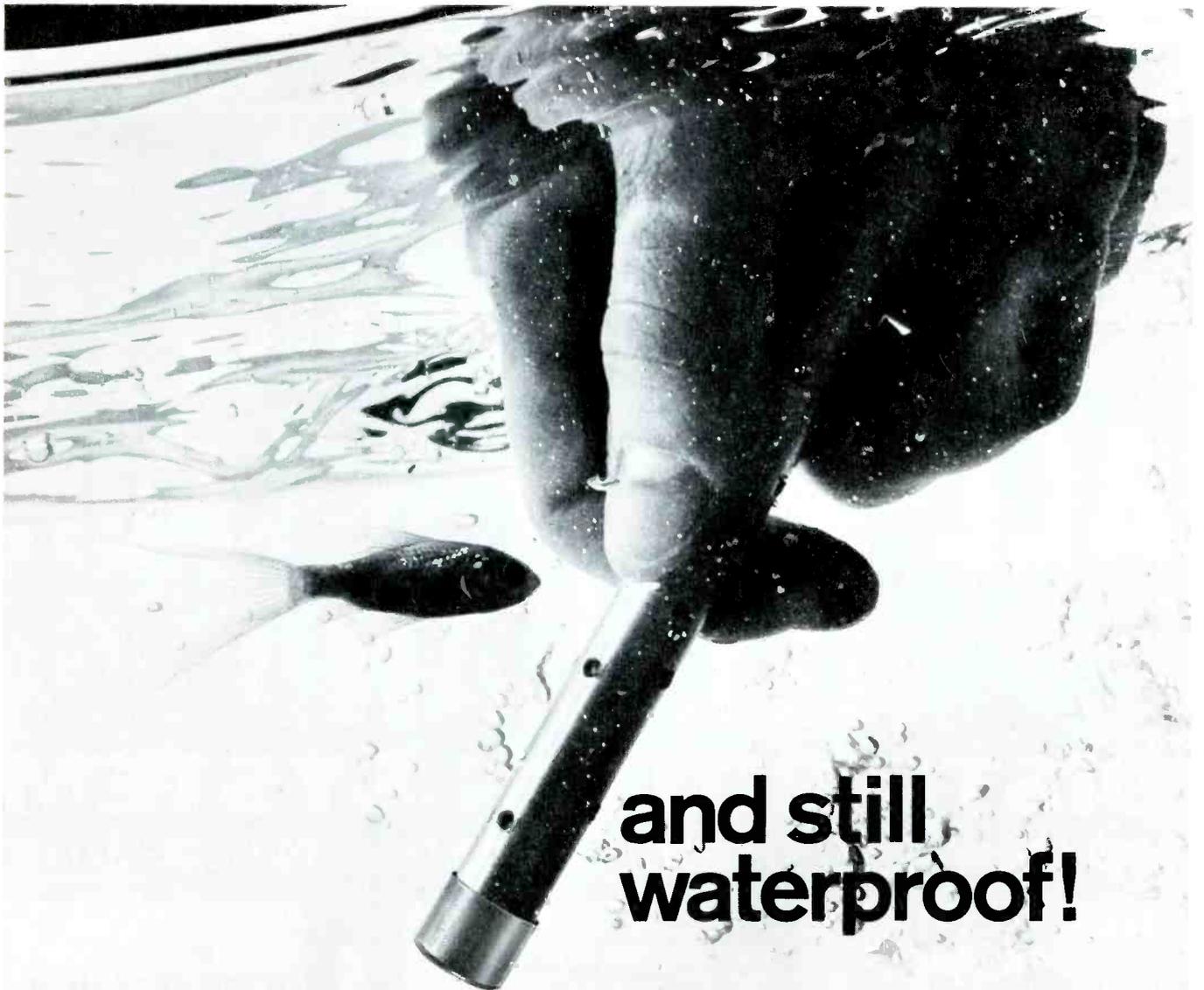
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Whether buried or up on the poles, the penetration of water vapor and/or water presents the most serious threat to transmission capability, efficiency and cable longevity. Times solid seam-

less drawn aluminum tubing cable solves this costly problem by swedging the aluminum sheath down to the point where the dielectric (foamed polyethylene) is actually under compression. It forms a complete gas and moisture barrier at all points along its lineal length.

We can prove that this advanced cable will cost you less. Sure, you initially pay more for this self-sealing cable! But the benefits and the system's ultimate lower costs make it more than worthwhile. Ordinary cable, without moisture barrier protection, requires optimum performance of all amplifiers in service, resulting in higher maintenance, higher technician cost, and tube replacement cost. What's more, you must account for increased attenuation when planning and operating your system. Otherwise, you will be faced with the problem of replacing cables much sooner than originally planned.

For long-term, maintenance-free payouts and higher dollar yields per dollar invested, specify Times JT-1000 series solid sheath cables.



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# FCC LOOKS AT CATV

by Robert E. Tall  
TV&C Washington Bureau

The community antenna television field will be submitting its next crack at the non-duplication philosophy of the Federal Communication Commission by the last week in February in comments to rule-making proposals issued by the agency shortly before Christmas, which the Commission seems bound to push through into final regulations as soon as possible.

Announcing its newest set of proposals in language designed to indicate that it has bent some toward a "not so tough" attitude toward the CATV industry, the FCC nonetheless stuck pretty well to its previously expressed convictions against permitting the community antenna industry to flourish unfettered unless it can work out any arguments with the television broadcasters on a local basis.

Another feather in the Commission's cap was the late 1963 refusal of the US Supreme Court to review a lower court decision affirming the agency's position in the celebrated Carter Mountain Transmission Corp. case, which results in the tough-to-dispute conclusion that the Commission can turn down an application for common carrier microwave radio relay facilities to serve community antenna TV systems to protect the local broadcast station.

That all sides of the CATV situation will be buffeted around pretty well by Congress this year is widely assumed. It would be wishful thinking, however, to lay heavy store on the possibility that Congress will, at best, salvage more than some of the freedom of operations which the CATV microwave transmission systems have enjoyed in the past, and a greater probability appears to be that full CATV regulation is on the way.

The December rulemaking proposals of the Commission are designed, accordingly to the Commission, to "promote the orderly development of the community antenna television industry" as a "complement" to the television broadcast industry, and to guard against "eliminating or crippling local television service."

The proposals were issued as a "further notice" in connection with previously instituted business radio service microwave systems serving CATVs, and as a new notice with respect to the common carrier field. The conditions for the microwave authorizations in both types of services would be the same.

The major shift in favor of CATV in the proposals was a reduction from 30 days to 15 days in the delayed non-duplication requirement which the Commission plans to impose as a condition for the antenna operator wanting to use microwave transmission facilities in either the business or common carrier radio services.

"In substance," the Commission said, the proposal is that "a CATV system within the Grade A (primary service) contour of a regular TV station not duplicate simultaneously, or 15 days prior or subsequent thereto, a program broadcast by the TV station, but that the CATV system would carry a program of the TV station at the latter's request."

"A CATV system located within the Grade B (secondary) contour of one or more TV stations," the agency went on, "would be required to notify (by letter) all such stations of the filing of its application for microwave relay facilities in either of the services mentioned. Upon appropriate showing, in-

terim protection, pending the outcome of a hearing, could be afforded such TV stations."

The Commission said it will not act on applications for microwave TV relay facilities in the two services involved until the conclusion of the rulemaking proceeding, unless the applicant agrees to the proposed conditions.

Commissioner Robert T. Bartley dissented to the "freeze" portion of the rulemaking proposals, and Commissioner Lee Loevinger disagreed with the whole approach.

Mr. Loevinger said he agrees that it is "appropriate" to "have a rulemaking proceeding in order to determine what attitude the Commission should take towards mission should take towards CATVs," but that the Commission should not "prejudge the outcome or assume that CATVs should be limited in their operation by artificial rules designed to favor local television stations," and "The statement of the Commission and the proposed rule appears to me to do both."

Despite the obvious impact of the new proposed rules favoring the television stations, the Commission stressed that the "goal" of the proceeding "is not, as some apparently believe, to adopt rules tantamount to an absolute prohibition of private microwave service to CATV systems. The Commission fully recognizes the valuable service CATV systems can render (and are rendering) in many areas the desirability of promoting the orderly development of the CATV industry, including action to authorize appropriate microwave facilities."

The agency spelled out its philosophy that rules should be adopted "which would require the CATV

system to carry the programming of a local station without material degradation and not to duplicate for a reasonable period the programming carried over any local station. We think that in this way, the conflict between the two services can reasonable be adjusted in a manner which will permit both to become established and grow."

Two initial points were made by the Commission: "The proposed rules would not automatically impose requirements upon the CATV system; a request would have to be made by a station entitled to claim protection under the rules.

"Second, and more important, we recognize that in many instances the station and the CATV system have worked out a satisfactory arrangement which in actual operation fully serves the needs of both. Where there is such an arrangement, which both parties still believe suited to their particular situation, it is not our intention to upset or replace it, for it may reasonably constitute a particularization of the public interest in that area.

"In short, an agreement, fairly arrived at between the parties and designed to fit the particular needs of the area, is entitled to great weight; we do not mean to inhibit or impair the good faith working out, by the broadcaster and the CATV, of the problems here under consideration."

The importance of proposed requirement that the CATV system carry the local station, the Commission said, "is self-evident. If the local station is not carried on the CATV system, it would seem to be effectively shut off from reception in the homes taking the CATV service. Indeed, the set is sometimes rendered incapable of off-the-air reception at the time when it is hooked into the system; and, in any event, off-the-air reception can be achieved only through the use of a switching device on the set—an inconvenience which inhibits such reception. Indeed, it has been brought to our attention that in many instances the switching device is tech-

nically defective," it added.

The agency pointed out that it has "tentatively determined" to "restrict" its rules to the Grade A contour of a local TV station, and the proposals reflect this. However, "we recognize that there would be some requests by stations for protection beyond the Grade A contour, and we would handle such requests on a case-by-case basis."

Two provisions are included on this point: "(1) A CATV system located within the predicted Grade A or Grade B contour of a station or stations would be required to notify by letter all such stations of the filing of its application for microwave facilities in the business radio service and to accompany its filing with a statement to this effect; a provision to the same effect is proposed in the domestic point-to-point microwave service. In this way, an existing station could file appropriate requests, in detailed form, with the Commission prior to the grant of the microwave application.

"(2) Upon an appropriate showing, interim protection, pending the outcome of a hearing, could be afforded stations whose Grade B contour encompasses a CATV system applying for microwave facilities."

On the "duplication" limitations, the Commission noted that "If the programs of a local station are duplicated by the signals being brought in by the CATV system, there would appear to be an obvious impact on the ability of that station to attract advertisers. If, on the other hand, the CATV does not duplicate any local station's programming, the latter can garner a sizeable percentage of the audience, particularly if it has popular network programming, and thus can have a substantial basis for obtaining advertiser support.

"There would appear to be little question, we believe," the FCC said, "about the need for protection against duplication. The issue, rather, would seem to be the extent of that protection—whether it should simply bar simultaneous

exposure or go beyond non-simultaneous protection."

The Commission commented that the National Community Television Association argues that "such provision for non-duplication imposes a severe burden on the CATV system and will cripple or kill its operation," but "It has set forth no facts or detailed showing to support this charge."

The Commission had originally called for comments on the rule proposals by Jan. 22, but NCTA asked that the comment deadline be extended to March 16, to permit it to complete a study to "establish whether any amount or what amount of delayed non-duplication on the part of a CATV system is necessary in order to ensure that a television station's ability to fulfill its obligations under the Communications Act be not hampered or impeded unduly by the CATV's system's operation to the detriment of the public interest."

In setting the new comment deadline for Feb. 24, the Commission also established March 16 as the last date for the submission of reply comments.

There is no doubt that the problems the industry is running into will toughen even more as a greater number of sizeable broadcasters move into the field and the problems of the local TV broadcaster—always tough to him—become greater.

In a specific case, the FCC, with only Commissioner Loevinger dissenting, has denied a request of TV Cable of Austin, Tex., for permission to duplicate the programming of Austin TV station KTBC-TV, which is owned by the LBJ Co. Mrs. Lyndon B. Johnson no longer has actual control of the station, but the implications obviously remain. Another local community antenna system—Capital Cable Co.—does not use FCC-licensed microwave facilities, but rather has its receiving antenna mounted on KTBC-TV's tower. KTBC-TV also has an option to acquire 50% of Capital Cable, and there has been a demand

*Continued on Page 25*

## Unbiased Standards for Cable TV

by I. S. Blonder  
Chairman of the Board  
Blonder-Tongue

The need for clear and unbiased standards for the transmission of TV signals by cable has long been recognized by industry and the home viewer. I am involved in this area as Chairman of the EIA subcommittee TR 17.1 on closed-circuit TV Standards and an advisor to the Research and Development Council of the NCTA.

Characteristic of the chaotic confusion in this industry is the self-serving bias on the part of some equipment manufacturers to so specify the system design, often by a set of untested and unchallenged features, so that no other equipment qualifies. The users of TV distribution systems are now receiving the waste and confusion they have been led to, and are demanding that standards be set for their guidance. This has led to the formation of the two committees that I am associated with.

There are three general means of distributing TV signals:

1. Video
2. Short Line RF
3. Long Line RF

Video distribution is commonly used only for studios and extreme quality special needs. Not only is the cost of video distribution generally higher, but only one signal can be carried. In any case, with the usual viewing

distance and resolution needs of the average viewer, ordinary TV standards of performance are acceptable — and much lower price wise!

Short line RF distribution includes schools, MATV, hospitals, etc. where the longest run of cable is less than 1000 feet.

Long line RF distribution systems approach standards as stringent as those which have been set by the telephone company for cross country service. The longer the line the more intricate and precise the quality standards. Good quality TV on long lines will require careful engineering and quality manufacturing as well as competent operation.

To solve the problem of standards, I suggest we specify the quality of the delivered signals at the user's TV receivers and the installation and maintenance costs of the system. No specific item of equipment should be analyzed except as it affects cost of installation and maintenance, and if possible no manufacturer be given an exclusive license by the manner in which the system is specified.

Finally, in some manner, somehow, an impartial bureau of standards, divorced from manufacturing or system design, should be available to measure and verify all claims of performance.

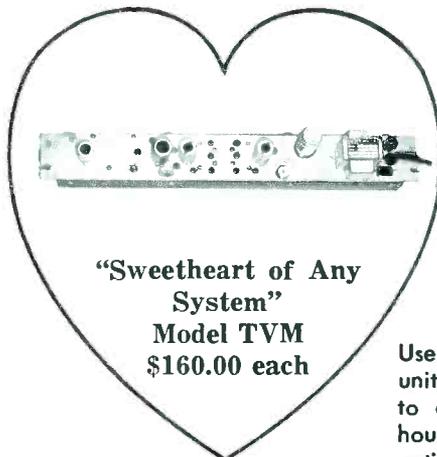
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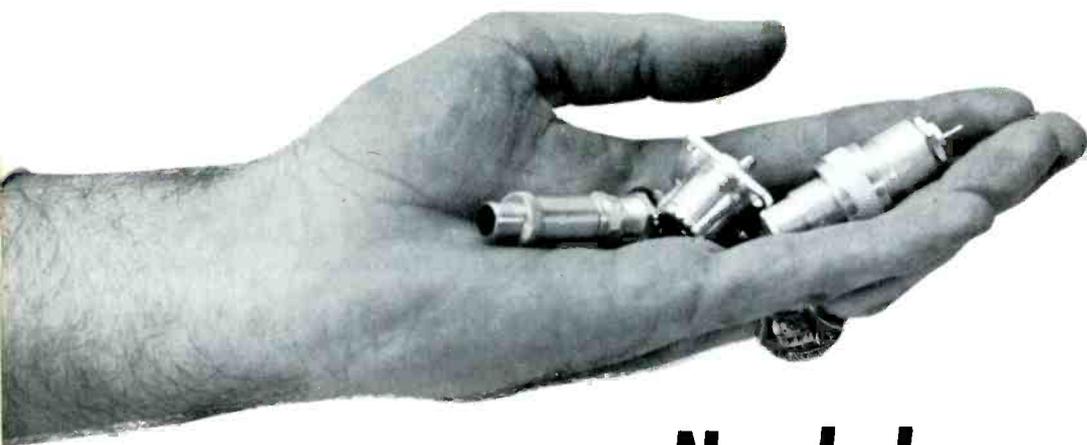


Model TVM plus the Conrac AV12E provides new system flexibility. Switch from off the air to local weatherboard or local slides or live presentations.

Use two Conrac tuners (SE-213 or crystal controlled units) and a time clock to switch from one signal to another at the head end at pre-determined hours of the day. Uses limited only by your imagination. Complete price—Conrac AV12E and CAS TVM — \$480.00.

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# **Needed: a New Connector Series**

**by J. E. Connor  
Director Product Development  
Ameco, Inc.**

With the advent of cable powered transistorized systems it has become evident that the ideal connector system for coaxial cable television transmission simply does not exist. The emphasis here is on *Cable Powering*, for it has become obvious to nearly everyone at this point that cable powering is the most natural, economical, and sensible way to operate a cable system. Also, one mustn't lose sight of the fact that this is a commercial business and therefore component and installation costs must be within reason. Quality and reliability must be foremost, but there is no need for an extreme military approach with its associated excessive high cost and complexity. With careful design the point of diminishing returns in reliability, as compared to rapidly increasing cost, can be reached at a lower point in price than is generally supposed.

Often overlooked factors in connector design are simplicity and robustness. There is no need to handicap the man outdoors on a pole with delicate little parts that require tedious assembly, or with complex multi-piece connectors that can easily be improperly installed. What is adequate for the laboratory or service bench is not necessarily best for system construction.

In the past it has been possible to select connectors primarily on the basis of ease of installation and price, with only secondary importance being attached to electrical performance. In the modern, high quality system, however, one can no longer afford this luxury. Extensive studies of the visibility of ghosts have been made by various investigators, and it is generally agreed that no ghost is visible if the reflected signal is 40 db or more below the desired signal. Also, for a time delay of 18

nanoseconds or less no ghost is observed. As time delay increases, the reflection must be proportionately decreased in amplitude in order to be invisible on the screen. This time delay and signal loss can obviously be converted to length of transmission line.

In older, low-band systems the length of cable between reflection producing discontinuities was long enough to adequately attenuate these reflections. In all-band systems, however, with shorter spacing between amplifiers, the actual electrical length of the cable at lowest channels is relatively short; perhaps only 12 db at Channel 2. Therefore insufficient attenuation is afforded to effectively damp the unwanted back reflection. From this it is obvious that what we are talking about here isn't just a matter of wanting better pictures than those considered acceptable in the old days, but rather an awareness that cables and terminations must be cleaned up electrically or pictures are likely to be not only no better, but actually worse!

For certain critical lengths of trunk cable VSWR requirements as low as 1.06 can be calculated as being necessary to prevent ghosting.

In a recently examined typical feeder-line layout VSWR requirements were 1.13 or better even if no taps were used for a distance of 150-1200 ft. from the receiving end of the cable.

These are tough requirements indeed, and would be difficult to meet in amplifiers and most passive devices. Fortunately these examples are worst-case conditions, however they clearly indicate the desirability of highest quality components, in order that consistently high performance can be realized in cable distribution systems.

Although the preceding information would be perhaps more pertinent to a discussion of why directional couplers should be used in a high quality system, it is included here to emphasize the increased necessity, in general, for closely matched components. Splitters and tapoffs with directional characteristics can provide the increased isolation necessary to bring VSWR requirements within more easily achieved limits.



"F" Series Connector

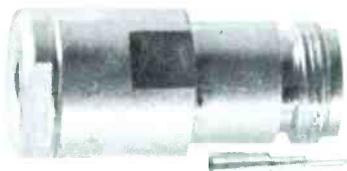
It would be impractical and even economically prohibitive to attempt to bring equipment input and output VSWR's to the extremely low theoretically required figures mentioned above, particularly if low quality, unmatched connectors are used throughout the system. Actually, in connectors themselves it is not difficult to achieve this degree of impedance match, providing they are carefully designed to meet all requirements peculiar



The familiar "UHF" connector

to the particular application. The goal here is to make each connection look like a simple continuation of the cable itself, rather than a reflection-producing discontinuity. In effect the connection should be "electrically transparent." In addition, the current handling capacity must be adequate for the requirements of cable powered equipment.

The connector types commonly used in cable television transmission to date have usually possessed at least one of the necessary performance requirements, but to date no single connector type has had all the desired features in combination.



"N" type coaxial connector

The two presently most used connector series are "F" and "UHF." The type "N," although not used extensively, has been forced into limited usage in an attempt to answer one of the shortcomings of the other two types.

"F" series connectors possess reasonably good impedance match at 75 ohms, perhaps not quite adequate by today's high standards, but are unsatisfactory because the pins are too small to handle trunkline current adequately and/or reliably.

"UHF" connectors have large pins well suited to current handling, but this basically 50 ohm connector offers a serious impedance mismatch in 75 ohm TV systems. With today's emphasis on quality transmission we can no longer afford this degree of picture quality degradation due to mismatch.

The "N" type connector has an excellent impedance match but has not been used extensively in CATV due to its excessively high cost and relatively complex assembly. The small pin in these connectors was not designed to handle current for cable powering and is inadequate for this purpose. As originally designed, the pin required soldering, a procedure not often reliably accomplished at the top of a pole.

Careful examination of the above considerations points inescapably to the fact that a new connector series specifically designed for cable television transmission is needed.

This new connector should draw upon the good features of existing types, and preferably retain as much compatibility as possible with at least one of them. Any change, no matter how much needed, is a burden to someone and if the degree of disadvantage is reduced it can only be helpful.

Electrical performance should be definitely better than any presently used series, with the possible exception of type "N," and its mechanical construction should be as big and rugged as the "UHF" series. Of existing types, the "UHF" connector would probably indicate the best framework within which to work because of physical size and simplicity.

VSWR should be developed to significantly better than 1.1:1, so that at least this degree of impedance match is maintained in typical field installations. Probably 1.05:1 or thereabouts would serve as a sensible design goal.

The need is here now, various manufacturers are aware of it, and I am certain that products will soon be available to satisfy this demand.

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# CATV SYSTEM CONSTRUCTION

An example of current CATV system construction, using the latest techniques and equipment, is the Lafayette, California, Cable-Vision operation.

Our thanks to Larry Nizza at Phelps-Dodge Electronic Products Corporation and to C. M. Kirkeeng, General Manager of Cable-Vision for the photos and information used in this special report.

The editors of *TV & Communication* invite you to submit photography and pertinent data on any communications or television project which you believe would be of interest to our readers.

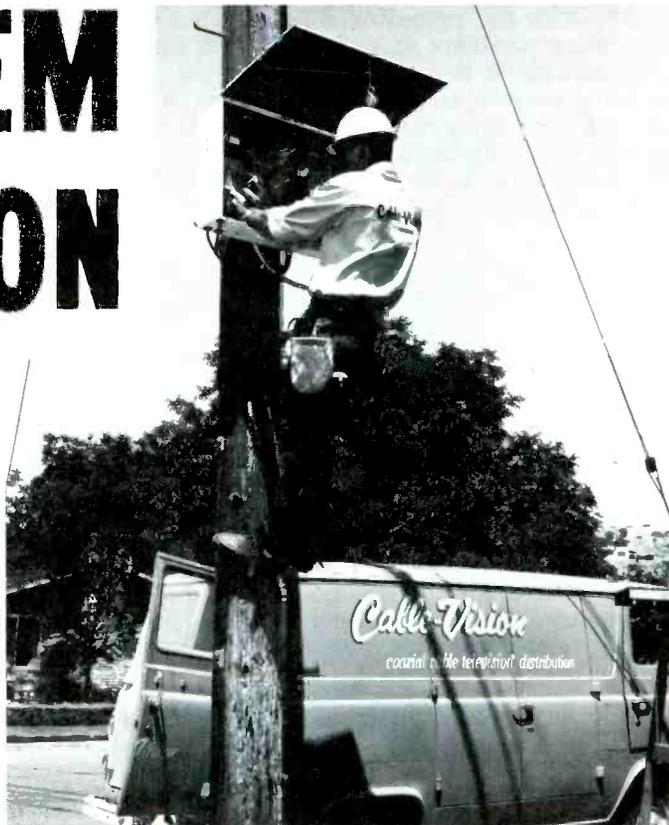
A nine channel community television system to serve the city of Lafayette, California was recently completed by Cable-Vision. Although Lafayette is only 20 miles east of Oakland and within 50 miles of the television transmitters of the Bay area stations, television reception is very poor and spotty due to topography. Spencer-Kennedy Laboratories, Inc. supplied the wide band distributed amplifier system for Cable-Vision. Phelps Dodge Electronic Products Corporation furnished their latest coaxial cable, Corr-O-Foam, designed specifically to meet the requirements of community and closed circuit television applications.

Over 20 miles of  $\frac{1}{2}$ " Corr-O-Foam was used in this CATV application for the main trunk line running from the new Spencer-Kennedy Laboratories solid state head-end at the antenna site, through several SKL main line amplifiers and ALC stations to form the backbone of the system. Additionally, over 45 miles of  $\frac{3}{8}$ " Corr-O-Foam cable was utilized for the distribution network to serve as a potential of 4200 subscribers.

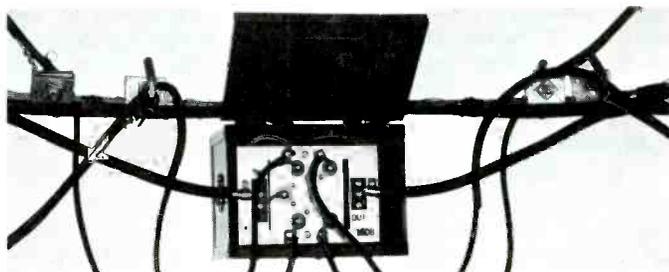
Corr-O-Foam is a lightweight, low loss, uniform characteristic cable supplied in 5000-foot lengths. Corr-O-Foam cable is constructed with a copper inner conductor, a foamed polyethylene dielectric, a formed corrugated aluminum tape and a Habirlene jacket. The aluminum tape outer conductor is partially lapped for full coverage and improved non-radiation characteristics.

Corr-O-Foam is also available with a copper outer conductor under the name Cuflex. It offers the same basic performance of Corr-O-Foam but has several distinct advantages due to the copper sheathing, including resistivity, longer operating life, and better return losses.

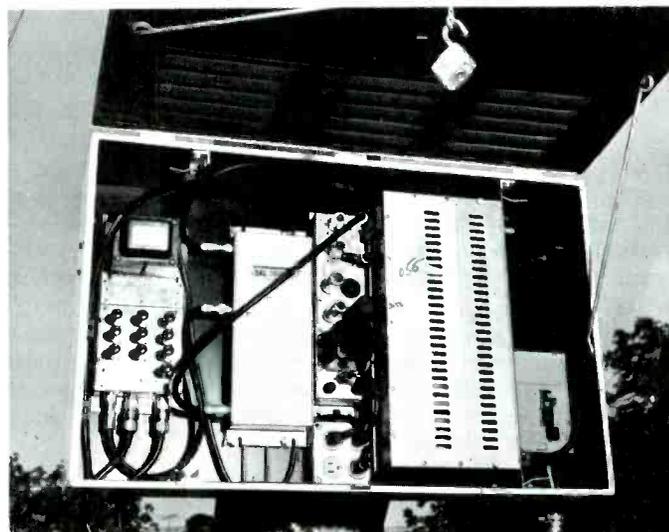
According to C. M. Kirkeeng, General Manager of Cable-Vision, "Corr-O-Foam cable was very easy to handle on the ground and in the air, and was extremely adaptable in connecting amplifiers, Multitap boxes, line splices and Chromataps. Much of the construction was made through heavy tree laden areas but the usual problems were minimal. Our subscribers are very happy with the quality of pictures they are receiving."



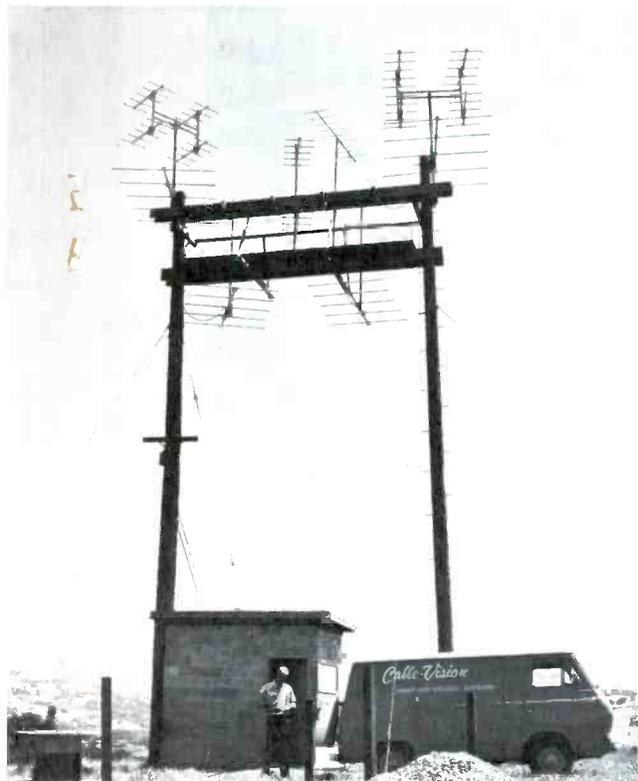
THE ANTENNA RUN of  $\frac{1}{2}$  inch cable coming from SKL's solid state head-end amplifier is adjusted by Cable-Vision technician.



THE  $\frac{3}{8}$  INCH CORR-O-FOAM enters a multi-taps outlet and four RG-59 house drops carry the signal directly to the subscriber's sets.



SKL MAIN LINE AMPLIFIER receives incoming signal and reamplifies and retransmits it to the main trunk line along  $\frac{3}{8}$  inch Corr-O-Foam to the next amplifier station.



LEAD-END of Cable Vision's Lafayette antenna site. San Francisco stations are less than 50 miles, but continuous rolling terrain and peaks up to 2,500 feet above Lafayette's average level make reception spotty and ghostly at best.



CLOSE-UP OF TECHNICIAN, running continuity test on 1/2 inch 75 ohm Corr-O-Foam cable.

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# CONVENTION REPORT

The 14th Annual PTGVC Conference was held in Dallas, Texas, last month with more than 300 in attendance and 24 exhibits on display. The two-day convention was highlighted with a key address by James E. Barr, Chief of Safety and Special Services Bureau, FCC.

An after-luncheon talk on "Spectra-culture" by R. P. Gifford, General Manager of General Electric Communication Products Department; presentation of 17 papers, and a panel discussion on spectrum allocation completed the program.

**OUTSTANDING PAPERS PRESENTED**—The program was opened by A. C. Simmons, PTGVC General Chairman; and W. J. Weisz, National Chairman. Papers presented at the first session were on quality control of mobile communication microphones, design of two-way antennas, base station antennas, and low power crystal ovens

The second session got underway with presentations on mobile telephone services and systems and a paper on "Mobile Communications Planning For The Federal Telecommunications System" by the Honorable Robert B. Conrad, Transportation & Communications Commissioner, GSA.

**BARR SPEAKS AT BANQUET**—Following the initial sessions, members were invited to a social hour and banquet. James E. Barr was guest speaker. Barr reported on the approach the FCC is taking to solve problems of land mobile radio communications. He indicated that the Commission can be expected to take more initiative in the future with regard to collection of vital facts affecting the land mobile services.

**SPECTRA-CULTURE TOPIC OF LUNCHEON**—Final day's sessions included papers on development of VHF power tubes, design of varactor multipliers, low noise UHF receiver design and two papers on the design of transistorized equipment. A luncheon following the third session was topped off with Dick Gifford's speech on Spectra-culture. Gifford was recently named Fellow of IEEE for "leadership in the field of communication techniques and practices."

**CONFERENCE ENDS ON SPECTRUM CONGESTION**—First paper of the final session was on automatically controlled dispatch, followed by a report on improved signaling systems and continuous tone squelch.

Maurice Kennedy, Director of Communications, Los Angeles County, reported on the recent FCC visit to California, then William J. Weisz of Motorola and Chairman, EIA Land-Mobile Section, brought a report on the EIA Frequency Usage Study (reprinted in this issue). Final event was a question and answer period on spectrum congestion.



General Manager Norman Helwig and Nelson Thomas, manufacturers representative; prepare Karr Engineering booth for display.



Bill Weisz, Motorola and PTGVC National Chairman, MC's luncheon.



R. P. Gifford of General Electric speaks on "Spectra-culture" at Friday luncheon.



Robert Troxel points out features of Shure microphones to Malcolm Stephenson, Aircraft Radio Corp., New Jersey.



Head table at IEEE-PTGVC luncheon is shown with outstanding members and guests.



Sherrill Dunn, TV & Communications Managing Editor, visits with Vic Machin, Sales Manager of Shure Brothers.



Jack Wilkinson of Wilkinson Brothers discusses future of two-way radio with Frank Genochic and Norman Helwig of Kaar.



Peter M. Keim (center) shows Dynacoustic Labs' Signaling and Control System to George Olive and Wayne Thalls, RCA representatives.

**We regret having such a limited number of photographs, however, pictures of the other manufacturer's displays and convention activities were destroyed by fire.**

**Profile of PTGVC**— The Institute of Electrical & Electronics Engineers (IEEE), is composed of many Professional Technical Groups covering the entire field of electricity and electronics— from aerospace to biomedical technology. One such group is the Professional Technical Group on Vehicular Communications (PTGVC).

The group is concerned with the field of radio communications as it relates to public safety, public utilities, railroads, truck lines, industrial and governmental groups. Its people are radio engineers, students, technicians and others who are involved in two-way radio sales, design and application; antenna design; component parts design and experimentation.

PTGVC's interests deal with the advancement of scientific engineering, increased professional standing, promotion of close cooperation and exchange of technical information. Members are kept up-to-date on technical developments, recent FCC decisions, new equipment, improved designs and activities of other similar groups.

The Vehicular Communications Group is divided into Sections and within each Section local Group Chapters are formed. These Chapters actively engage in discussion of current scientific topics related to the field of vehicular communications. They are promoted by the National Group and are distributed throughout the United States.

The primary function of the local Chapter is to stimulate specialized professional interests of its members and to co-ordinate these interests with the activities of the Section and National PTGVC.

Local Chapters promote PTGVC meetings within the Section and solicit papers for presentation

Local Chapters promote PTGVC meetings within the Section and solicit papers for presentation at National Group symposia and for publication in local newsletters and the Group magazine **Transactions of Vehicular Communications**.

The national conference which is held annually includes presentation of a number of select papers. The papers are then published in a Convention Record.

**TV & Communications** will feature several of these papers in future issues.

The Mosley UNI-LINEAR Business Band Antenna is compatible with any transmitter, receiver or transceiver you choose for two-way communication needs. This antenna is available in two models:  
**ULBB-27** (27.2 to 27.5 MCS)  
**ULBB-35** (35 to 36 MCS)

The (ULBB) antenna is an omni-directional vertical ground plane, designed and manufactured to fulfill the most exacting requirements demanded by two-way communication users.

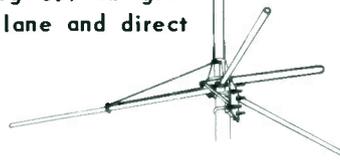
Mosley (ULBB) incorporates a shunt match feed with 50 ohm impedance, rated to 1000 watts with a normal 1.5 or less VSWR at resonant frequency. Mosley UNI-LINEAR offers a big 3.4 db gain over a standard ground plane and direct ground lighting protection.

#### Model ULBB-27

FREQUENCY - 27.2-27.5 MCS.  
 HEIGHT - 20 FT.  
 WEIGHT - 8 LBS.  
 RADIAL LENGTH - 9 FT.  
 RATED WIND VELOCITY - 80 M.P.H.

#### Model ULBB-35

FREQUENCY - 35-36 MCS.  
 HEIGHT - 16 FT. 4 IN.  
 RADIAL LENGTH - 79 IN.  
 WEIGHT - 7 LBS.  
 RATED WIND VELOCITY - 100 M.P.H.



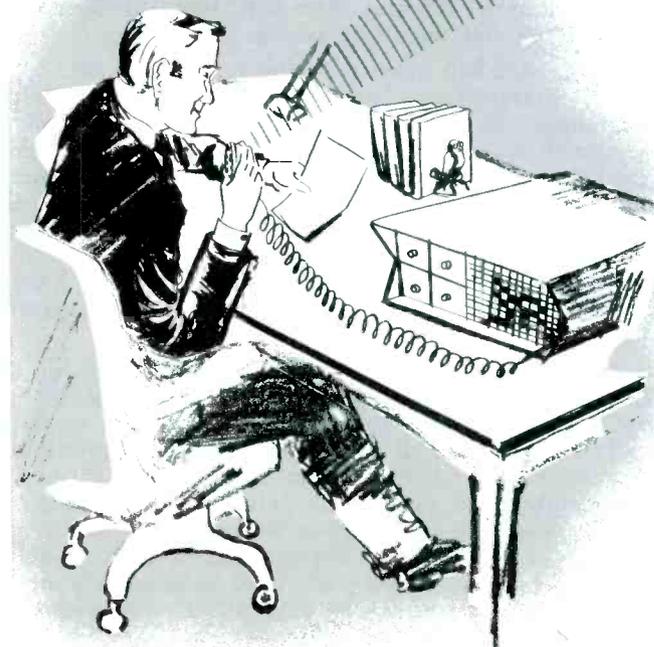
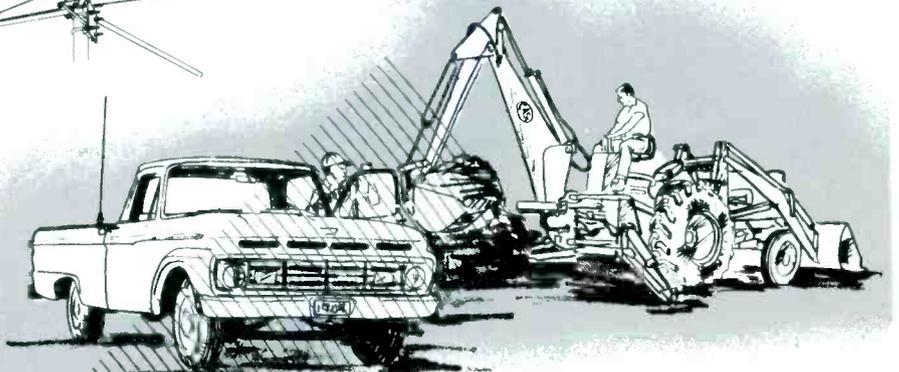
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 COMMUNICATION IS NEEDED - -**

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**- - - farm - - - anywhere - - -**

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The Mosley MBB-35-5 is designed and produced to **BOOST** the performance of any two-way communications. This Mosley Business Band Beam can be mounted vertically, horizontally or stacked to increase the effectiveness of any transmitter, receiver or transceiver you own or contemplate for your two-way communications.



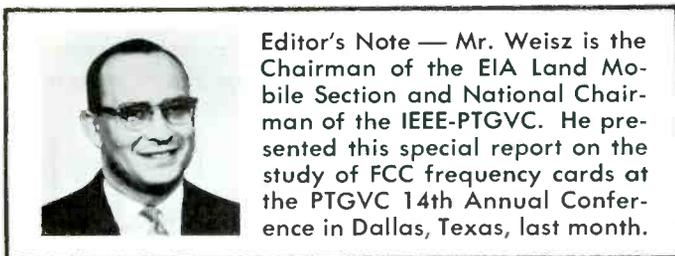
BOOM LENGTH - 18 FEET  
 ASSEMBLED WEIGHT - 31 POUNDS.  
 MAXIMUM ELEMENT LENGTH - 166 INCHES.  
 GAMMA MATCHED - 50 OHM FEED POINT IMPEDANCE.  
 POWER RATING - 1KW A.M. / 2 KW P. E. P. SSB.  
 TURNING RADIUS - HORIZONTAL - 12 FEET / VERTICAL - 9 FEET.  
 WIND LOAD - HORIZONTAL - 91 POUNDS / VERTICAL - 136 POUNDS.  
 FRONT-TO-BACK - 20 DB. OR BETTER HORIZONTAL AND VERTICAL.  
 FORWARD GAIN - 9.3 DB OVER DIPOLE REFERENCE /  
 11.4 DB. OVER ISOTROPIC REFERENCE.  
 VSWR - LESS THAN 1.5 TO 1 AT RESONANT FREQUENCY.

**MBB-35-5-SK** - is two MBB-35-5 antennas stacked  
 STACKING BOOM LENGTH - 12 FEET.  
 POWER RATING - 1 KW A.M. / 2 KW P. E. P. SSB.  
 TURNING RADIUS - HORIZONTAL - 12 FEET / VERTICAL 11 FEET.  
 WIND LOAD - VERTICAL - 301 POUNDS.  
 FRONT-TO-BACK - 20 DB. OR BETTER.  
 FORWARD GAIN - 12.3 DB. OVER DIPOLE REFERENCE  
 14.4 DB. OVER ISOTROPIC REFERENCE  
 VSWR - LESS THAN 1.5 TO 1 AT RESONANT FREQUENCY.

**Mosley Electronics, Inc.** 4610 N. LINDBERGH BLVD. BRIDGETON, MO. 63044

# EIA FREQUENCY CARD STUDY NEAR COMPLETION

by William J. Weisz  
Vice President  
Motorola, Inc.



Editor's Note — Mr. Weisz is the Chairman of the EIA Land Mobile Section and National Chairman of the IEEE-PTGVC. He presented this special report on the study of FCC frequency cards at the PTGVC 14th Annual Conference in Dallas, Texas, last month.

Those of us who have been active in the vehicular field know quite well the magnitude of our frequency congestion problem. Unfortunately most of those outside our field have little understanding of our spectrum usage, or of the importance of the service performed by users of two-way radio. Throughout the years, the Electronic Industries Association's Land Mobile Section has been an active fighter for the cause of proper frequency allocation and management. It has been active in the development and promotion of new technical methods for better spectrum utilization.

The EIA Land Mobile Section's latest effort to achieve frequency relief was the filing of a petition requesting that UHF-TV Channels 14 and 15 be reallocated to the land mobile services. This position was strongly supported by the vehicular radio user groups. But opposing filings from other services accused the two-way radio users of not properly using the frequencies they already had. There was, unfortunately, no existing official study or set of statistics that showed the real usage of land mobile frequencies.

The EIA Land Mobile Section decided to make a

study which would clearly show the usage of the land mobile portion of the frequency spectrum. It requested the Federal Communications Commission to allow it to make copies of all of their electronic computer frequency assignment cards for the purpose of a computer study of the channel loading. The FCC gave its approval in June, 1963 and the study began.

Over 350,000 punched cards were copied by the Study Committee. These cards were then sorted by frequency, by geography, and by service, and put on magnetic tape for use by the computer. A frequency card shows the complete data about a particular licensee in the land mobile service. The number of authorized units, longitude and latitude, frequency of operation, and specific users identification are all punched into the cards. Only the technical details on the cards were retained and put on the tape. All information regarding specific user identification was deleted.

The basic format of the study is as follows: The United States has been divided into over 4800 30 mile by 30 mile squares. The electronic computer automatically accumulates all the base stations and mobile units authorized to operate within each square throughout the country and prints this data out. There are some 18,000 sheets of information which have been printed out by the computer. From an analysis of this data, the frequency usage of any 30 x 30 mile square or any multiple of squares can be determined. For example, a summation of the Los Angeles area situation would show all the base and mobile transmitters operating in the area encircled on the map (figure 1). One form of presentation of the land mobile frequency usage data

Continued from Page 14

for Congressional investigation of the FCC action.

NCTA, still expressing bitterness over the latest FCC rule proposals, has commented that "in the event some rules on CATV are eventually adopted," the present proposals include at least "one wise provision": "In order to assure that no inequities would result in actual employment of this interim relief" to a broadcast station, "we would require reporting by the station and, if it desires, the CATV system, at six months' intervals as to the effects of the relief granted. In this way," the Commission said, "we would be in a position to re-examine, upon request or on our own motion, the appropriateness of the interim relief afforded (e.g., the financial impact on the CATV's operation, etc.)."

NCTA declared that "It is only on the questions of whether there is a need for delayed non-duplication and the definition of a local TV station that there is a real issue between the FCC and the CATV industry. There is a real issue on whether there ever was in any case yet presented proof of a serious adverse economic impact by a CATV system which so damaged a TV station that its ability to perform its obligations under the Communications Act was hampered."

The broadcasting industry's trade press has indicated that the FCC's rule proposals may develop into "one of the most controversial issues" the FCC will face this year, and that the broadcasters are "pleased" by the proposals as issued by the Commission.

**For the benefit** of your associates, here's a suggestion from TV&C: After you have had opportunity to thoroughly review your copy, why not pass it on to the rest of the technical and management personnel in your company? Chances are that there is material in each issue that will be both interesting and profitable to everyone on your staff.

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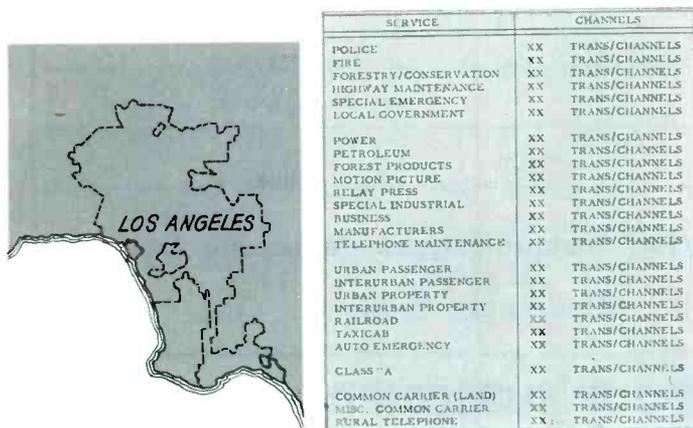
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for Los Angeles will be a frequency by frequency listing (figure 2). Every frequency assigned to the land mobile services will be shown, the service to which it is assigned, the number of base stations and mobile units authorized, and any special remarks about that frequency such as a limitation to 3 watts plate power input, or the fact that it can only be assigned to mobile units. Thus, every frequency in all bands assigned to the land mobile services and its usage will be easily seen. A summary method of presentation obtained by dividing the total number of frequencies allocated will show the loading in terms of the number of transmitters per channel for each service in the Los Angeles area.



It should be clearly understood that no attempt is being made by EIA to set standards on channel loading for the different services. 50 units per channel in one service may be just as heavy loading as 150 units per channel in another one. The FCC, with the help of the user group involved, must make that determination.

Now, after using Los Angeles as an example, the study will be expanded to include the entire United States. The study will show just what the frequency loading is, by service, geographically over the whole country. The computer will print out the average transmitter per channel loading in each one of the 4800 30 mile by 30 mile squares on the map of the United States. There will be a separate map for each of the

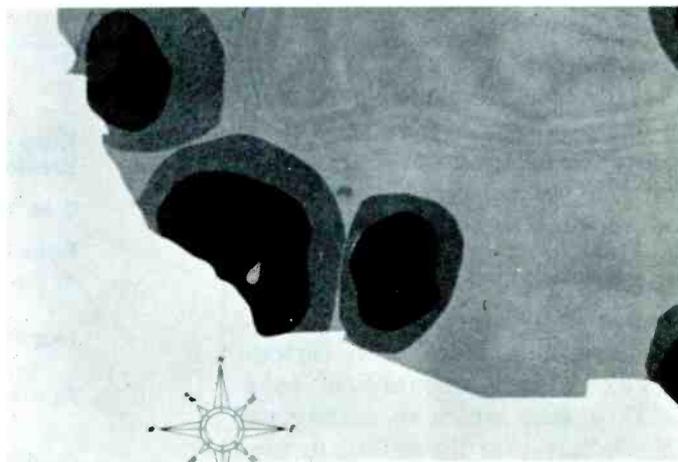
FREQUENCY IN MC	SERVICE	NUMBER OF BASE STATIONS	NUMBER OF MOBILE UNITS	LIMITATIONS
154.875	POLICE	XXX	XXX	
154.890	POLICE	XXX	XX	(B)
154.905	POLICE	X	XXX	
154.935	POLICE	XX	XX	
154.950	POLICE	X	XX	(B)
154.965	LOCAL GOVERNMENT	XXX	XXX	(G)
154.980	LOCAL GOVERNMENT	XX	XX	
154.995	LOCAL GOVERNMENT	XXX	XXX	(G)

major land mobile services. The computer print-out will be converted to various shades of color representing the different degrees of loading in different parts of the country. Thus, on the Police Service Map of the United States (figure 3), Los Angeles may be colored deep red for heavy loading, and Death Valley may be

colored very pale red for very light loading. A single summary map will show the specific numerical loading for all service in every geographic area where a congestion problem exists. Of course, all the maps will be backed up by the detailed computer print-out sheets allowing careful examination of any specific trouble spot.

At the present time, the Los Angeles area portion of the study which was used as a guinea pig to work out the techniques to be used throughout the United States, has been completed. A meeting was held with the FCC staff members concerned, and agreement has been reached on the format for completion of the study. Work is now going on by the Study Committee and by the computer to complete the study as described here. There is, of course, still a substantial amount of work to be done. The Land Mobile Section hopes to complete the study within the next two months, after which detailed discussions will be held with the FCC staff and the Commissioners to determine what further steps should be taken.

There has been great concern on the part of many, as to what the study will mean and what it will do. The study will merely state the facts — nothing more, nothing less. It will show for the first time in a clear



straight forward fashion, the frequency loading that exists in all the land mobile services, on all land mobile frequencies, in all parts of the United States. It will not, by itself, reallocate more frequency spectrum to the land mobile services because only the Federal Communications Commission can do that. It will not recommend that Land Mobile Service X's frequencies should be reallocated to Land Mobile Service Y. But — what it will do is state the facts of land mobile usage — no more, no less.

By stating the facts, it will help the FCC to determine whether there is any further geographical sharing that can take place among land mobile users. It will also show them those places where the land mobile frequencies are all used to the fullest regardless of service and where the answer can only be the allocation of additional frequencies, or the geographical sharing of frequencies by the land mobile user with other than land mobile services. The study will be of tremendous value to the user groups as well as the FCC because it will show the present status of the frequency problem in their individual service in clear and concise terms. It will prove the case of land mobile frequency congestion and will bring the solution to the problem closer to actuality.

# Washington Report

By Robert E. Tall



**Overall Spectrum Policy** — The FCC finally came to grips with the land mobile radio frequency congestion problems in a special meeting on Friday, Jan. 10, but after reviewing the staff recommendations placed before to decide the crucial state of the industry, called for changes in a number of areas, to be taken up again possibly at the end of January or beginning of February.

Major steps included in the package of recommendations include termination of the Commission's long-pending inquiry into present and future uses of the non-government frequency spectrum between 25 and 890 megacycles; denial of the petition of the Electronic Industries Association's Land Mobile Communications Section for reallocation of television channels 14 and 15 to the land mobile services; and the establishment of a joint government-industry committee to look into possible ways to alleviate the land mobile congestion problem.

**No FCC Fees For a While** — The Seventh US Circuit Court of Appeals in Chicago stymied the FCC's plans to put its scheduled program of charging application filing fees at the beginning of this year by ordering a 60-day "stay" in the Commission's execution of its plans.

An original petition asking that the court formally review the FCC's filing fee decision had been filed by a number of aviation industry organizations, a broadcaster, and a private pilot, and these were joined in support for such a move by the American Trucking Associations

and the National Association of Broadcasters.

The petition charged constitutional and statutory invalidity on various bases, lack of statutory authority by the Commission, and invalid exercises of the Commission's delegated powers, among others.

Next move is up to the government—the FCC and the Justice Department—who are expected to oppose any extension of the "stay" against the filing fee program past the 60-day period, or until the court completes its full review of whether the FCC actually does have the authority from Congress to charge fees.

Congressman Walter Rogers (D., Tex.), who heads the House Interstate & Foreign Commerce Committee's Subcommittee on Communications, meanwhile, has announced plans for hearings before his subcommittee on a bill which would prohibit the FCC from charging fees, early this session of Congress.

At the same time, Senators A. S. Mike Monroney (D., Okla.) and Peter H. Dominick (R., Colo.), joined in sponsorship of a Senate bill which would ward off a part of the filing fee plan.

While Congressman Rogers' bill would flatly prohibit the Commission from instituting any type of filing fee plan without further action by Congress, the Senate version specifies that "The Commission shall not make any charge for obtaining a permit or license for the construction, installation, or operation of any radio station which is required by federal law or by re-

gulation of any government agency," without further Congressional action.

The Senate bill, therefore, would exempt from the fee schedule aircraft radio licenses where the radio installations are required by Federal Aviation Agency regulations, and certain marine radio licenses, in cases where the Communications Act calls for such installations.

**RCC Industry Prospers** — The two-way radio common carrier business, insofar as companies not also providing landline telephone companies is concerned, experienced a 25% increase in gross revenues during the past 12 months for which data is available, as compared to a 15% increase in plant investment, and the future of the industry looks "good" if a favorable regulatory climate can be achieved, members of the National Mobile Radio System's Board of Directors were informed in early January.

Concentrated attention was also directed during a meeting of the NMRS Board of Directors to a report on the growing number of cooperative radio installations licensed by the FCC in non-common carrier services. A study by an NMRS committee compiling information on such operations is expected to lead to a formal request that the FCC take action to curb the licensing of such systems where it can be shown that the private radio systems are actually common carrier-type operation.

**UHF TV Set Relief Asked** — The Consumer Products Division of the Electronic Industries Association has asked the FCC to extend for

a year the relaxed radiation requirements for UHF television receivers. UHF sets, which operate on frequencies between 470 and 1000 megacycles, EIA said, are required under a temporary condition to limit radiation to 1000 microvolts per meter—as compared to the VHF set limit of 500 microvolts per meter—and the association's request is to extend the temporary UHF period, which now ends on April 30, for another year.

EIA said manufacturers have shown improvement in the ratio of UHF sets with radiation of less than 500 microvolts per meter since 1960, and that the introduction of semiconductor devices shows promise of "significant further improvement," but that "there is insufficient data as of now to determine the extent."

**Senate Promise** — Shortly before the adjournment of Congress late last year, the Senate Commerce Committee emphasized that "A review and complete evaluation of the allocation of frequencies must be made." The statement came in a report on the activities of the committee during the first session of the 88th Congress, put into the Congressional Records by Senate Majority Leader Mike Mansfield (D., Mont.), at the request of Chairman Warren G. Magnuson (D., Wash.) of the Commerce group.

In its discussion of communications, which consisted principally of a review of hearings held during the past session, the committee said in connection with frequency allocations that it "has been in constant contact with the appropriate agencies in an effort to work out the necessary guide-lines and criteria," and "This work is continuing."

**Plenty Safety-Special** — In a year-end statement, FCC Chairman E. William Henry pointed out that the more than 40 classes of radio operation in the Safety & Special Radio Services included more than 1,200,000 licensees authorized for nearly 4,000,000 fixed, mobile, and portable transmitters at the

end of calendar 1963. Mr. Henry said the Commission "is concerned particularly about the frequency congestion problem in the land mobile services and is currently studying means to alleviate this situation."

**RTCM Meeting** — The annual assembly of the Radio Technical Commission for Marine Services will be held in Boston, Mass., March 31-April 2. The program will include a full day of technical papers on the operational and reliability needs of radar users.

**UHF TV Comment Date Extended** — The comment deadline on an FCC - proposed revised nationwide UHF television assignment table, proposing to add more than 400 new assignments to the present tables, has been extended to Feb. 3. The Commission pointed out that the National Association of Educational Broadcasters has submitted an alternative assignment plan, using computer techniques, which would result in a larger number of new assignments than its own plan, and issued an order calling on interested parties to submit their views comparing the two approaches.

**Government Microwave** — A resolution of the US Independent Telephone Association Board of Directors, registering opposition to plans of the US Bureau of Reclamation for a government microwave system, was put into the Congressional Record appendix by Rep. Ancher Nelsen (R., Minn.), a former Rural & Electrification Administrator. Rep. Nelsen also inserted a letter from Herbert H. Butler, USITA Director-Government Relations, describing as "incongruous and paradoxical" the Bureau of Reclamation's move toward its own system, "when advanced facilities and services can be provided by the most competent communications entities in the world which stand ready to do the job."

**EARC Space Agreement** — The Senate Foreign Relations Committee was expected to schedule hearings early in this session of Congress on the agreement on fre-

quency assignments for space use recently reached at the extraordinary administrative radio conference in Geneva. Senate ratification of the agreement is expected to come with no undue delays.

**OEP Cutback** — Despite a statement by the Senate Appropriations Committee that it "believes it is of particular importance that the telecommunications functions of the Office of Emergency Planning should not be curtailed," about one-third of the 48 members of the OEP telecommunications staff were given their dismissal notices from government service as of the end of last year or at mid-January. Among them was Fred C. Alexander, Director of the OEP Telecommunications Office and a veteran of more than 12 years as the top staff official of the various executive branch telecommunications policy organizations.

**Amateur Hassels** — A petition of the American Radio Relay League for extensive amateur radio rule changes designed, according to ARRL, to boost the "proficiency" of amateur radio operators, has already drawn "numerous comments, both formal and informal, representing a wide variety of viewpoints," the FCC said, and in the event the agency "finds merit" in the proposals, interested parties will have further opportunity to comment on them after the Commission issues specific rulemaking proposals. The order came in a denial of a request from the Foundation for Amateur Radio, Inc., for another 60-day extension in the time for submitting responses to the petition. The closing period for reply comments was Dec. 26. A further delay at this stage of the game, the Commission said, "is unwarranted."

**New Orleans RCC** — Communications Industries, Dallas-based electronics and communications firm, has announced the purchase—subject to FCC approval—of the Mumphrey Radio Dispatch Service, of New Orleans, La. The Mumphrey operation which went into

service in 1949, was one of the first radio common carrier systems in the United States. The CI Mobil-fone Division operates an extensive RCC system at Midland and Abilene, Tex.

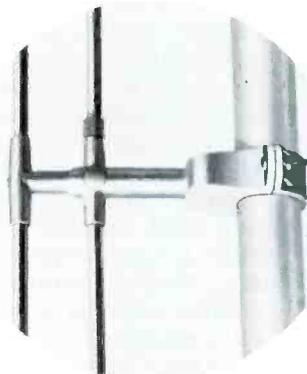
**"Economic Value" of Spectrum** — A new method of evaluating present and potential uses of the radio frequency spectrum—in effect, "farming" the spectrum much along the lines in which other natural resources of the United States are being handled—was suggested by General Electric Communication Products Department General Manager Richard P. Gifford to about 300 members of the Institute of Electrical & Electronics Engineers attending the IEEE Professional Technical Group on Vehicular Communication national conference in Dallas.

**New FCC Bureau Chief** — Bernard Strassburg, Associate Chief of the FCC Common Carrier Bureau who has also been Chief of the Commission's Office of Satellite Communications since the creation of the latter office a little over a year ago, has been named Chief of the Bureau, upon the retirement of John J. Nordberg, previous Bureau Chief. Asher H. Ende, a former Bureau official who has been an FCC hearing examiner for the past two-and-a-half years, succeeds Mr. Strassburg both as Associate Chief of the Bureau and as Chief of the Satellite Office.

**Microwave Sharing**—The American Petroleum Institute's Central Committee on Communication Facilities has petitioned the FCC to "clarify without delay" industrial radio services rules "governing the conditions under which private microwave systems may be shared by operational fixed users in the petroleum radio service." The requested action, the committee said, "should reaffirm and make clear the long recognized right of eligible petroleum radio licensees to share private microwave facilities without restrictions other than that any sharing arrangements be on a strictly cost-sharing basis."

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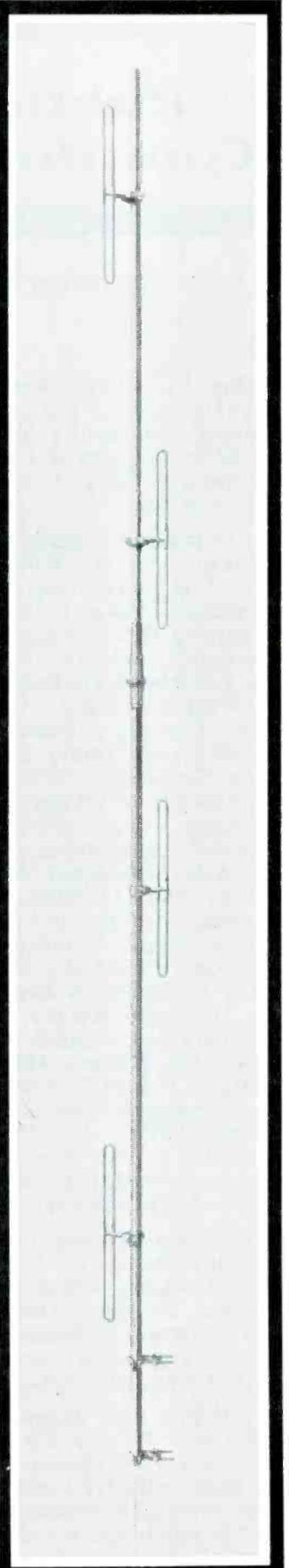
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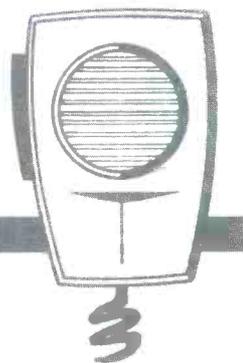


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# Public Safety Communications



By Robert E. Brooking

The Fall 1963 meeting of the Public Safety Communications Council was held at the Bismark Hotel in Chicago on October 29 & 30. An agenda of 18 items awaited the representatives.

Assembled to tackle the long list of items were Mr. Willis M. Green, attending as representative for the American Association of State Highway Officials; Captain Frank Campbell and Mr. Jacob Bowers for Associated Public-Safety Communications Officers; Captain Edward Tierney, representing Eastern States Police Radio League; Mr. Max Guiberson, PSCC Chairman and Mr. Fred Waters representing Forestry Conservation Communications Associations; and Chief Thomas P. O'Brien, Mr. Jorman Koski and Mr. William Crocker representing the International Municipal Signal Association. Also in attendance were Mr. John McCue, FCC Public Safety Division Chief; Mr. Leonard Kolsky, Rules and Standards Branch Chief; Mr. Joseph M. Kittner, APCO Counsel and Mr. Robert E. Brooking, Secretary-Treasurer and Technical Advisor, PSCC. Mr. George M. Tomsho of the American Public Works Association attended the meeting as observer for APWA.

President Campbell of APCO used the opportunity for a meeting of APCO officers, which was held on October 28. Mr. J. Rhett McMillian and Secretary William Gamble were therefore present and observed some of the PSCC sessions.

The first item discussed was the letter from FCC Safety and Special Radio Services Bureau Chief James E. Barr to the National Frequency Advisory Chairmen of the various Public Safety groups requesting information about the various frequency advisory committees and

their operating methods. FCC Public Safety Division Chief John McCue told those present that Mr. Barr is very much interested in the job that the committees are doing. Mr. McCue added that this is not an attempt by the Commission to be critical of the work of the committees, but rather a desire to be of assistance in this most important function.

He added that when Mr. Barr started to look into the complicated picture of frequency coordination in the Public Safety Radio Services, the lack of information available to the Commission for its use became apparent. It is the desire of Mr. Barr and the Commission to increase the information it has in this field so that it may be better able to understand our problems. Mr. McCue pointed out that the Commission is desirous of getting all coordinating committees to adopt the standard form developed by PSCC for use in Local Government coordination, not only for their own Service. He called attention to the fact that when an applicant is given a frequency advisory letter for a primary frequency, it is the responsibility of the chairman to notify the other chairmen, where there are users within 75 miles and 30 Kc; i. e. Police primary and L. G., Police primary and Highway Maintenance and Fire Primary and L. G.

The frequency card study by EIA was the second item discussed. It was explained that this card study will show only that the channel is in use and the number of licensees. It will not show the number of mobile units in use or the percentage of time the channel is busy. It will be necessary for the Public Safety groups to develop these facts, as to

permissible loading and other factors for Public Safety channels, including the amount of interference and delay which can be tolerated.

Chariman Guiberson suggested that an agenda item concerning the FCCA study of possibilities of sharing the 151 Mc. splits could best be included in the discussions at this point. He went on to explain that as its 1963 National Conference had adopted a Resolution proposing that FCCA make a comprehensive survey of forestry and conservation communications throughout the United States with the thought that it would be preferable to share with other Public Safety Services in selected geographical areas where there are frequencies available. He pointed out that in some of our heavily metropolitan areas, this might provide a few more channels for Police, Fire or Local Government systems.

Turning to the EIA petition requesting TV channels 14 & 15 most comments expressed were that the myth concerning Broadcast spectrum space being sacred, had ended. Channel 37 has been assigned to Radio Astronomy. Also on the agenda was the APCO Petition for a Statutory Inquiry. It was reported that the Commission had commented concerning the APCO Petition in its Report and Order on Docket 14503. Since the visit of the Commissioners to Los Angeles, there is a good possibility that the Commission will give serious consideration to the APCO Petition for a Statutory Inquiry.

The APCO Resolutions #16 & 17 of the 1963 National Conference were discussed. #16 deals with standardization of placement of control heads and direction of rotation on mobile control heads, while #17 considers the problem of increased interference which can be expected with the switch to transistorized ignition systems. Chief O'Brien commented that in large departments the personnel learn the operation of a control head only to find that a new radio operates practically in reverse, even though it may be of the same manufacture. More will be heard about these matters in the future, both in and out of PSCC.

The proposal of Commissioner Lee for a government-industry

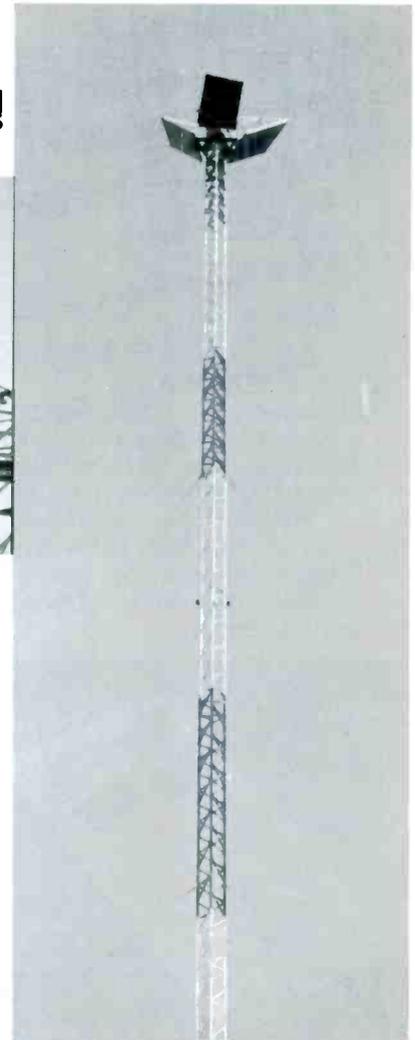
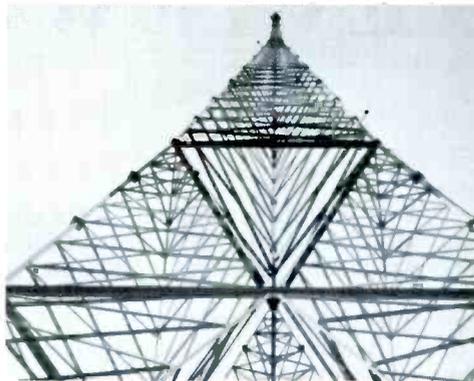
committee for the various Land Mobile Radio Services was brought before the group. Joseph Kittner, APCO Counsel, stated that he felt more than ever, now, that such a committee would be formed and that the recent visit by the seven Commissioners to Los Angeles certainly enhanced this possibility. Asked about the activities of such a committee, he commented that there would in all probability be a study of all of the Land Mobile Services and that Public Safety must be ready when the opportunity arises, to present its facts.

The group then discussed the recent decision in Docket #14503, by the Commission. Public Safety would have lost a large portion of the spectrum space it uses in the 30-40 Mc portion of the spectrum had the original proposal been adopted. Chief O'Brien stated that all of the Public Safety Radio Services owe Mr. McCue and Mr. Kolsky a vote of thanks for their efforts in our behalf. Joe Kittner termed the results "a minor miracle, brought about by the concerted efforts of Public Safety groups and licensees from all over the nation." Joe mentioned the National APCO filings amounting to more than 120 pages, providing statistics concerning the problems of Police Radio Service around New York City, Philadelphia, Cleveland, Detroit, Toledo, Chicago and Los Angeles. Another set of statistics filed with the Commission showed that over 1800 Police Radio systems with more than 26,000 mobile units would have been required to move if the original proposal of the Commission had been adopted. The cost for crystals and technicians' time would have exceeded \$1,300,000.00, Mr. Kittner added.

Mr. McCue stated that yet another problem was the situation in areas where fire protection is provided by volunteer Fire groups. These groups usually operate on Police channels, and in many cases the local law enforcement agency alerts the firefighters and provides communications. To alleviate the necessity for these agencies to spend money to move, the Commission redesignated the ten frequencies most commonly used to Local Government. Existing licensees operat-

Continued on Page 33

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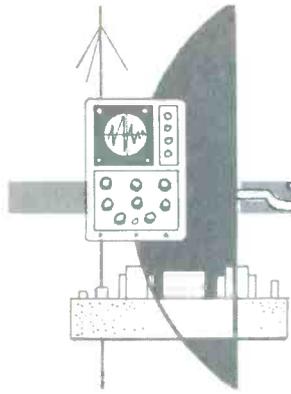
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# PRODUCT REVIEW

## CATV & MICROWAVE

A new concept in power load centers is claimed by **Telesystems Corporation** with the introduction of the **Power-Pack PFC-4**. This plug-in unit enables the technician to make any necessary repairs on the RF filter unit without removing the complete load center from the installation location.



The **Power-Pack PFC-4**, with four staggered outlet receptacles, eliminates UHF radiation and electrical interference while protecting electronic distribution equipment from surge and overload. When the circuit breaker is open the indicator light can easily be seen from ground level, eliminating unnecessary pole climbing inspections. Price of the new unit including lightning arrester is \$29.50. It is available now from **Telesystems Corporation**, 113 S. Easton Road, Glenside, Pa.

A new slide rule which serves as a technical aid in the testing and alignment of **Collins** single side-band microwave radio and cable carrier systems is available from **Collins Radio Company**.

This slide rule enables technicians to quickly determine frequencies of any specific carrier and test tone during any phase of modula-

tion within the system. This allows level measurements to be taken at any point without prolonged mathematical computations of frequency translation.

Because the individual carrier signals are suppressed and are not used for level measurements, a table is provided, on the rule, to determine the position of the test tone with respect to the channel frequency. The actual channel frequency will always be above or below the measured frequency by the amount of the inserted test tone.



## COMMUNICATIONS

A lightning arrester which is reported to effectively reduce static build-up around any communications antenna system and safely bypass to ground 10 or more direct lightning strokes has been introduced by **Hy-Gain Antenna Products Corp.**

Adapted from a surge arrester originally designed to protect electronic gear aboard military aircraft, **Hy-Gain's Model LA-1 Lightning Arrester** can be easily installed in the 52 ohm or 72 ohm coaxial feedline leading to any communications antenna. Its cur-

rent surge bypass capability is 10 or more voltage surges of 15,000 amperes in 5 microseconds at 21 coulombs (each surge equivalent to a major stroke of lightning). The manufacturer points out that the **Model LA-1** should not be confused with spark gap, fuse type devices that break down when subjected to an electrical surge.

Properly installed, the **Model LA-1** will effectively remove static build-up around the antenna system and vastly reduce the possibility of the equipment being hit by a direct lightning stroke while also offering positive protection in the event the system is hit by a major stroke.



**Hy-Gain's Model LA-1 Lightning Arrester** is available from **Hy-Gain** distributors for \$19.95 net. For more information write to **Sid Kitrell** at **Hy-Gain Antenna Products Corporation**, N. E. Highway 6 at Stevens Creek, Lincoln, Nebraska.



**Carter Electronics Corporation** has announced a special offer of a free **Carterfone** to be shipped to each dealer ordering three of the units at regular dealer discount. The **Carterfone** "phone - patch" is fully transistorized and voice operated, requiring no manual switching. **Carterfone** is utilized by two-way radio users to link mobile units with land telephone lines through the **Carterfone** unit located at the base station. An auxiliary speaker enables the operator to monitor the call, sign-off with the mobile unit and hang-up the telephone at the end of the conversation. **Carterfone**, the manufacturer points out, allows dispatching from

any private office connected by telephone with the base station. The device fully complies with FCC regulations. For further details contact Carter Electronics Corp., 6762 Greenville Ave., Dallas 31, Texas.



The Public Safety Communicator, "University Vanguard I" is available from LTV University. The Vanguard I is a 50 watt siren system utilizing the ES-50 siren speaker, dynamic push-to-talk Model 61 University microphone, and push button control panel. The manufacturer claims unusually good performance based on speaker quality and simple, compact push button control head. In addition to manual, automatic and "alert yelp" siren functions, the Vanguard I provides public address system and can be switched to amplify incoming broadcasts when operator is out of the vehicle. Price of the siren system, complete, is \$199.95 from LTV University, 9500 West Reno, Oklahoma City, Okla.

### ANTENNAS & TOWERS

A line of VHF communications towers is now available from Andrews Tower, Inc. Andrews has been a supplier of self-supporting and guyed towers for TV, A.M. and F.M. broadcast as well as UHF and microwave applications. According to Andrews the addition of the VHF towers completes a family of tower designs that has been proven through performance.

All Andrews towers come equipped with climbing steps welded in one face of the tower. All towers are built in welded sections of ASTM A-7 structural steel. Andrews designs are reported to exceed EIA specifications RS-222. Antenna brackets, guy arms, ladders and coax shields are available from stock.

For your copy of the company's 21-page brochure and data sheets, write to Johnnie Andrews, Andrews Tower, Inc., 1420 Layton Ave., Fort Worth, Texas.

### LITERATURE

A bulletin dealing with UHF two-way communications has been

made available, free of charge by G-E. Information is included on new compact, economically priced mobile equipment for the 450-470 mc range. Data includes dimensions, power output, weight, battery drain, sensitivity, selectivity, and other technical characteristics. Also included are details on frequency stability, improved tube and component life, ruggedized construction and battery saving circuit. Write for Bulletin ECR-1114 from Section P. General Electric Communications Products Department, P. O. Box 4197, Lynchburg, Va.

"Diodes and Transistors" is the title of a new book by French technical author Guy Fontaine. The book explains the language of semiconductors and their uses in all kinds of circuits. Fontaine gives a comprehensive review of the principles underlying all semiconductor devices. The book includes discussions of N-type germanium, P-type germanium, P-N junctions and the effects of an electric field on a P-N junction. Diodes are covered in detail.

Problems of the design engineer in using diodes and transistors are considered. Parameters of transistors are analyzed and compared to similar parameters of vacuum tubes. A final section gives methods, formulas and equations for designing transistor circuitry. Illustrations include 3-color graphs and diagrams. "Diodes and Transistors," 470 pages, is available at \$9.50 in cloth binding from Hayden Book Co., Inc. 116 West 14th St., New York 11, N.Y.

## CALENDAR

**FEBRUARY 24** — Deadline for filing comments with the FCC regarding "Notice of Further Proposed Rule Making, Docket No. 14895 (private microwave) and Notice of Proposed Rule Making, Docket No. 15233" (common carrier microwave).

**FEBRUARY 3** — Deadline for comments on rule making to authorize six UHF channels for airborne ETV in six Midwestern states (MPATI).

**FEBRUARY 3** — Deadline for comments on UHF allocations tables proposed by FCC and National Association of Educational Broadcasters.

**MARCH 31-APRIL 1** — Spring meeting of the Public Safety Communications Council, Arlington, Virginia.

### Public Safety Continued

ing combined Police and Fire systems may continue to do so without modification of their licenses until renewal time.

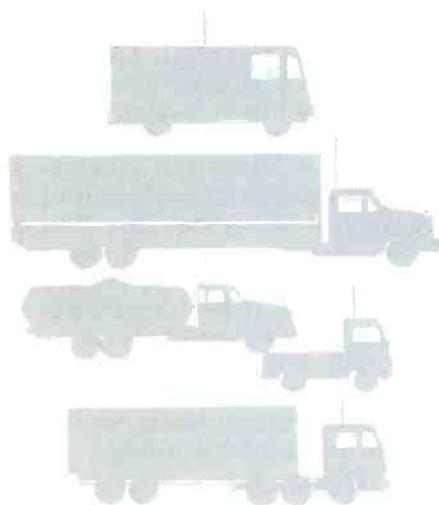
During Tuesday afternoon an informal exchange of information took place between Mr. McCue and Mr. Leonard Kolsky speaking for the FCC and the representatives to PSCC. A number of problems were covered including misunderstandings on the new coordination procedure for the Local Government Radio Service. Most of the misunderstandings are in regard to FCC requirements concerning inter-committee notifications. The National Frequency Advisory Chairmen of the various groups will advise the various committee chairmen on these matters.

On Wednesday morning, the group considered the APCO proposal that a fee be established for handling frequency advisory matters. A committee was selected to investigate the possibilities of establishing such a plan, and to develop a form and suitable procedure for implementing the plan. The group also studied the recent Public Notice of the FCC deleting 1143 types of radio equipment from the Type Acceptance List. All Public Safety licensees are advised to check this list carefully.

Mr. McCue was asked about the National Industry Advisory Committee (NIAC) and its relationship to Public Safety Communications. He stated that new material is being developed and that Public Safety will be heavily involved.

The next meeting of the Council is scheduled for March 31 and April 1, 1964 in Arlington, Virginia. It was felt that by holding the meetings near Washington, D.C. the Commissioners and Mr. Barr could attend or at least meet with the representatives of PSCC while they were in the area and discuss the problems of Public Safety.

**For the benefit** of your associates, here's a suggestion from TV&C: After you have had opportunity to thoroughly review your copy, why not pass it on to the rest of the technical and management personnel in your company? Chances are that there is material in each issue that will be both interesting and profitable to everyone on your staff.



# TRUCKERS BOOST PROFITS WITH 2-WAY COMMUNICATIONS

by Melvin Shapiro  
Vice President  
Outercom Electronics Corp.

Highly encouraging results have been obtained from a recent study of communications expenses to truckers — before and after installation of two-way radio systems. The findings of this report should be of vital interest to any firm whose service or delivery personnel are not completely pre-routed before leaving the plant.

According to a survey conducted by Outercom Electronics, a typical firm using four one-half ton panel delivery trucks now saves an average of 71% monthly on driver-to-office communication expenses since installing two-way radios. The installation consists of four mobile units in the trucks, plus the base station. Purchase cost to the user is approximately \$90 per month.

Before installation of the two-way equipment, this company spent an average of \$312 monthly for driver-to-office communication. This was compiled as follows: it takes a driver an average of 12 minutes per telephone call (including time to park his truck and the time to actually complete the call). Four drivers earning \$2.90 per hour each, and making only 3 calls per day would cost the company \$174 per month. Three hundred calls at 10¢ per call would cost \$30. And the extra mileage required in getting to telephones adds an additional monthly expense of \$107.50 (figured at 9¢ per mile).

This firm now enjoys a savings of \$222 every month in actual expenses, plus the extra profits made possible

because the time saved enables the four trucks to make more deliveries. Of course, another valuable feature of the two-way equipment is the ability of the dispatcher to call the trucks — rather than having to wait for the drivers to call him.

In another part of the country, we found that a firm paying an average of \$3.50 per hour to its ten drivers enjoys a saving of \$267 per month as a *direct result of two-way radios*. These figures are based on only two calls per day per driver and an average of 8¢ per mile truck expense. The survey indicates that these ten drivers had been spending a cumulative total of four man hours daily contacting the office by phone. In addition, they were driving a total of 24 extra miles during each day. And the savings in petty cash for phone calls amounted to \$2 per day.

The cost study figures received from the Southern Illinois and Missouri areas indicate that only \$1.65 per hour is being paid to truck drivers. On this basis, a firm using six vehicles realizes a net savings of \$96 each or a total of \$576 per month savings with the use of two-way communications equipment.

The figures used in the Outercom study are purposely conservative. It is certain, however, that savings far exceeding those detailed here are being realized by many truckers. The clear-cut conclusion of this report is that *any* company requiring even routine communication with its trucks or service vehicles can probably save money by installing a two-way radio system.

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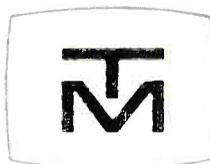
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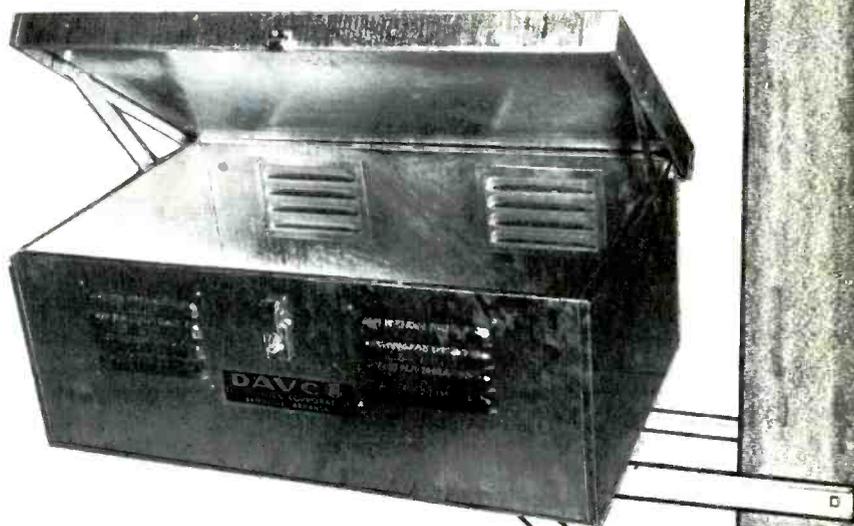
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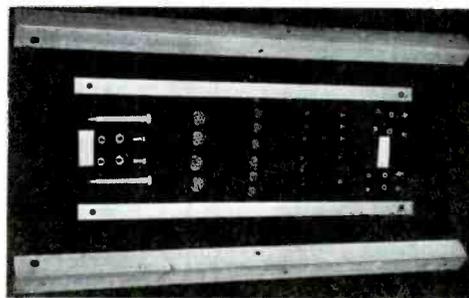
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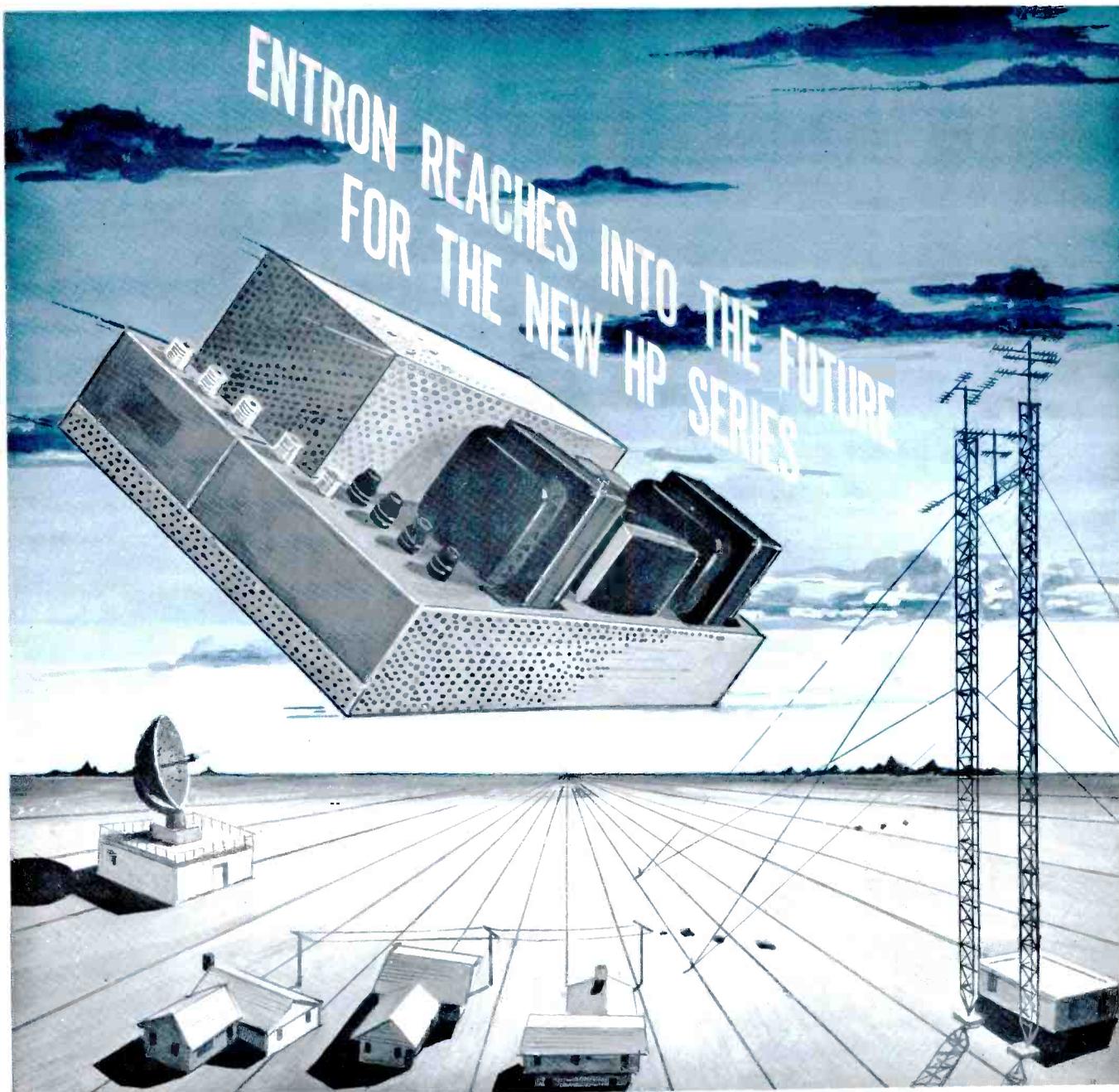
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