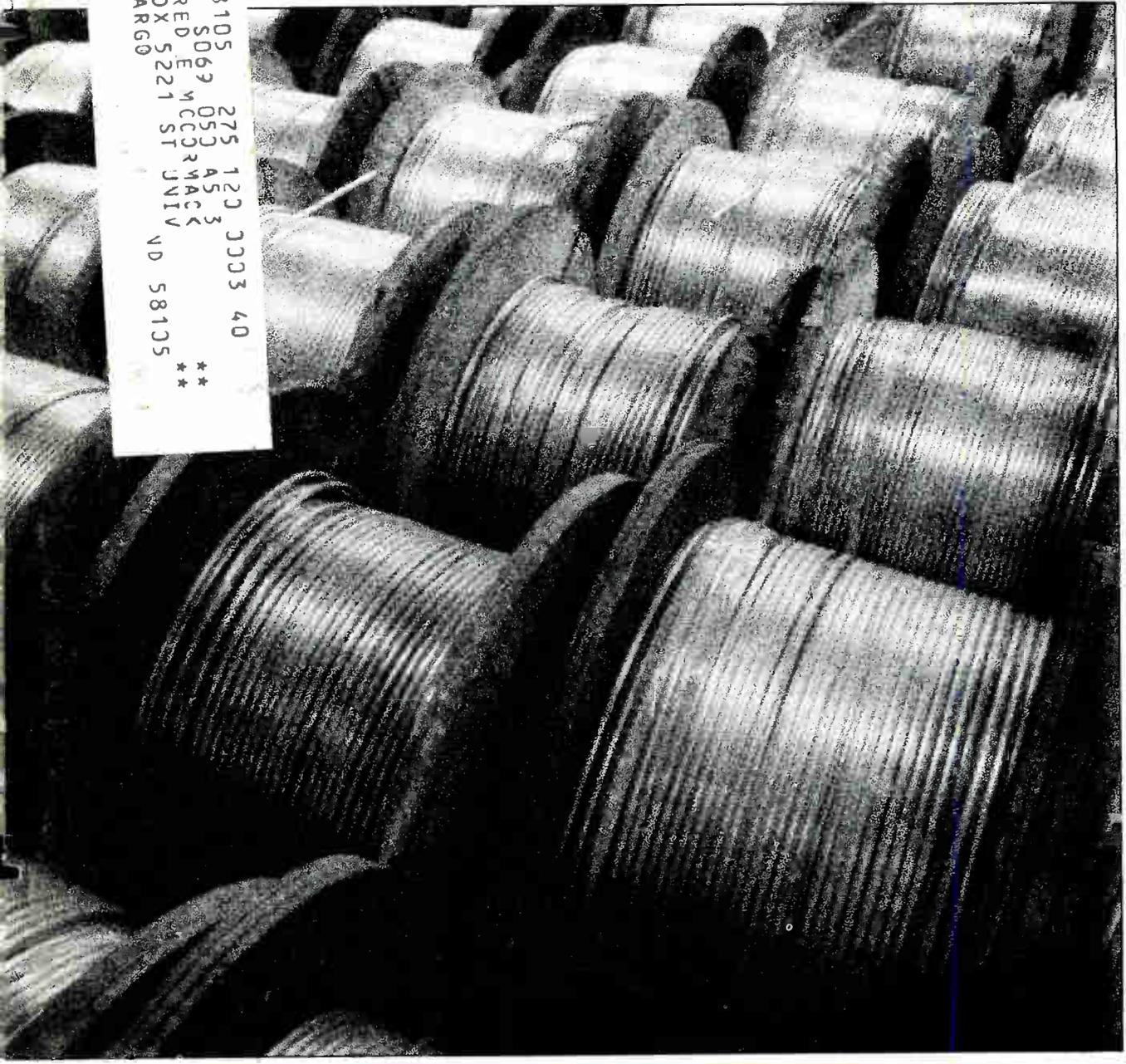


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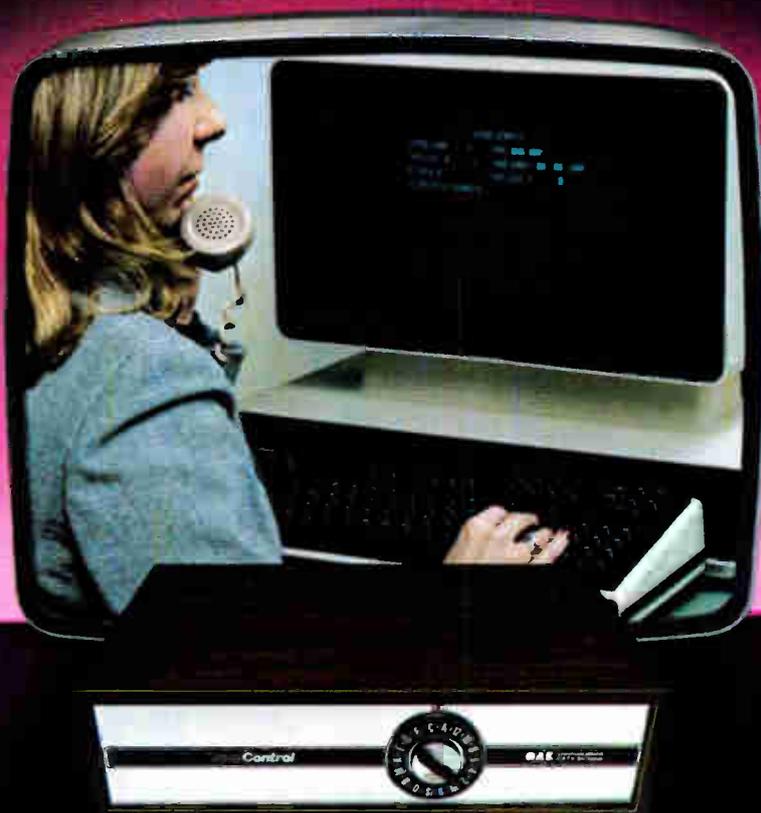
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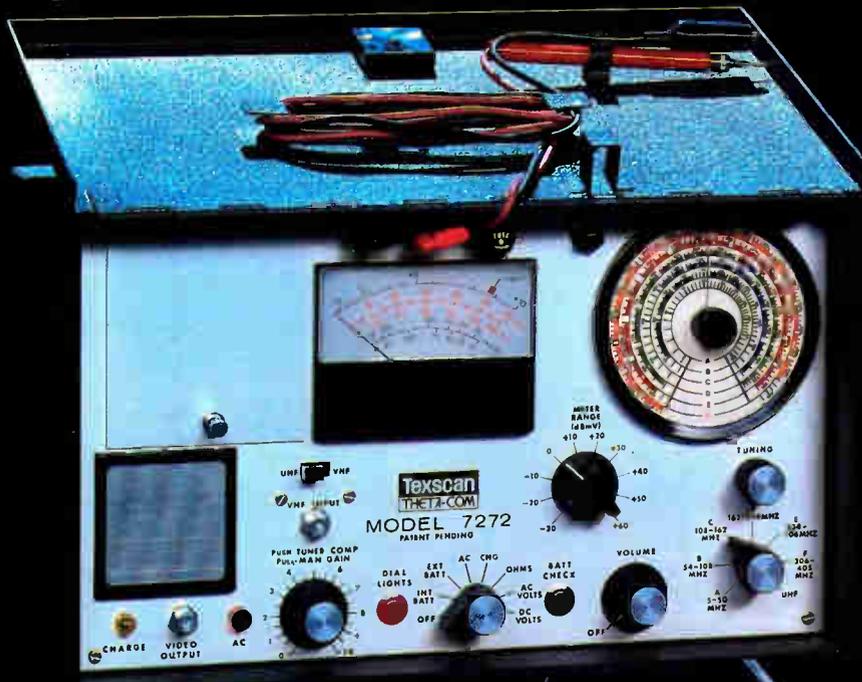
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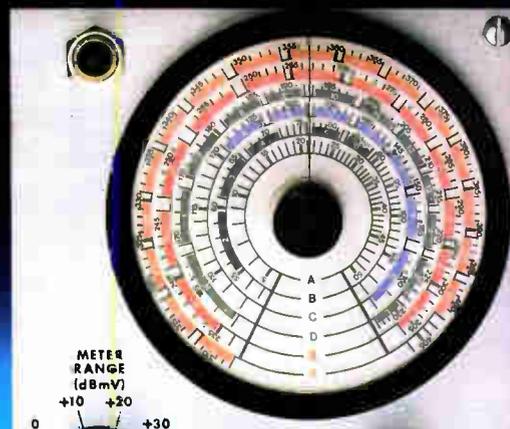
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C-ED News at a Glance

MIAMI, OKLAHOMA—**Caltec Cablevision** of Baltimore, Maryland, will be the first CATV system to **install a spherical antenna**, according to the U.S. Tower Company, which recently introduced the design.

The rectangular antenna will replace an existing six-meter dish now in use by the new cable system, which serves over 20,000 subscribers. The antenna will provide **simultaneous satellite programming from Satcom I, Comstar D-II, and Westar III** beginning in November. A fourth feed horn will be added to the system for experimental purposes, and will eventually be set for **Satcom III**.

WASHINGTON, D.C.—**The Federal Communications Commission (FCC)** has begun an inquiry into regulatory policies and technical aspects of **Direct Broadcast Satellites (DBS)**. The commission has requested public comments on their **staff recommendations, which call for minimal FCC regulation** of direct satellite-to-home TV service.

The staff report on DBS **recommends creating a hybrid service** covering the similarities of STV, MDS, and DBS services. Such a move, the staff notes, "would rationalize the Commission's treatment of supplemental video services and **would permit operation free of conventional broadcast and common carrier regulation.**"

LAGOS, NIGERIA—**The Nigerian government** has decided to set up an extensive satellite network for both **TV and telecommunications**. Contracts for manufacture and installation have been awarded to the French firm of **Thomson-CSF**, according to **TV World**. Included in the deal will be four TV transmitters to improve reception coverage. Most of the work is expected to be completed by late 1981.

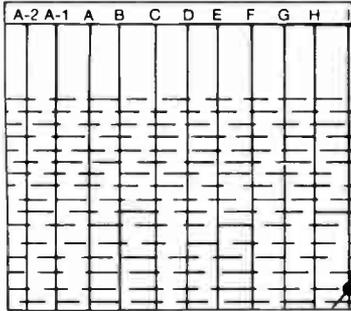
NEW YORK CITY—**Manhattan Cable**, one of the first cable systems to experiment with data transmission in 1973, and **Viacom of San Francisco**, will **partake in an experiment involving the coast-to-coast satellite relay of data from one cable system to another.**

The unique aspect of this satellite linkage is that the coast-to-coast hook-up will be accomplished **without the use of any telephone company lines or equipment.**

The experiment is **being conducted by Tymenet and Satellite Business Systems**, and will begin in early 1981. The results are hoped to prove that **cable systems can be a significant medium for high speed transmission of data**, something that present unmodified telephone systems are incapable of doing with a high, cost-efficient quality.

CHICAGO—**Independent telephone companies** are becoming increasingly active in **acquiring cable franchises outside their telephone service areas**, giving cable firms even more competition, reports **CableVision magazine**. The fifth largest phone company in the country, **Central Telephone Company (CTC)** with **assets of approximately \$2 billion**, owns and operates cable systems in five states. **Its systems serve 75,000 subscribers.**

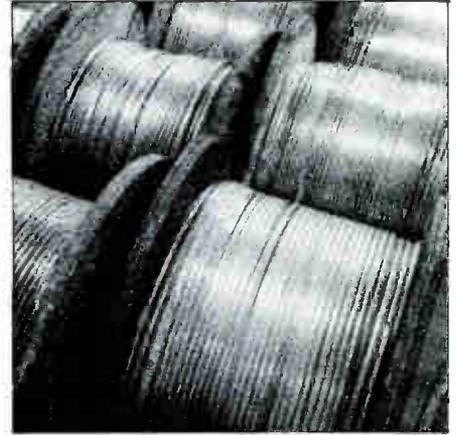
Through its subsidiaries, Centel Communications, OV Cablevision and Cable Communications Operations, the Chicago-based **CTC is aggressively seeking franchises in suburban areas in Texas, Virginia, and Tennessee**, and has even inquired about **Miami**, whose city council recently announced the preparation of a cable ordinance and RFP.



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Cover: Aluminum sheath cable awaits shipment at Comm/Scope's Catawba, North Carolina, plant.

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Editor's Letter

With this issue of *C-ED* comes our first survey of cable television engineers and technicians. The survey contains interesting questions relating to both the demographic make-up of our readership, and their opinions on various technical topics. We hope you take the time to fill out the postage-paid response card and drop it in the mail. The survey begins on page 61, and the response card is on the facing page. Results of the survey will be carried in upcoming issues of both *C-ED* and *CableVision*.

This is the last issue of *C-ED* that will bear the familiar front-page logo. The December issue will sport a completely redesigned look, starting with a new front-page design, and continuing throughout the issue.

In this issue, Glenn Chambers takes a look at rebuilding systems, beginning on page 31. The decision between rebuilding your system, or just upgrading it, may be easier than you think, he says.

Steven Lowe and Robert Lackey of Weatherford, Oklahoma, have submitted an interesting program that can help you aim your earth station. Written for programmable calculators, the story begins on page 43.

Our "Satellites" section (page 46) takes a closer look at the NCTA Engineering Committee's caution against the use of three-meter dishes, and our Letters to The Editor column begins anew with this issue on page 11.

Paul A. FitzPatrick



"Now I can reach population pockets without emptying my own."

"Loleta had 195 potential subscribers, Hydesville, 190. That's plenty if you can reach them economically." And that's exactly what Sam Shults, President of Redwood Cable Vision of Fortuna, California did. He serves several small communities profitably with a Hughes AML microwave system feeding 50 1/2 miles of aerial distribution.

Hughes AML receivers are cable powered, designed to work outdoors, and feature 40-channel capacity with VHF input and VHF output. There are more than 6000 video channels being distributed by Hughes AML systems around the world.

If you'd like to know more about how you can make small population pockets fill your pockets, call or write Hughes Communications Products, P.O. Box 2999, Torrance, CA 90509, or call 213/517-6100. Micro-Sat Communications, Ltd., (416) 839-5182.

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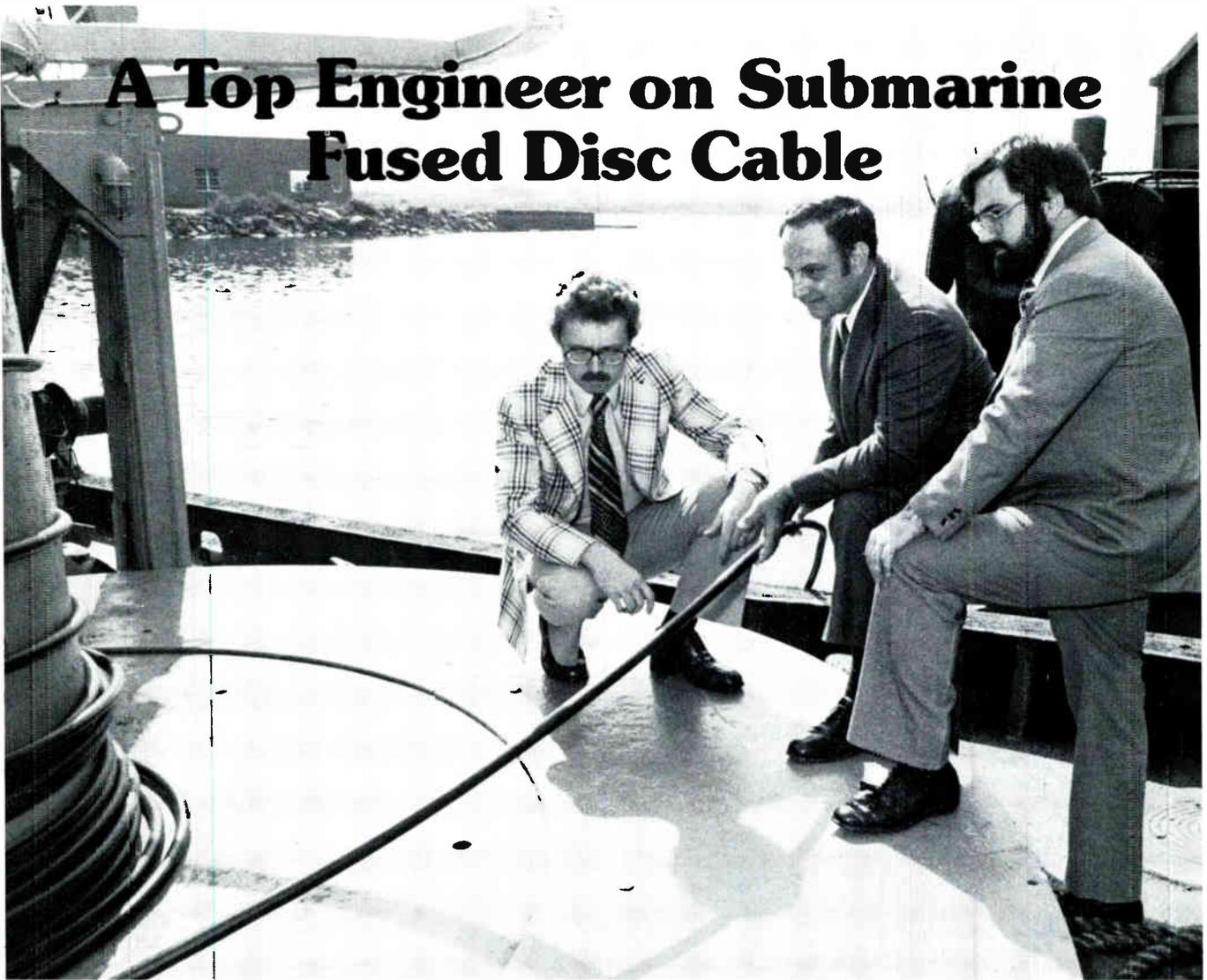
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Richard M. White, Vice President, Engineering for Vision Cable Communications, Inc. of New York, N.Y. had this to say in a recent letter to us:

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SCTE Plans Manpower Projects

The Society of Cable Television Engineers (SCTE) is engaged in a series of actions to help the cable industry manpower problem, according to Society spokespersons.

The Society will soon be distributing a new handbook, developed by SCTE for the Department of Labor's Private Sector Initiative Program (PSIP), to all SCTE members. The handbook, titled "Developing Manpower Resources For The Cable TV Industry," focuses on methods that cable companies and others can use to work with the government's Community Employment Training Act (CETA) programs.

Dolan Announces SCTE Nominating Committee

Lawrence Dolan, president of the Society of Cable Television Engineers, recently announced the appointment of the 1980 Board of Directors Nominating Committee, to be chaired by Joseph Van Loan, Viacom Communications, Pleasanton, California. The committee will coordinate the nominating and election process for the six seats opening on the board of directors in 1981. This includes: Region One (Alaska, Arizona, California, Guam, Hawaii, Nevada, Oregon, Utah, Washington); Region Three (Iowa, Kansas, Missouri, Nebraska, North and South Dakota, Oklahoma); Region Five (Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North and South Carolina); and, three At-Large Directorships.

Van Loan will be assisted by committee appointees: Ralph Haimowitz, Indian River Cablevision, Sebastian, Florida; Jim Emerson, Northern CATV

The Society is also applying to the Department of Labor for funding to conduct a follow-up program, consisting of a series of ten one-day workshops across the United States to assist industry companies in developing training proposals and further explain the business-government relationship that is the major goal of the PSIP office.

To further support this effort, the Society is continuing their long-standing resume' program for people with no experience in the cable industry. The society will distribute copies of submitted work qualifications to interested companies.

Distributors, Manlius, New York; Jim Chiddix, Cablevision, Inc., Honolulu, Hawaii; and, Barney Geolat, Scientific-Atlanta, Belleville, Illinois.

In its first official function, the committee issued a Call for Nominations from the entire SCTE membership. Under Van Loan's direction, the committee will develop a slate of candidates based on the results of the Call for Nominations.

SCTE-AMAG Meeting

The Appalachian Mid-Atlantic Group (AMAG) of SCTE's Region 6 will meet November 19 from 9 a.m. to 3 p.m. at the Holiday Inn in Chambersburg, Pennsylvania. Topics will include 400 MHz/52 channel technology, a general discussion, and viewing of a training tape from SCTE headquarters.

For information, contact Tom Carbaugh at (717) 263-8258.

Addressable Tech Seminar Ends SCTE's Year

The Society of Cable Television Engineers plans its "Addressable" seminar, to be held November 17-18 at the Ramada Inn, Philadelphia International Airport.

Seminar topics include: premium subscriber control; basic service control; apartment house control; pay-per-view control; integration of device control with subscriber management services; and, future switched systems.

Program participants will include manufacturers, suppliers, users and managers of addressable systems. The meeting's format is flexible, allowing a free flow of interaction between speakers and audience.

Registration information may be obtained by calling the SCTE office, (202) 293-7841, or by writing SCTE, 1900 L St. Northwest, Suite 614, Washington, D.C. 20036.

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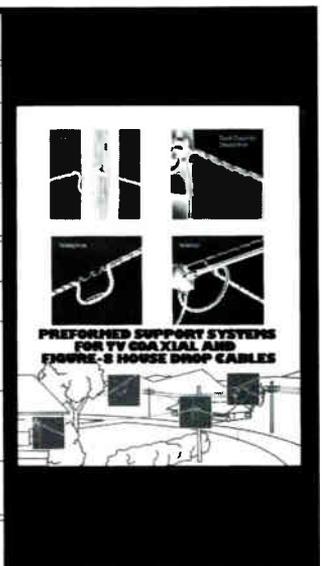
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Letters

Dear Editor,

I am concerned and question the integrity of the reviewers and your magazine when emphasis is placed on the fact that good information is available in the publication for those who wish to build a good CB kilowatt linear, when, in fact, they are illegal and the improper use of CB linears causes interference to the cable and telecast industry.

Lad F. Hlavaty
RKO General Television
Boston, MA

Dear Editor,

I was very disappointed to see C-ED's rather flippant bibliography review of *The Linear Amplifier Planbook*, October issue, page 55.

First, I do not understand what a book review on any publication about CB radio is doing in C-ED. Worse, the sole subject of this book is how to construct illegal CB amplifiers. CB radios are the number one cause of TV interference to both cable and direct off-the-air households and CB linears greatly compound the problem to us all.

In case you missed it, here are the closing paragraphs from the review:

"Good luck to all you who build them. Hope Uncle Charlie or the local CATV tech doesn't catch you with a kilowatt linear. We give the *Engineering Bulletins* a three-star rating."

Bob Luff, VP Engineering
UA-Columbia Cablevision
San Angelo, TX

Editor's Note: *CB illegals are a problem, and we do not encourage their use. The very fact that they are a problem is cause enough, we believe, for CATV industry techs and engineers to be aware of the design and function of CB linears. They should be as up-to-date on sources of system interference as they are on ways of preventing them. Our reviewer correctly did not give a C-ED recommendation or rating to the Linear Amplifier Planbook.*

Dear Editor,

I'm writing in reference to the article in your September, 1980, issue "Small Lifts Handy: Aerial Baskets Useful to CATV Crews."

We believe our company, Durnell Engineering, Inc., pioneered the electric-over-hydraulic aerial lift when my partner, Morris Durnell, began manufacturing such units to serve the CATV industry in 1967. We have continued since that time to manufacture a rather complete family of electric-over-hydraulic aerial lifts.

For your information and interest, the UEC Manufacturing Co., tried unsuccessfully to acquire Durnell Engineering, Inc., during 1973. Failing their acquisition attempt, UEC proceeded with activity to emulate the Durnell units.

To state that UEC brought the electric-over-hydraulic units to the present state of the art, or developed these units, or that they are number one in the electric-over-hydraulic aerial lift industry is misleading at best.

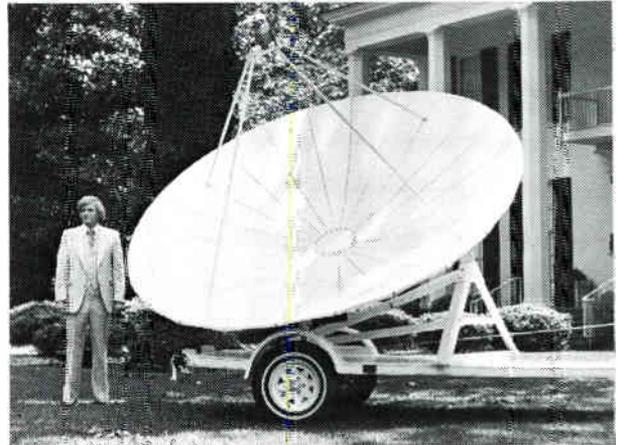
Gordon J. Kuivanen, President
Durnell Engineering
Emmetsburg, IA

Editor's Note: *Mr. Kuivanen is right, the article did not contain both sides of the story. C-ED will be running a story on the history of the aerial truck in a future issue that will provide a more complete perspective.*

C-ED welcomes letters to the Editor. Ideally letters should be typed double-spaced on ordinary stationery, short and to the point. C-ED reserves the right to edit letters for space considerations only. Signed letters only will be published, although names will be withheld upon request.

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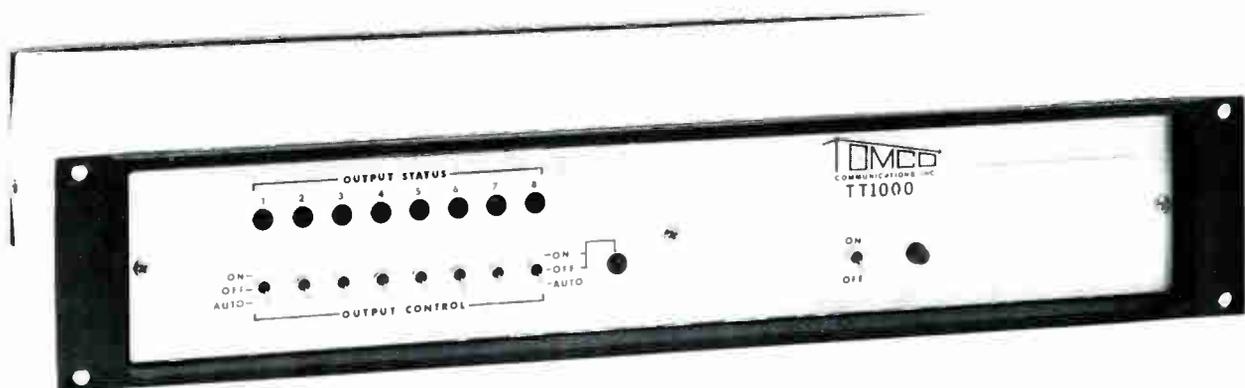
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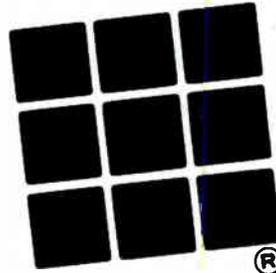
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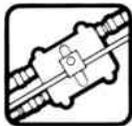


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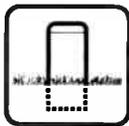
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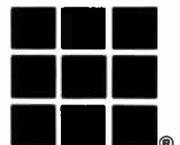
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Addressable, Tiered Programming Now Available For Broadcast TV

LOS ANGELES—Telease, Inc., of Los Angeles, has announced the development of a new transmission system that will allow broadcast TV operators to offer addressable, tiered programming.

The system, called Multiple Audio addressable Secure Television, (MAAST), allows broadcasters to transmit up to five audio channels for each video signal, and to address receiver/decoder units located between the viewers antenna and TV set for specific program authorizations.

The new technology, currently a company secret until patent proceedings are completed, holds great promise for multi-lingual programming, according to Telease International Marketing Director Carl Johnson, as well as for other broadcast applications, including stereo sound, electronic information services such as Viewdata and Teletext, data transmission, and police and fire applications.

The system provides for secure signal transmission with a sophisticated encoding/decoding system dependent on the semi-smart home terminal. Each individual home terminal can be individually addressed through the transmitter by the headend computer, according to Telease Director of Engineering Ron Gerlach. The system has no two-way capability.

Two levels of video security are offered. MAAST basic video scrambling relies on sync modification with required demodulation to base band for decoding. Higher security video scrambling is available where higher video security is required, and audio scrambling, accomplished on a different basis, makes the system extremely secure.

Comsat Torus Destined For Anchorage

WASHINGTON, D.C.—Communications Satellite Corporation (COMSAT) has signed a contract with Multivisions, Ltd, an Anchorage-based cable television company, for the first commercial application of COMSAT's new ten-meter Multiple Beam Torus Antenna. The antenna is scheduled to be used in conjunction with fiber optic headend link.



On-The-Air's dish farm on the outskirts of Owensboro, Kentucky.

Three-Dish System Scores Third "First"

OWENSBORO, KENTUCKY—Owensboro On-The-Air became the first CATV system to operate three earth stations this summer when they installed a three-meter dish which they received free for being one of Southern Satellite Systems' first 100 SPN-2 customers.

On-The-Air was the first CATV system to operate a satellite earth station when they erected their first dish, a ten-meter Andrew, in 1975. They were also the first CATV system to operate two dishes when they put in a four-and-a-half-meter Andrew dish in 1977.

Owensboro's Chief Engineer Ralph Dorris said that the 10-meter Andrew is pointed at Satcom 1; the smaller Andrew is currently aimed at Westar 2, and the three-meter dish is receiving SPN-2 from Westar 3.

Owensboro's Director of Engineering Bill Hilliard said that the ten-meter dish is polarized both horizontally and vertically, and that the three dishes give the system the capability of looking at virtually any programming satellite.

The 12-channel system carries HBO, a busy local origination channel, and several satellite signals. The company also operates WVJS-AM, and WSTO-FM, in Owensboro.

Canada First in 14/12 GHz

OTTAWA, ONTARIO—Canada is the first country with a commercial satellite service in the 14/12 GHz bands, according to Canadian Communications Minister Francis Fox.

A consortium of Quebec cable TV companies (SETTE) is leasing one of Telesat Canada's Anik B channels to beam French television programming to about 40 earth stations throughout southern Quebec.

Mr. Fox said the Department of Communications, which led the world in the development of the 14/12 GHz communications satellites with

Hermes, had leased from Telesat all of the 14/12 GHz capacity on Anik B to conduct a wide range of pilot projects as a follow-up to the experiments performed with the highly successful Hermes satellite.

Mr. Fox said this commercial service will not affect any of his department's pilot projects, including the world's first direct broadcasting service which has been taking place in a pilot project in Ontario with TV Ontario and in British Columbia with the CBC and CTV.

Telesat Canada is refunding to the Department of Communications \$765,000 a year for use of a channel on

the satellite. There are five other 14/12 GHz channels on Anik B as well as 12 channels in the 6/4 GHz band.

Mr. Fox said his department gave its blessing to use of one of its leased channels because alternate terrestrial distribution systems would have been much more costly for SEETE, the consortium of Canadian broadcasters.

The TV signals for this commercial service are being uplinked from one of the first of the new Anik C earth stations, located at a Bell Canada site in downtown Montreal and provided by Raytheon Canada Ltd. of Waterloo, Ontario. The signals are then beamed down by Anik B to about 40 earth stations owned by the cable operators and provided by Spar Aerospace of Ste-Anne-de-Bellevue, Quebec. The "footprint" or area covered by the beam includes most of southern Quebec and the Atlantic provinces.

Mr. Fox said this was a red letter day for Canada. "We have scored many achievements in this high technology field for many years, particularly on the research and development side. I am immensely proud that the efforts and foresight of the engineers, scientists and others at the Communications Research Centre are once again coming to fruition in the form of a commercial service. There are many people in the public and private sectors who have made possible this first commercial satellite service in the 14/12 GHz band."

Comtech Wins Contracts

SMITHTOWN, NEW YORK—Comtech Laboratories, a division of Comtech Telecommunications Corp. announced receipt of two contracts totaling over \$1 million.

One contract, awarded by Home Box Office, Inc. (HBO), calls for Comtech to design and manufacture a satellite communication earth station for the transmission and reception of video programming. Upon formal notice to proceed, Comtech will manufacture and integrate the system, and provide final installation at a site in New Jersey.

Under a similar contract awarded by WNET, Comtech will provide a television uplink (transmission system) to be used with Western Union's Westar satellite. When completed, the uplink will be installed in Western Union Telegraph Company's satellite communications earth station at Glenwood, New Jersey.

Australia Invites American, World Input On CATV, STV, DBS

NORTH SYDNEY, AUSTRALIA—The Australian government has invited American companies and individuals to the inquiry it will be conducting into the ways and means of introducing cable television into Australia, and its possible effects on Australian society.

The Tribunal, an Australian government body charged with administering general legislation concerning radio and TV broadcasting, plans to begin public hearing in its cable TV inquiry early next year.

The inquiry is expected to be the most far ranging and lengthy inquiry ever undertaken by the Tribunal, and

will seek to analyze cable TV, direct broadcast satellites, and subscription TV as ways of bringing advanced communications services to Australia's population.

The commission is seeking written proposals, opinions, and monographs on the proposed services, on all aspects of cable and subscription television services, and their possible social effects. The study will focus on engineering and technological consideration, financing and economics, television production and programming, and sociological and statistical information.

Submissions must be received in Australia by December 15. Submission registration forms can be obtained by contacting the Australian Consulate in San Francisco at (415) 362-6160.



American Cable TV's three- and ten-meter dishes in Tamarac, Florida.

Florida CATV System To Install Third Dish

POMPANO BEACH, FLORIDA—The city of Tamarac, Florida, gave permission to American Cable TV to build a seven-meter satellite earth station in September, giving them the opportunity to become the first CATV system in Florida to operate three earth stations.

The third dish will enable the company to add up to seven new TV channels to their existing cable services in the cities of Tamarac, Lauderhill, and Sunrise. The company is also

committing approximately \$100,000 for electronic improvements to its western cable TV services.

The company is currently operating a ten-meter dish which they installed in 1976 to receive signals from Satcom I, and a three-meter dish installed in early September of this year, which is aimed at Westar 3 to receive Southern Satellite Systems' SPN-2 service.

The American Cable TV system currently serves nearly 33,000 subscribers in Pompano Beach, Lighthouse Point, Deerfield Beach, Wilton Manors, Tamarac Lauderhill, Sunrise, and some unincorporated areas of north Broward County.

Voice Activated Equipment Widespread by Decade's Eve

NORWALK, CONNECTICUT—Voice activated typewriters and other equipment will be in "widespread" use by the end of this decade, with the giants of the computer and electronics industries battling for control of what appears to be a lucrative new market.

Faster-than-expected progress in the development of speech recognition technology will result in the widespread use of voice-activated equipment, according to a Norwalk, Connecticut market research firm. International Resource Development, Inc., (IRD) has just release a 170-page report which predicts the rapid deployment of voice-activated technology, and concludes that "more than one million typists and secretaries will be redeployed—or unemployed—as a result of the new machines."

The firm predicts that the first commercial versions of the voice-activated typewriter will correctly recognize about 95 percent of "typical" business English, as spoken by the average executive. The first IBM units, which the consulting firm expects to be marketed in 1983—will be equipped with a CRT screen which will display the words as they are spoken. Then the dictator—or more likely his secretary—must type in those words which the machine failed to recognize correctly.

IRD predicts that voice-activated technology will show up rapidly in other products, such as voice-recognition on TV channel turners, and voice locks on automobile ignitions.

Warner Amex Dedicates "Milestone" Blue Ash Cable Television Facility

BLUE ASH, OHIO—Leading civic officials, prominent guests and major sports personalities led by Pele, the legendary soccer superstar, attended dedication ceremonies here for the new 43,000 square-foot cable television facility of Warner Amex Cable Communications of Greater Cincinnati. The new facility will provide 42 communities in the greater Cincinnati area with the advanced technology and programming, including two-way interactive services.

The Blue Ash installation, one of the most modern of its kind in the nation, features a 33,000 square-foot building housing a communications studio complex, central computer

facilities, master control and administrative offices.

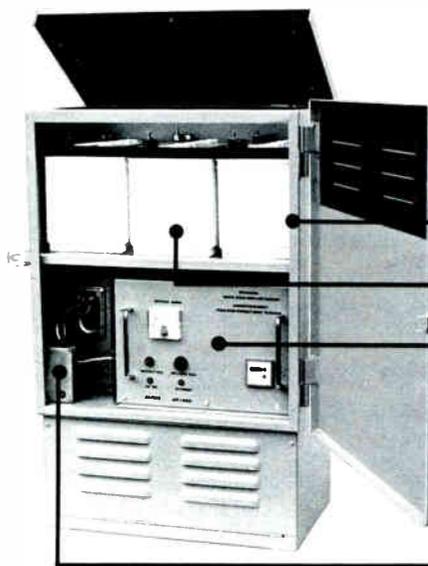
Peter Alden, Executive Vice President for Warner Amex, told the assembled guests that Blue Ash represents a major milestone in the company's history. "When Warner Amex first introduced QUBE in Columbus, Ohio, in December 1977, we said that two-way interactive cable television was the wave of the future. We're witnessing the accuracy of that statement today and we will, in the very near future, see additional QUBE

installations in the thriving cities of Pittsburgh and Houston where construction is already underway," Mr. Alden said.

The heart of the service, QUBE, is a two-way interactive cable TV system that has revolutionized communications techniques since its introduction by Warner Amex less than three years ago. Its interactive capability allows subscribers to "talk back" to their TV sets by means of a small home console with five response buttons. By merely "touching in," subscribers can interact

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with all types of programming including important community meetings, public access and public service programs and entertainment.

The 42 communities which are located in the counties of Hamilton and portions of Butler, Clermont, and Warren, have a population of some 400,000 persons and a potential of 150,000 homes for Warner Amex service.

Digital Signal Carries TV To and From European Satellite

LONDON—The first successful transmission of digital video color television pictures through a European space satellite using compact small-dish earth terminals at both ends of the link has been achieved at the Independent Broadcasting Authority (IBA) Engineering Centre in Winchester, according to *TV World*.

The series of experiments, carried out with the cooperation of British Telecom and the European EUTEL—SAT organization, passed digital signals through the OTS satellite launched in May, 1978.

The digital sampling rate and techniques used in these trials are for experimental purposes only, and are not being proposed as an international standard. The IBA work is only showing that digital-video transmission have useful advantages for news gathering and national and international distribution via space satellites.

Survey Shows Cable Subscribers Satisfied

NEW YORK, CITY—Cable TV is an outstanding success in terms of consumer satisfaction, according to a new national survey. Nearly nine out of ten cable subscribers say they are satisfied with their cable-TV service, and more than half are "very satisfied."

The survey was conducted in mid-June by Opinion Research Corporation of Princeton for the October issue of *Panorama* Magazine, using a random sampling of 504 of the nation's 17 million cable-TV subscribing households.

In the study, 46 percent of the subscribers cited the wider range of programming choice as cable TV's most satisfying feature, followed by improved reception, mentioned by 25 percent. Only nine percent mentioned the absence of commercial interruptions as a chief benefit.

The effect of cable on network viewing is noticeable, but is hardly a landslide. Twenty-nine percent of cable subscribers say they now watch less network programming, 13 percent say they watch more, and the remainder—the majority—report no change. In terms of audience loyalty, movie houses and live theater have suffered more from the growth of cable TV than have the TV networks. Forty-six percent of those interviewed say they go out less frequently to see movies and plays since cable's arrival.

The survey found that the greatest

draw in cable programming is movies, with 63 percent of the sampling watching fairly often. Sports are second in popularity (49 percent), and entertainment specials run a close third (47 percent).

In addition to their basic-cable service, 43 percent of those interviewed subscribe to one or more pay-TV channels, such as Home Box Office or Showtime. Asked what kinds of programming they would like to see increased on cable, 58 percent of these pay-TV respondents mentioned educational shows.



The French phone book will never be the same, after data terminals replace the yearly publication.

French Let Digits Walk Through Electronic Phone Book

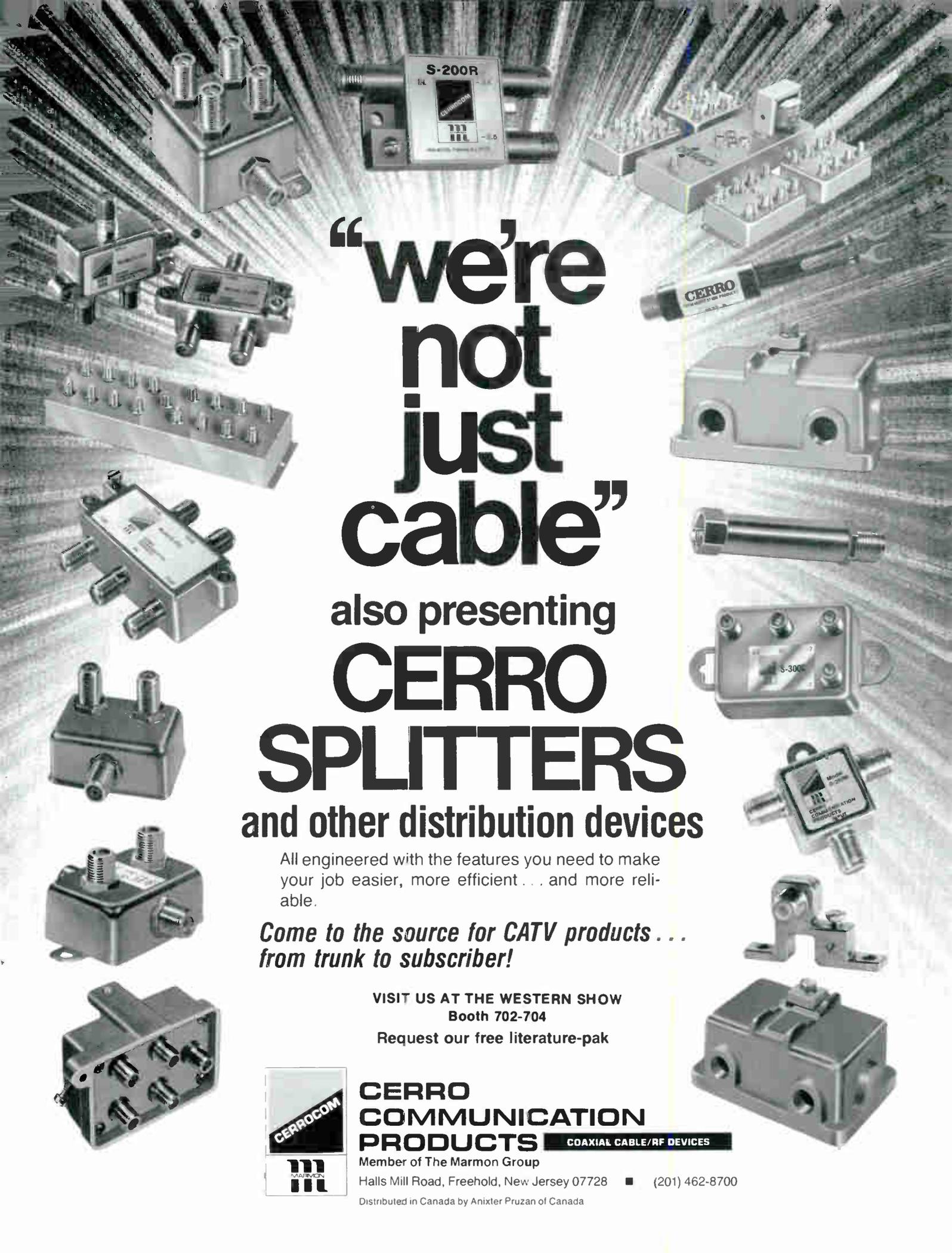
PARIS—Dozens of residents and businessmen in the Saint-Malo resort have become pioneers in the first large-scale test of France's plan to completely eliminate conventional telephone directories and the telephone "information" service.

Rather than use the annual phone directory, Saint-Malo subscribers are using their electronic telephone directory, which promptly displays phone numbers and other information on a video screen in their home or office.

Rather than searching through the pages of a bulky telephone directory, they will "instruct" the electronic directory by typing the required information on an alphanumeric keyboard.

In lieu of telephone directories, the phone company will provide every customer—private or business—with an electronic terminal over the next ten years. Spokespersons for the French telephone company say they expect to distribute more than 30 million free terminals in the next decade.

Distributing the terminals will still be cheaper than publishing conventional telephone directories, and updating them yearly, the phone company says. It will also be more efficient,



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because the electronic directory will always be completely up-to-date.

The Saint-Malo test, begun in mid-July, is the first of several throughout France. By next year, some 250,000 terminals will be installed in the Ille et Vilaine region, around Saint-Malo.

Altogether, there are 30,000 entries in the data base being tested this summer in Saint-Malo. The test will help to define the most acceptable form of access and also the effectiveness of the dialogue employed.

The electronic directory is one of

several new telecommunications projects being developed under a national program known as Telematique. Others include Teletel, the French two-way videotex system of which the Electronic Directory is the simplest form; two-way facsimile service for the home; a free-form telewriting system; smart-card technology and complete teleconference facilities for corporations. These systems will be mass-marketed at a relatively low cost as a result of new developments in microprocessors and digital technology.



Mark M. Takeuchi, President of C. Itoh Electronics, and Robert F. Jacobs, President of the TeleMine Company, during contract signing ceremonies in New York.

New Cable TV Descrambler From C. Itoh and Telemine

NEW YORK, CITY—C. Itoh Electronics, Inc. of California, a subsidiary the giant C. Itoh & Co. Ltd. of Japan announced that it has obtained the exclusive license from the TeleMine Company, Inc., of New York (OTC) for world wide manufacturing and marketing of the M.C. Complete Control System (patent pending), an addressable descrambler control box for the cable and pay-TV industry.

C. Itoh will be responsible for the world wide manufacturing and marketing of the M.C. Complete Control System and the TeleMine Company, Inc. will be the exclusive sales representative for C. Itoh. Assembling will be done in California.

The M.C. Complete Control System is designed to increase cash flow to cable operators by eliminating subscriber delinquency problems. It is capable of controlling basic cable and three levels of pay-TV, as well as offering up to 64 hours of pay-per-view programming a month.

The system is activated by disposable magnetic cards, which completely erase after one use. This negates the possibility of transfer to nonsubscribers and eliminates the opportunity for signal piracy. Mark M. Takeuchi, president of C. Itoh said that evaluation samples will be ready for market testing prior to the Western Cable Show in Anaheim, California. Robert Jacobs, TeleMine president, stated that first orders will be taken at that show in December, 1980.

TAKE FIVE
TAKE FIVE
TAKE FIVE
TAKE FIVE
TAKE FIVE

Before you finish reading this issue of C-ED, please take a few minutes to fill out the readership survey card on page 60. The information we gather from this survey will tell us—and you—a great deal about our industry. Age, education, salary, position, and experience are only a few of the categories that will help us profile the engineering segment of the CATV industry. It's important and useful to both of us, so help us help you and take the five minutes necessary to complete the survey.

Reader Survey on Pages 61-62.

Promotion, Transfer Info Wanted

By Glenn Chambers

You have probably noticed that very few technical people, especially field technical people, ever get their promotions, transfers and awards written up in cable TV magazines. It isn't that we don't want to publish this information, we just never hear about it.

We are now in the process of getting the major MSOs to notify us when their techs do something newsworthy, get promoted, or get transferred, but there is no way that we can contact all your bosses.

If you would like to see your name in print (and who doesn't?) send any information pertaining to field techs to us at *C-ED*. We will make you famous, or at least notorious. Recent photos will also be welcomed.

SCTE Student Placement Service

Judith Baer, Executive Vice President of the Society of Cable Television Engineers, informs us that their student placement service is still operational. Students who have never been employed in Cable TV are welcome to send a one or two-page resume showing education, past employment (if any), geographical preference, salary requirement, etc., to The Society of Cable Television Engineers, 1900 L Street, NW, Suite 614, Washington, D.C. 20036.

Judy's staff will forward copies of the resume to those corporations which are subscribers to the SCTE manpower service. The SCTE does not guarantee that will get a job in Cable TV, or even that you will get an answer from the companies receiving your resume. Your resume will get exposure and, who knows, some company may be just waiting for you.

Judy asked me to make sure that everyone understands that this service is only for those persons who have never worked in Cable TV.

Calculator Programs Available

One of our readers, Steve Lowe, Chief Engineer of Oklahoma Cable Systems, Inc., has suggested that we publish some programs for programmable calculators such as the Texas Instrument Model TI-59. He even volunteered to supply us with some programs to start it off.

We are just a little hesitant to make this a regular feature in *C-ED* since we are not sure how many programs will be made available to us. We are also not sure how many of our readers would have programmable calculators, and how many people would be interested in programs for them.

After some discussion, we feel that publishing those sent to us on an as-available, as-is basis would probably

be best for all concerned. We can make no guarantees as to accuracy and originality of any programs published.

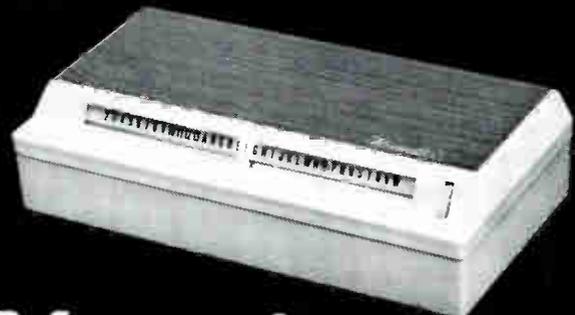
Steve tells us the first program he is submitting is "Aim Your Dish Like a Pro." Follow-up programs will include satellite downlink signal to noise calculations and figuring cable systems feeder design.

If you have any programs which would be of interest to our other readers, and are willing to pass them along at no cost, send them to us and we will publish them as space permits. Be sure to include your name, title, system or address and phone number in case we need to contact you. Also, be sure to include full details on what the program does, which make/model calculator it is written for, and any other information which may help others to use it. We can also publish microprocessor programs if any are sent. We would prefer limiting them to those written for the more common makes such as Apple, Pet, OSI, and Radio Shack.

Glenn Chambers

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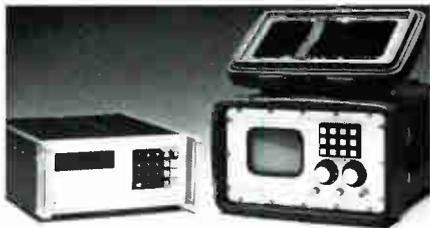
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control. It even takes care of most of the setup procedure that used to take so long.

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Rebuild or Upgrade?

The Choice May Be Easier Than You Think

By Glenn Chambers

There are many cable systems which are nearing franchise renewal time and, from all reports, cities are getting tougher and smarter on renewal requirements.

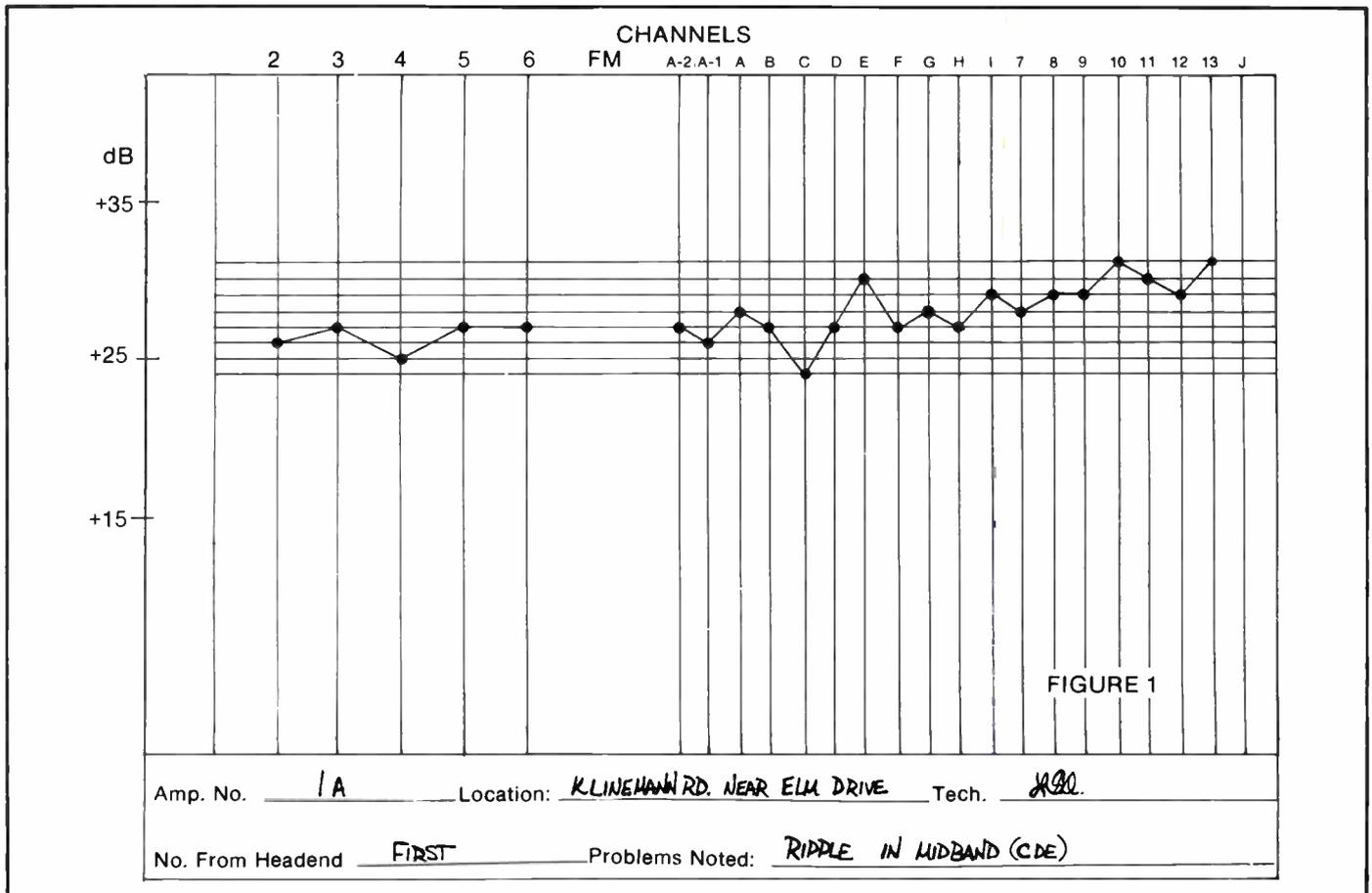
Most cities are requiring that older systems be at least upgraded to provide more channels. Some are even

insisting that the entire plant be rebuilt to provide more channels, two-way activation, security service, and all the other whistles and bells being offered to newly franchised areas.

Many cities feel that if your company is unable or unwilling to upgrade or rebuild your system, another com-

pany may be willing to take over the franchise and build an all new plant.

If you have systems for which the current franchise will expire in two or three years, the time to start planning for the renewal is now. There is a better than even chance that if you upgrade or rebuild your system before renewal





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383-2732. **Southwest:** 643 Sky Harbour Dr., Granbury, TX 76408. Telephone (817) 573-2752. **West:** 15335 Morrison St., Suite 340, Sherman Oaks, CA 91403. Telephone (800) 423-5651 or (213) 894-8111. California License #176131C61

"An upgrade could be the most cost-effective expenditure you could make."

time, getting the renewal will just be a formality. If you have done few system improvements, and your public relations are bad, it could be a different story.

One major decision which owners of older systems must make, either now or later, is whether an upgrade (which may be defined as replacing only some key system components) or a complete rebuild must be done to keep your system current.

An upgrade of your present system(s) to accept and transport more channels could be the most cost-effective expenditure you could make. After physically evaluating almost 1,000 miles of older plant in several systems, one large MSO recently found that adding midband channels A through I (14-23) would only require replacement of the amplifiers and less than 10% of the cables and passives. Ages of the systems evaluated ranged from a low of nine years to a high of 16 years.

Two things seemed to be key determining factors in how well the systems still performed after a number of years:

1. The type materials used for initial construction of the systems.
2. The amount and type of preventive maintenance the system had received.

Those systems initially constructed with RG-11 and pressure taps have not lasted well and chances are that some or most of them have already been replaced. On the other hand, if aluminum sheathed cable was used, even with pressure taps, and connections were properly made and weather-proofed, the cable may be perfectly usable.

Those systems which had received regular, consistent preventive maintenance and repairs almost invariably tested out better than those with sporadic or non-existent maintenance programs.

Technical evaluation of a system to determine whether to upgrade or to

rebuild is simple, but can be quite time consuming. The physical part of an evaluation requires checking levels at every amplifier location, if you want to be sure that the upgrade will perform as expected. The mental part of an evaluation is comparing all the recorded data to make sure that cable and passives can pass the range of frequencies desired. The most economical way to gather the required information is to use the least expensive employees and the least complicated test equipment available.

Before any information is recorded, the headend should be set up to produce normal levels across the band. The easiest and most accurate way to do this is to balance the headend into the first trunk amplifier. Some people prefer to balance into the input of the amplifier, others prefer to balance to the amplifier output.

If a multiple channel signal generator is available, such as a Theta-Com model KTSS, or equivalent, it can be

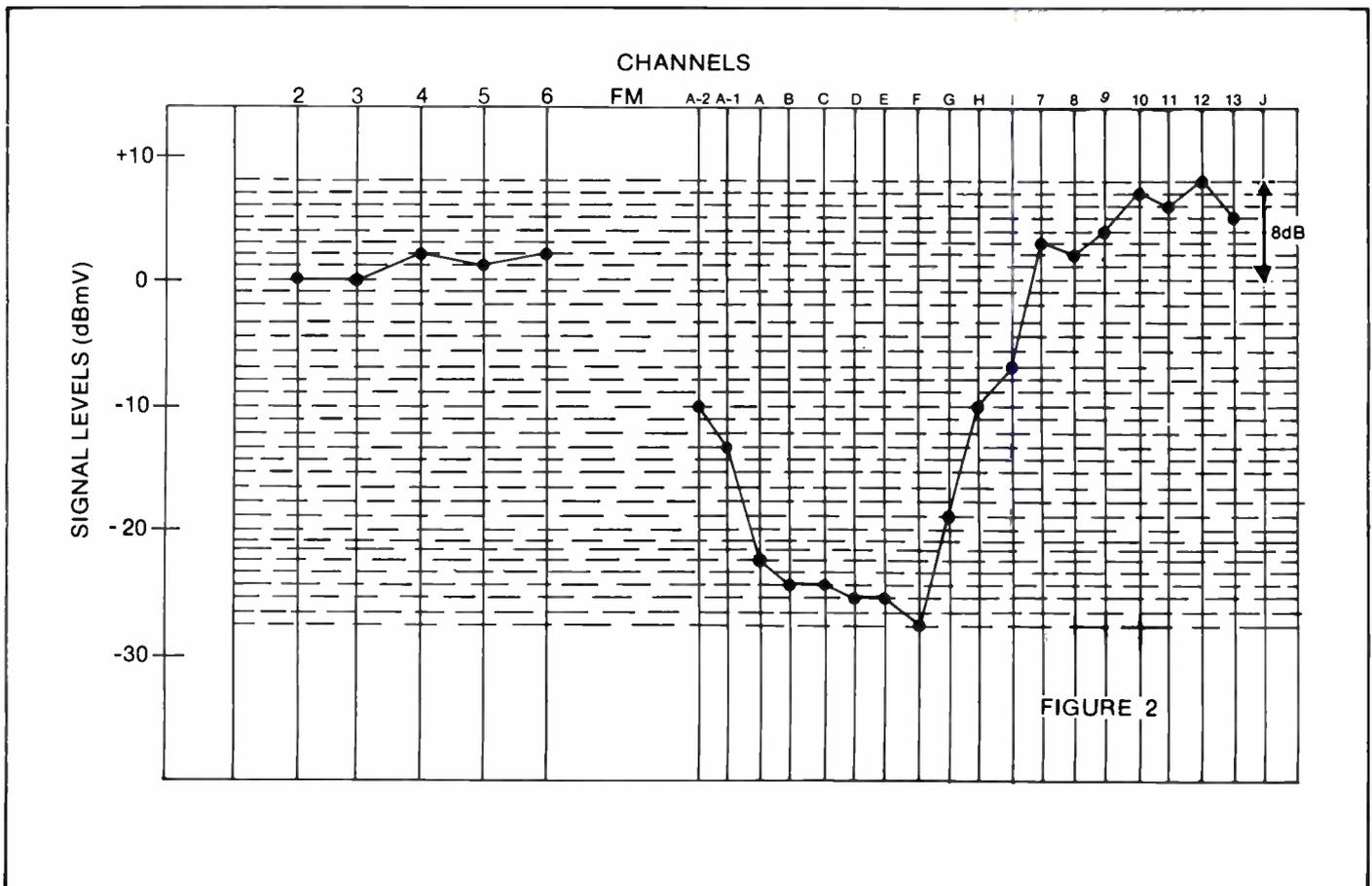


FIGURE 2

"Generator levels and slope should be consistent with . . . normal channels carried."

connected to provide desired additional signals at the proper levels into the trunk line through a reversed directional coupler or through a signal combiner. Generator levels and slope should be consistent with the slope and levels of normal channels carried.

If a multiple channel generator is not available, a single channel market generator will give you one signal to use as a reference.

Signal levels should be read and recorded at trunk and bridger amplifier outputs for all visual, pilot, and generator signals carried on the system. They may be read on a signal level meter and written down or, to speed the process, spectrum analyzer photos may be taken for later evaluation.

If a multi-channel generator and an analyzer are used, you may notice an unusual amount of beat or "birdie" spikes within the spectrum, particularly within the midband. Some of these spikes may also be causing some subscriber complaints. For this reason,

the generator should be turned off when not actually in use for testing.

Proceed through the system by taking signal level readings at each amplifier input and output. Record the levels even if they are poor or indicate problems. Comparative analysis may give clues as to where the problems originate and plans for corrections may be made.

Even though many older amplifiers are not designed to pass midband channels, enough signal level may "leak through" to give an indication of cable and passive's response curves. If no midband signals pass, you can still receive enough data to evaluate the response of the rest of the system.

Recording the signal levels in a graph format can greatly simplify later comparisons and may even show up some system problems quite well. I use graphs made from 10x10 to 1" ruled chart paper. These can show water saturation attenuation, impedance problems, or other problems. On an

evaluation we found that the first trunk spacing had the response shown in Figure 1. Note the signal level deviation in the midband. This was later proven to be caused by a cracked cable sheath.

Figure 2 illustrates system response through a pad from an older tube type, split-band amplifier. Note that even though the response looks pretty rough, maximum level separations between adjacent channels is only 3dB and overall system peak-to-valley is only eight dB. Also note the fairly rapid rolloff toward the midband frequencies. No apparent cable or passive problem is indicated here and the system will probably pass the midband signals with little degradation when the amplifiers are replaced.

It is best to start comparing recorded data when from 10% to 30% of the system recordings are completed. If major problems are apparent within the tested segments, you may want to halt the evaluation and start planning

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"Most upgrades and rebuilds seem to pay for themselves in better community relations"

for a plant rebuild. If no major problems have shown up by now, you can continue the evaluation with a pretty good chance of success.

You can obtain almost exactly the same data with a system sweep setup as with the procedures described. The only negative I have found with using the sweep method is that for accurate results, the technician performing the sweep should be more qualified, and therefore more expensive, than someone who can just get up and down a pole and read a signal level meter. If all your technicians and installers are qualified to interpret scope or sweep receiver readings, the evaluation may be performed any way you desire.

Since it is assumed that your system amplifiers are old, it will probably be necessary to replace them to gain linearity and diminish distortion products. An alternative to amplifier replacement may be to upgrade your existing amplifiers with modification kits such as those supplied by Broad-

band Engineering, Inc. and other suppliers. Amplifier upgrading offers an economical alternative to complete amplifier replacement.

If the cables and passives check out reasonably well, the next step would be to verify amplifier spacing for the new or upgraded equipment. This is easily done from the evaluation charts. If the system was correctly designed and built originally, amplifier spacing should remain the same unless higher frequency channels are to be added.

Amplifier spacing verification or system redesign may be done manually with a calculator, with a programmable calculator, or with one of the personal computers. The quickest and easiest way is with a computer, but not everyone has access to them. I feel that the time savings on one redesign will just about pay for one of the smaller microprocessors. That it can be used for so many other system jobs is an additional plus.

While doing amplifier spacing checks

or redesign, it is a good idea to check predicted system distortion parameters such as signal-to-noise, second and third order distortion, cross-modulation, etc. These parameters can greatly influence your decision on amplifier spacing and cascade lengths. A microprocessor makes these checks quick and easy with the proper program.

Most upgrades and rebuilds seem to pay for themselves in better community relations and less technician hours spent on non-productive service calls and maintenance. Rebuilds also produce new subscribers who want the improved service and the additional channels.

But don't forget the greatest benefit of all: What group of city officials could refuse to renew the franchise of a company who has just voluntarily spent money on their system and improved service and channel capacity?

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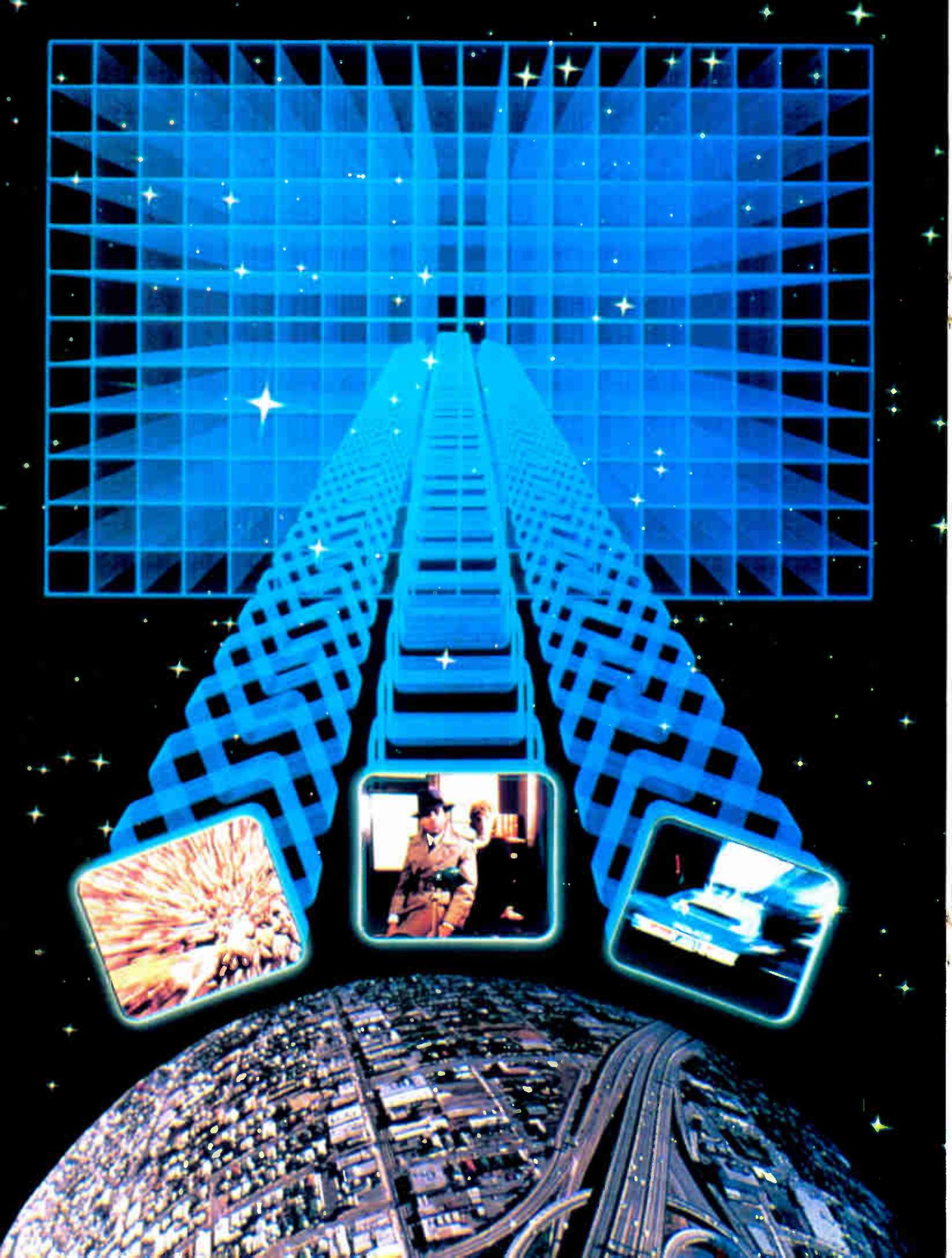


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Maps, Measurements

Plan Now For Rebuilds

By Glenn Chambers

Many cable systems will be forced to rebuild or upgrade their systems within the next two or three years. If your system is among those, your operation can be a real nightmare unless you are properly prepared for the disruptions with materials, manpower and money, as well as being physically and mentally prepared.

To help you with this project, this article lists some of the more common problems which you may encounter, and some suggestions and guidelines

which may help to minimize oversights. They have served well in many systems, and we hope they will be of some benefit to you.

Map Elements

The first and foremost requirement for the proper rebuilding of any cable system is a complete set of recent as-built maps, or at the very least, an accurate set of strand maps. All maps should be drawn to scale for ease-of-use and accuracy. Map scales should be between 1" equalling 100 ft. and 1" equalling 400 ft. Larger or smaller

scales are more difficult to use or to read.

Good strand or as-built maps should show at least the following information:

1. Streets, easements, and alleys. Street names and block numbers are also helpful.
2. Strand (and cable) routing and possible additional routes.
3. Span lengths between poles. These should be measured in the field, not from map scales.
4. Required guying. The rebuild will be a good opportunity to clear up those missing or slack guy wires. Missing or

improperly placed hardware should also be noted.

5. The number of homes passed or served from each pole. Include vacant lots where homes may be built prior to your next rebuild.

6. On as-built maps, include types, sizes, and lengths of trunk and feeder cables, amplifier locations, passive devices, and power supply locations.

Figure 1 (page 40) shows a small section from a well-made strand map. Figure 2 (page 41) is a section of an as-built map. Note the wealth of information on each map section.

If you plan to use older as-built maps, they should be spot checked to verify footages and house counts, as well as for equipment (strand, cable, hardware, etc.) which may have been added to the system since the maps were made.

Also, watch for older homes which may have been converted into apartments and new homes and apartments that may not be on the older maps. An accurate house count is mandatory for a well designed system.

Budget Tips

If you must prepare a budget for a rebuild, there are a number of expenditures which seem to be overlooked frequently. These overlooked, but necessary, items can add thousands of dollars in cost overruns which had not been planned. Some of the more common items are:

1. Salary and expenses for the person who will supervise the rebuild project. Include his vehicle, mileage, gasoline and maintenance costs. Depending on the size of the rebuild, this can run into a lot of money.
2. Telephone calls and telephone service to a warehouse, if used. Conversations with vendors, usually long distance, and with contractors are frequent and expensive.
3. Warehouse for rebuild materials. If you rent a warehouse in order to have control of material, and to keep interference to the system at a minimum, the rental expenses, including heat, water, lights, and sewage charges must be included. You may need to include a warehouseman's salary also.
4. Yard and maintenance trash collection. Around any construction yard there are always piles of paper, cable ends, reels, etc., which must be removed. The size of the project will determine the size of the dumpster and the frequency of collection.

5. Office supplies, map copying, and postage can be another considerable expense.

6. Tree trimming can also be a large expense and estimated costs should be included in a budget.

7. Cost plus contractor's charges for replacing hardware, adding underground ties, rearranging poles, setting anchors, tensioning guys and installing bonds can easily create budget costs to be overrun.

8. Don't forget to include wreckout costs for removing the old plant and

the costs to transfer drops from the old plant to the new.

Pole Problems

As mentioned earlier, during as-built or strand mapping is a good time to look for cable, telephone, and power company pole infractions. All possible infractions should be cleared up during the rebuild. Some of the more common pole problems are:

1. Not enough clearance between power primary or secondary lines.

(Continued on page 40.)



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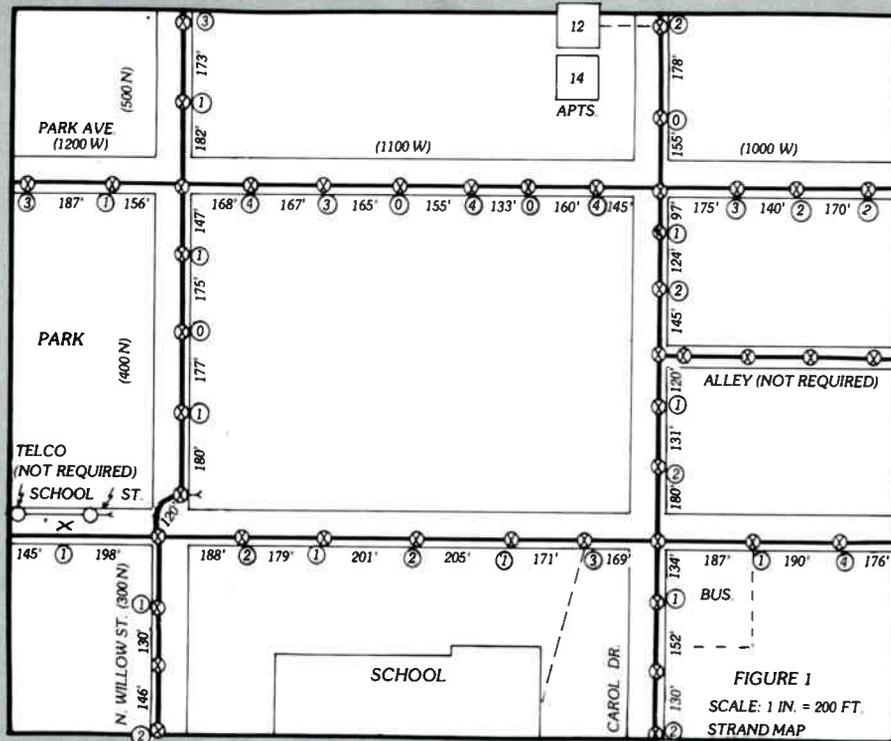


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*Portable units available

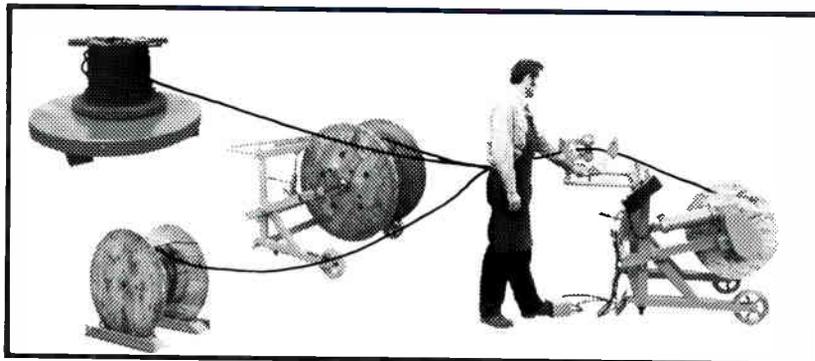
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- 2. Not enough clearance above or below street light brackets or wiring.
- 3. Improper midspan clearance from telephone or power lines.
- 4. Not enough clearance above or below street light brackets or wiring.
- 5. Not enough telephone drop clearance.
- 6. Cables touching or wrapped to telephone cables.
- 7. Cables too low across streets, alleys, and driveways.
- 8. Loose or missing guy wires or guy guards.

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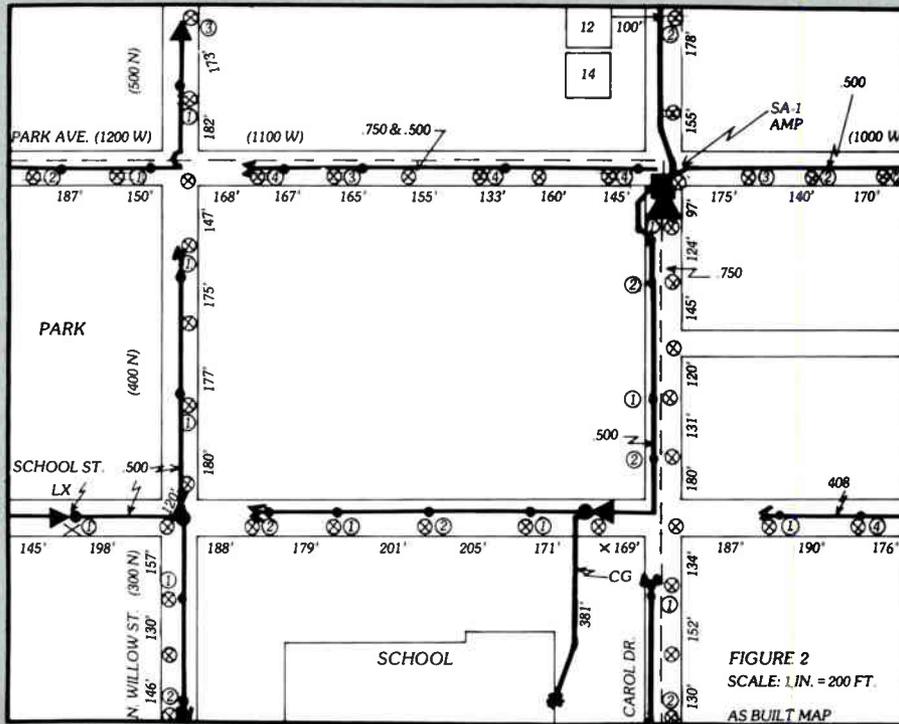
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all the possible problem areas, or tell everything you should know, since each system is different. We do hope that this list will be of some benefit on

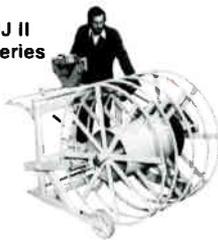
your next rebuild or upgrade. Thorough planning of the job to be done will be of greatest benefit to you and your system. **C-ED.**

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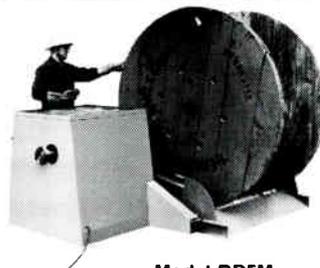


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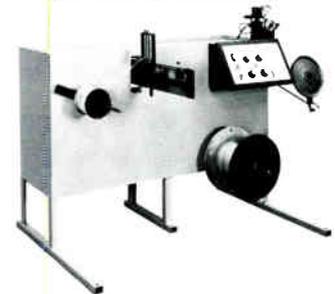


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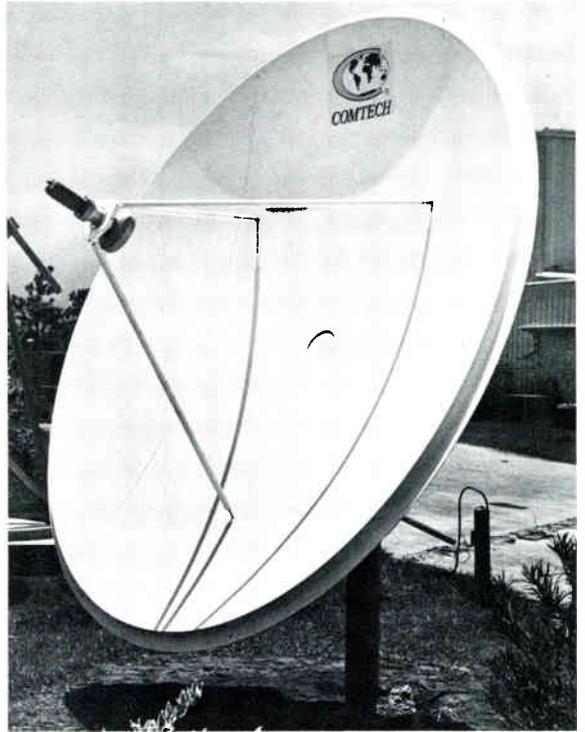
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Aim Your Dish Like A Pro

By Steven Lowe, Sr.,
and Dr. Robert Sam Lackey

Have you ever wondered how the computers tell you exactly where the "birds" are, how they produce printouts with nice uniform rows of antennae azimuth and elevation angles?

This article is about how you can make the same calculations as the pros, with a hand-held calculator costing under \$100.

First, a few basics on satellites, more particularly on satellites in the geostationary orbit. A geostationary satellite has an orbit directly above the equator and an orbital velocity that matches the rotational velocity of the earth. It is because of this that the satellite appears stationary to a given point on the earth.

In North America the orbital "parking place" for geostationary satellites is from 70 degrees west to 135 degrees west longitude.

Armed with these facts, along with the receive station's longitude and latitude (which you can get from air navigation charts or USGS Topographical Maps), you can calculate the

Dish-Aiming Program for Programmable Calculator

Off/On	021 RCL	044 +	067 2 *	090 =	113 RCL
LRN	022 01	045 1	068 STO	091 STO	114 13
	023 -	046 8	069 08	092 10	115 =
* 001 Lbl	024 RCL	047 0	070 RCL	093 RCL	116√x
002 A	025 02	048 =	071 01	094 07	117 X
* 003 DMS	026 =	049 STO	072 -	095 X	118 RCL
004 STO	* 027 TAN	050 06	073 RCL	096 STO	119 08
005 01	028 STO	051 R/S	074 02	097 11	120 =
006 R/S	029 04	* 052 Lbl	075 =	098 RCL	121 STO
* 007 Lbl	030 RCL	053 E	* 076 COS	099 09	122 14
008 B	031 03	054 RCL	077 STO	100 X ²	123 RCL
* 009 DMS	* 032 SIN	055 03	078 09	101 STO	124 10
010 STO	033 =	* 056 COS	079 RCL	102 12	125 ÷
011 02	034 STO	057 STO	080 09	103 RCL	126 RCL
012 R/S	035 05	058 07	081 X	104 11	127 14
* 013 Lbl	036 RCL	059 6	082 RCL	105 X	128 =
014 C	037 04	060	083 07	106 RCL	129 INV
* 015 DMS	038 ÷	061 6	084 X	107 12	* 130 TAN
016 STO	039 RCL	062 3	085 RCL	108 =	131 STO
017 03	040 05	063 6	086 08	109 STO	132 15
018 R/S	041 =	064 2	087 =	110 13	133 R/S
* 019 Lbl	042 INV	065 0	088 -	111 1	
020 D	* 043 TAN	066 9	089 1	112 -	LRN/Rst

azimuth and elevation angle to an accuracy of one-tenth of one degree.

First, a look at the equations before we tackle the programming.

$$A+180^\circ = \text{Arc tan } (+/- \tan \lambda / \sin \varphi)$$

$$E = \tan^{-1} \left(\frac{(6.6362092 \cos \lambda \cos \varphi) - 1}{6.6362092 \sqrt{1 - \cos^2 \lambda \cos^2 \varphi}} \right)$$

Where:

- A = Azimuth angle in degrees from true north.
- E = Elevation angle in degrees.
- λ = Difference in longitude between the earth receive station and the satellite of interest.
- φ = The earth receive station's latitude in degrees.

This program was written for a Texas Instruments 58/59 programmable calculator, but it adapts easily to other machines.

Enter the program as shown: (Remember, * indicates 2nd function of a key.)

When the program is loaded, you are ready for work. Assume the following, and try this example:

1. Satellite of Interest Longitude is 135° W (Satcom I).
2. Earth Receive Station Longitude is 121D 15M 45S W.
3. Earth Receive Station Latitude is 38D 03M 44S N.

Armed with these facts, merely key in "135," then push "A." Display should now read "135."

Key in "121.1545," then push "B." Display should read "121.2625..."

Now key in "38.0344" then push "C." Display should read "38.0622..."

Then push "D." This *calculates and displays* the antennae azimuth in degrees from true North, which in this case is "201.6°."

Then push "E." This *calculates and displays* the antennae elevation angle in degrees. The result here is "43.6°."

As you can readily see, utilizing this program is very easy. Should you want to make the same calculations for the same receive location but for different satellites, you merely have to enter the new satellite's longitude under "A," then push "C" and "D" to get the new azimuth and elevation angles.

The only thing to watch out for, when entering degrees of longitude and latitude, is always to place a decimal point after the degrees, i.e. "121." Always use four places after the decimal point—this means placing a zero before all single-digit entries (.0344, not .344). The example above illustrates this.

So, as you can see, in a few moments you can have a "printout" of antenna azimuth and elevation angles of truly professional quality.

Steven P. Lowe, Sr., is Manager and Chief Engineer at Oklahoma Cable Systems, Inc., of Weatherford, Oklahoma. Robert Sam Lackey is a communications consultant and teaches writing at Southwestern Oklahoma State University in Weatherford.

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Basic/Pay Combination Trend

Cable operators constructing new systems in major markets are offering basic and pay services in combination from the very start, and in more and more instances are offering multi-pay/multi-tiered service as well.

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*Dec. 31, 1979 edition of Paul Kagan Associates Pay TV Census.

This is true in franchise negotiations as well as marketing your services to basic subscribers.

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Three-meter Pot Comes To Boil

The controversy over the merits of the lowly three-meter satellite earth station came to a full, rolling boil in October, as manufacturers and users of the small dishes reacted to the "caution" issued by the NCTA's Engineering Committee.

The September statement by the engineering committee declared that the use of the small dishes by cable systems was not considered "good engineering practice" and warned that, should the FCC decide to reduce satellite arc spacing, the dishes would become "totally unusable."

"This whole thing has been blown out of proportion," said NCTA's Thomas Wheeler. "It has got more notoriety than it's worth. What we are trying to do is put out information to help operators, so that they have a full plate of information upon which to base a decision."

The NCTA Engineering Committee's work on the three-meter question has largely been an extension of work done previously by Home Box Office, and submitted to the FCC as part of HBO's comments on TVRO station licensing. In the FCC's subsequent deregulation of earth stations no provision was left for licensing or protection of three-meter stations from interference.

The committee's warning is based on calculations for the performance of dish antennas, which claim that even with strong signals from satellites, the operating carrier-to-noise ratio for the small dishes is "perilously" close to the impulse noise in the very best of satellite receivers.

Yet, three-meter installations across the country are working, and producing results that range from "very adequate" to "excellent." Selman Kremer, of Southern Satellite Systems, described the performance of their many three-meter installations as "terrific."

"They have been performing better than expected," he said. "We never expected to have three-meter dishes working in south Florida, and all

across the country, like they are. It says to me that the EIRP's the field has been working with may not be accurate."

Many critics of the three-meter decision point to an earlier report by the NCTA's Delmer Ports, filed with the FCC in 1976. The earlier report, a study of smaller earth stations, argued for smaller earth stations generally, but did not specifically refer to three-meter systems.

Microdyne Corporation's George Bell said that although the engineering committee's warning did contain some accuracies, it was generally misleading. "We don't have an axe to grind," he said. "Microdyne doesn't make or sell a three-meter. But our basic feeling is that the report by the NCTA may cause them some ultimate embarrassment. I think the pleadings written by Ports and filed with the commission prove, unequivocally, that the limitations on spacecraft spacing are the uplink antennas, and the frequency allocations, and the polarization plans. It has nothing to do with the downlinks."

The question of the suitability of the three-meter dishes has many system engineers concerned, especially from those systems that have already invested or installed a three-meter station. "There is no question that the NCTA epistle has had a great effect on the engineers in the field," Southern Satellites' Kremer said. "We have been talking to the NCTA people, trying to get with them to discuss this thing in a proper manner. We are trying to get them to agree to the fact that these dishes are meritorious."

But the NCTA is not about to agree that the dishes are meritorious according to Wheeler. "The NCTA's Engineering Committee is a bunch of engineers who sat down and worked it all out," he said, "and came up with this conclusion. We are not going to hide it under a bushel."

"The report did not say 'don't buy a three-meter dish,'" he said. "It didn't say 'Southern Satellite, you're making a terrible mistake with your plans.' It just

said 'hey, here's something you ought to know, here's something to think about, when you make your market-place decisions.

"It wasn't our design to have an impact on the sales or installation of three-meter dishes," he said. "I frankly don't think that consideration should be a concern here. All we are doing is telling people that there are some interesting facts about three-meter dishes that people should be aware of, that should be factored into their decision.

"We're not in the business of telling people what to buy," he said. "We are in the business of providing information and letting people make their own decisions."

The American Cable TV system in Pompano Beach, Florida, was one of the first to install a three-meter Prodelin, given to them by SSS as part of the SPN-2 promotion. They were initially promised a slightly larger dish from SSS, but a shortage forced them to install the three-meter.

"The picture was beautiful," said Neil Burmeister, manager of the Pompano Beach system. "The picture, frankly, was good enough for any cable system. We do have very, very high standards here on our system, and that's why we had SSS order a larger dish for us originally. But we were very pleased with the quality of the picture from the three-meter."

American Cable TV replaced the three-meter with a 12-footer in early October, and have been very pleased with the results, especially since the slight increases in radiated power from the Western Union satellite.

"We understand Western Union has been increasing their transmission power," Burmeister said. "So that helps our reception and fits in with what we are doing here. Our engineer, Rick Scheller, says that if they increase the strength of their signal any more, it will just be insurance for us."

American Cable's new dish experienced some severe performance falloffs during recent heavy rains in the Florida region. Due to the steep look angle to Westar 3, water had been collecting in the dish. The regional engineer from Southern Satellite recommended drilling drain holes in the bottom of the dish, which cured the problem.

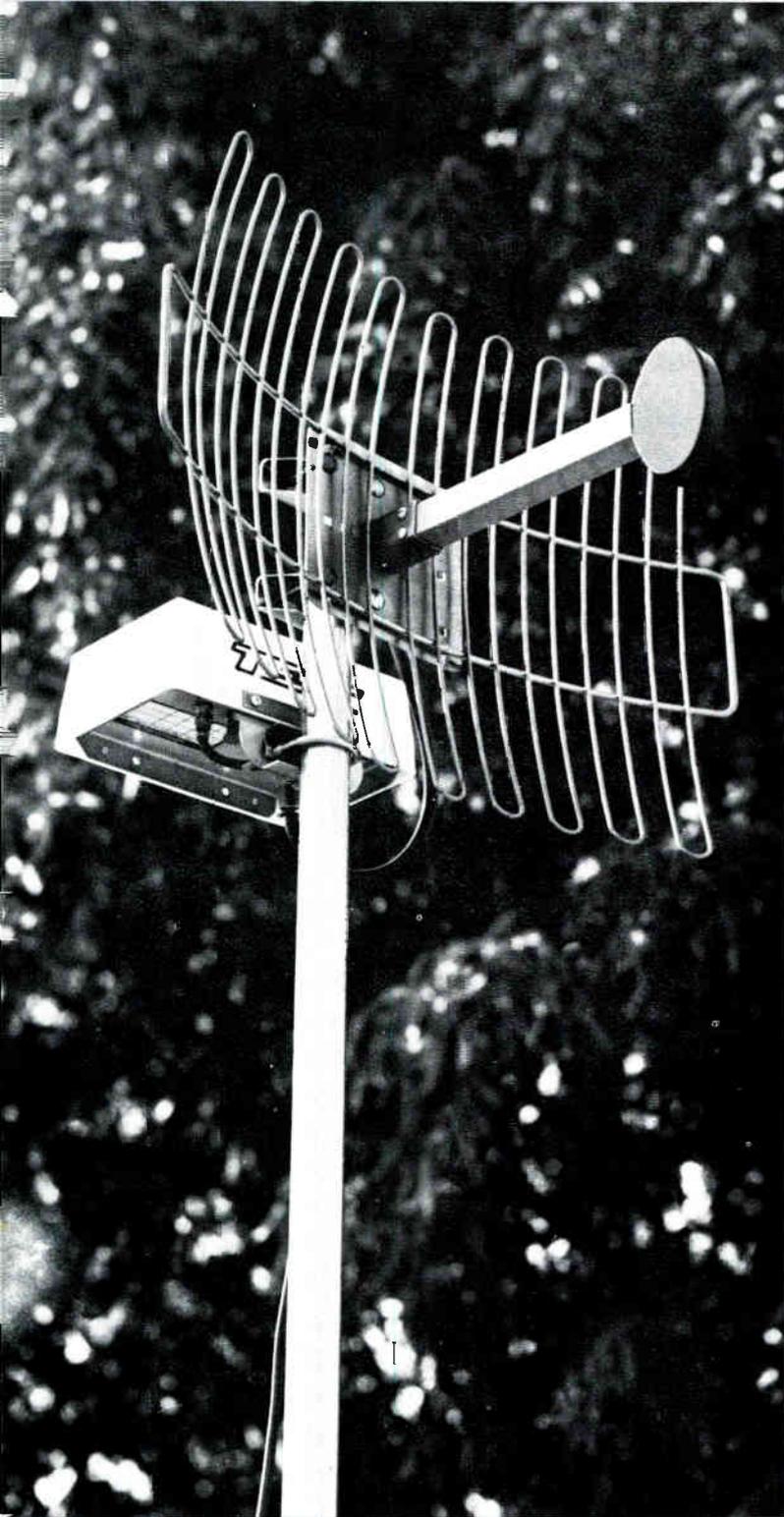
Cable Programming For November

Signal	Day	Start/Stop	Alert Tones	Satellite/ Transponders	Signal	Day	Start/Stop	Alert Tones	Satellite/ Transponders	
C-SPAN	Monday-Friday	9:30 a.m. to 6:30 p.m.	195'/#	F1, #9	Modern Talking Pictures		12 pm-5 pm (weekdays) 7 am-12 pm (weekends)	243'/#	F1, #22	
					Newstime		24 hrs.	276'/#	F1, #6	
CBN		24 hrs.	No	F1, #8						
ESPN	Monday thru Thursday 6:00 p.m. to 4:00 a.m. Friday, 6:30 p.m., to following Monday, 4:00 a.m.			F1, #7	PTL		24 hrs.	No	F1, #2	
Front Row		2:30 pm-2:30 am	481'/#	E,C F1, #12 P.M F1, #10	Reuters		4:00 a.m. to 7:00 p.m. Monday thru Friday	No	F1, #18	
HBO	Nov. 1 Nov. 2 Nov. 3 Nov. 4 Nov. 5 Nov. 6 Nov. 7 Nov. 8 Nov. 9 Nov. 10 Nov. 11 Nov. 12 Nov. 13 Nov. 14 Nov. 15 Nov. 16 Nov. 17 Nov. 18 Nov. 19 Nov. 20 Nov. 21 Nov. 22 Nov. 23 Nov. 24 Nov. 25 Nov. 26 Nov. 27 Nov. 28 Nov. 29 Nov. 30	1:30 p.m. 1:30 p.m. 3:30 p.m. 3:30 p.m. 3:30 p.m. 3:30 p.m. 3:30 p.m. 1:30 p.m. 1:30 p.m. 3:30 p.m. 3:30 p.m. 3:30 p.m. 3:30 p.m. 3:30 p.m. 1:00 p.m. 1:30 p.m. 3:30 p.m. 3:30 p.m. 3:30 p.m. 3:30 p.m. 3:30 p.m. 1:30 p.m. 1:30 p.m. 3:30 p.m. 3:30 p.m. 3:30 p.m. 1:30 p.m. 3:30 p.m. 1:30 p.m. 1:30 p.m.	3:35 a.m. 2:22 a.m. 3:42 a.m. 1:58 a.m. 2:31 a.m. 2:57 a.m. 3:22 a.m. 3:07 a.m. 3:28 a.m. 2:30 a.m. 2:36 a.m. 2:53 a.m. 3:15 a.m. 2:58 a.m. 2:50 a.m. 3:24 a.m. 3:27 a.m. 3:25 a.m. 2:32 a.m. 3:27 a.m. 4:07 a.m. 4:00 a.m. 2:12 a.m. 3:00 a.m. 3:21 a.m. 3:17 a.m. 3:43 a.m. 3:15 a.m. 3:12 a.m. 3:27 a.m.	Program 729'/# Scramble 835'/# Duplication 940'/# Take-2 E. 592'/# Take 2 W. 681'/#	F1, #24 F1, #22 F1, #23 F1, #20	SPN	24 hrs. (Sun.)	429'/# auto switch to commercial, on/off respectively	F1, #21	
							517', begin SPN Program segment, after Pay TV (10:30 p.m. Eastern, Monday-Saturday).	517#, end SPN Program segment, before Pay TV segment 8:00 p.m. Eastern, Monday-Saturday).		
					Showtime	Nov. 1 Nov. 2 Nov. 3 Nov. 4 Nov. 5 Nov. 6 Nov. 7 Nov. 8 Nov. 9 Nov. 10 Nov. 11 Nov. 12 Nov. 13 Nov. 14 Nov. 15 Nov. 16 Nov. 17 Nov. 18 Nov. 19 Nov. 20 Nov. 21 Nov. 22 Nov. 23 Nov. 24 Nov. 25 Nov. 26 Nov. 27 Nov. 28 Nov. 29 Nov. 30	3:30 p.m. 3:30 p.m. 6:00 p.m. 5:00 p.m. 6:00 p.m. 6:00 p.m. 3:00 p.m. 2:30 p.m. 5:30 p.m. 6:00 p.m. 5:30 p.m. 5:30 p.m. 5:30 p.m. 3:30 p.m. 2:30 p.m. 6:00 p.m. 6:00 p.m. 6:00 p.m. 6:00 p.m. 6:00 p.m. 6:00 p.m. 2:30 p.m. 2:00 p.m. 6:00 p.m. 5:30 p.m. 6:00 p.m. 2:00 p.m. 2:30 p.m. 3:30 p.m. 2:00 p.m.	2:24 a.m. 1:45 a.m. 2:27 a.m. 2:00 a.m. 1:58 a.m. 2:29 a.m. 3:36 a.m. 4:07 a.m. 1:30 a.m. 2:26 a.m. 1:44 a.m. 12:57 a.m. 2:28 a.m. 4:09 a.m. 4:49 a.m. 1:15 a.m. 2:24 a.m. 2:28 a.m. 2:50 a.m. 2:30 a.m. 4:32 a.m. 4:06 a.m. 1:35 a.m. 1:13 a.m. 2:00 a.m. 4:06 a.m. 4:09 a.m. 3:22 a.m. 4:45 a.m. 3:18 a.m.		
HTN		8 pm-10 (11) pm	517'/#	F1, #21	SIN		24 hrs.	No	Westar II #6	
KPIX (time permitting)		2-4 hrs. per day	No	F1, #1	The Movie Channel		24 hrs.			
KTVU		7 am-1 am (weekdays) 7 am-4 am (weekends)	No	F1, #1	Trinity (KTBN)		24 hrs.	No	F1, #14	
USA Network				F1, #9	WGN		5:42 am-3 (3:30) am (Mon.-Thurs.) 24 hrs. Sat. & Sun. Ends 3 am on Sun.	No	F1, #3	
	Nov. 1 Nov. 2 Nov. 3 Nov. 4 Nov. 5 Nov. 6 Nov. 7 Nov. 8 Nov. 9 Nov. 10	10:00 a.m. 11:00 a.m. 6:30 p.m. 6:30 p.m. 6:30 p.m. 6:30 p.m. 6:30 p.m. 10:00 a.m. 11:00 a.m. 6:30 p.m.	Nov. 11 Nov. 12 Nov. 13 Nov. 14 Nov. 15 Nov. 16 Nov. 17 Nov. 18 Nov. 19 Nov. 20	6:30 p.m. 6:30 p.m. 6:30 p.m. 6:30 p.m. 10:00 a.m. 11:00 a.m. 6:30 p.m. 6:30 p.m. 6:30 p.m. 6:30 p.m.	Nov. 21 Nov. 22 Nov. 23 Nov. 24 Nov. 25 Nov. 26 Nov. 27 Nov. 28 Nov. 29 Nov. 30	6:30 p.m. 10:00 a.m. 11:00 a.m. 6:30 p.m. 6:30 p.m. 6:30 p.m. 6:30 p.m. 6:30 p.m. 10:00 a.m. 5:30 p.m.				
	Calliope	10:00 a.m. to 1:00 p.m. Saturdays and 6:30 to 7:30 weekdays. No Sunday.			WOR		24 hrs.		F1, #17	
		English Channel, Sundays 10:00 p.m. to 12:00 p.m. and Tuesdays following sports (approximately 10:00 p.m.)								

E = eastern † Commercial substitution 601'/#; Thurs. baseball 706'/#.
C = central †† On-line 679'/#; off-line 753'/#; access 843'/#.
M = mountain
P = pacific

All program times are listed for the eastern time zone, unless otherwise noted.

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New Color Catalog Available from Global Specialties Corporation

Global Specialties Corporation (formerly Continental Specialties Corporation) has just published a new 36 page color catalog, "Instruments for Testing and Design." Copies are available by contacting Global Specialties Corporation toll-free at 1-800-243-6077 (9-5 Eastern time, Monday through Friday; in Connecticut, call New Haven 624-3103); write them at 70 Fulton Terrace, P.O. Box 1942, New Haven, Connecticut 06509; or TWX (710) 465-1227. Western Regional Office: 351 California Street, San Francisco, California 94104; phone (415) 421-8872; TWX (910) 372-7992. Europe, Africa and Mid-East: Shire Hill Industrial Estate, Units 1 & 2, Saffron Walden, Essex CB 11 3AQ; phone Saffron Walden 0799-21682; International Telex (815) 817477.

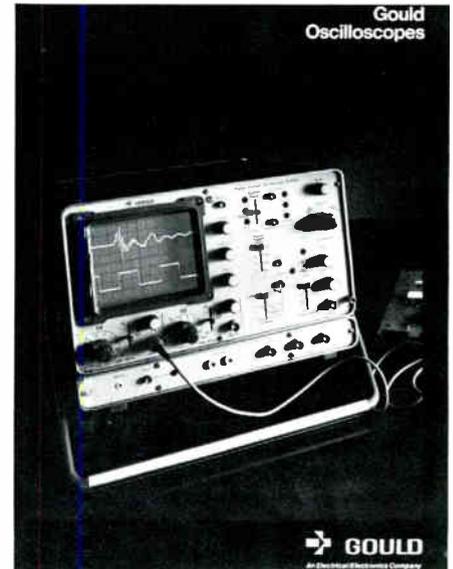
Bulletin Describes Gould Oscilloscopes

A new, 16-page bulletin describing the complete line of Gould portable oscilloscopes is available from Gould Inc., Instruments Division. The line includes instruments for a broad range of applications from educational and service use to the most demanding laboratory and digital circuit measurements.

Among the instruments detailed in Catalog 449-16 are 15 MHz dual trace and true dual beam oscilloscopes, a 25 MHz scope with signal delay, a 30 MHz unit with variable trigger delay, and 60 MHz and 100 MHz scopes with third channel trigger view and holdoff. An optional 3½-digit DMM add-on for the latter two scopes accurately displays signal amplitudes, times and frequencies.

In digital storage scopes, Gould pioneered the OS4000 with conventional 10 MHz oscilloscope performance combined with digital storage to 450 kHz, roll-mode viewing, and up to 100% capture of pretrigger information.

Catalog 449-16 is available from Marketing Communications, Gould Inc., Instruments Division, 3631 Perkins Avenue, Cleveland, Ohio 44114.



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Earth Station

Low-Cost Satellite Reception Provided by New Hughes System

A satellite receiving system, designed to provide for low-cost channel expansion of CATV systems and compatible with existing earth station receiving equipment, has been introduced by Hughes Aircraft Company's microwave communications products.

The receiving system consists of separate downconverter and receiver modules. The downconverter, Model IDC-472, converts the entire 3.7-4.2 GHz band to 0.95-1.45 GHz for input into the receiver. Significant cost savings can be obtained by connecting up to 12 agile receivers to a single downconverter on either horizontal or vertical polarization.

The 24-channel receiver, Model SVR-463, provides means for push-button channel selection, conversion to a second intermediate frequency,

automatic gain control, demodulation and video/sound processing. Utilizing state-of-the-art microwave integrated circuitry for high reliability, the receiver is an outgrowth of receiver-development work performed by Hughes for NASA.

Additional standard features of the receiver include threshold extension, remote tuning capability, and built-in test/alignment circuitry. An AGC output terminal aids in locating and aligning the antenna. For complete details, contact Hughes Aircraft Company, Microwave Communications Products, P.O. Box 2999, Torrance, California 90509, (213) 534-2146.

Cable

Cable Maker Draws Aluminum Plant

CATAWBA, NORTH CAROLINA—The booming sales of the Comm/Scope

Company have drawn an aluminum extrusion manufacturing plant to locate in Catawba. Alumax Extrusions, Inc., manufacturers of both primary and extruded aluminum, has begun construction of a 20,000 foot facility next to Comm/Scope's manufacturing operation, according to Gary Kanipe, Vice President of Purchasing for Comm/Scope.



The new plant, scheduled to be in production in mid-January, will manufacture extruded aluminum tubing for use as aluminum-sheath coaxial cable. Comm/Scope is a leading manufacturer of aluminum-sheath cable for the CATV industry.

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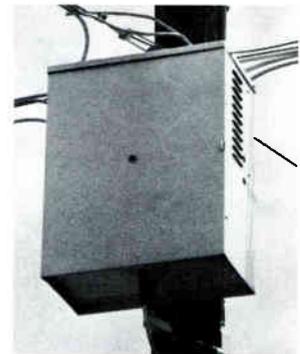
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The Alumax Extrusions company is headquartered in Schaumburg, Illinois.

New Cable Sizes

In response to increase demands for longer and larger cable television systems, Times Wire and Cable has announced the addition of new five-eighths-inch and seven-eighths-inch cables to its Series 4000 'Lumifoam III'™ trunk and feeder cables.

According to Bruce M. Brown, Senior Vice President of Times' CATV Marketing Group, "the new sizes will give operators of large metropolitan and suburban areas the ability to design cost-effective systems for future growth."

"Lower attenuation characteristics provide the system operator with a number of attractive options," Brown stated. "For example, system band-

width can be extended without changing amplifier spacing; or a system can be designed with greater amplifier spacing for lower initial cost and reduced maintenance—plus built-in flexibility for future expansion or interconnection."

According to Brown, Times has completed product development and initial production testing, and is now manufacturing the new cables at their Chatham, Virginia and Phoenix, Arizona plant locations. The five-eighths-inch and seven-eighths-inch sizes, designated JT 4625 and JT4875 respectively, will be available in jacketed, flooded and armored versions as well as plain aluminum cable, with delivery ranging from four to ten weeks after receipt of order.

All JT 4625 and JT 4875 cables are performance tested over the full range from 5 to 500 MHz. Typical attenuation specifications are 1.27 and 0.94 dB per 100 feet at 400 MHz for JT 4625 and JT 4875 respectively.

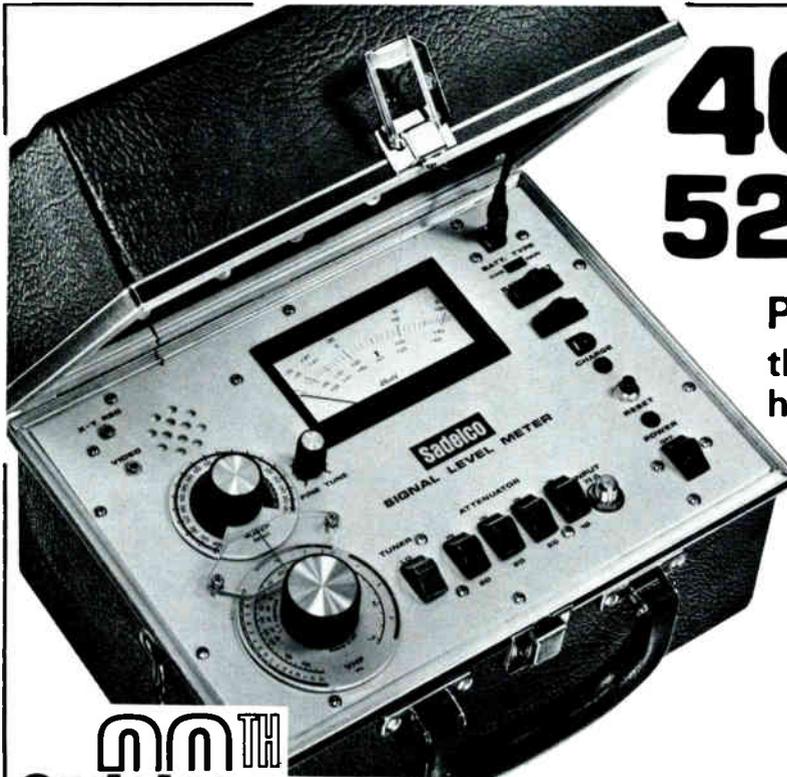
For more information, contact Times Wire and Cable, a subsidiary of Insilco

Corp., at 358 Hall Avenue, Wallingford, Connecticut 06492, or call (203) 265-8500.

Test Equipment

Ballantine Widens Mini-Portable's Range

Ballantine Laboratories' Mini-Portable Model 1022A Travelscope, small enough to fit in an attache case



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yet offering standard-size instrument feel for operation and function, has had its range upped to 15 MHz from the original model's 12 MHz limit.

Most important, the current model is now "truly" portable with its battery-pack compatibility. The Ballantine Option 05 battery pack, now available for the company's 1020 series Travelscope (the single-trace version is designated the model 1021A), fits onto the back of the Travelscope case blending in as part of the total package. Mounting holes are on the rear panel of current Travelscopes to accommodate the pack, enabling field retrofit to be made in less than ten minutes.

The Option 05 battery pack, costing \$185 with 45 to 60 days ARO delivery, includes sealed rechargeable NiCad batteries, a charging circuit and electronic switching components. The electronic switching circuit automatically routes the external power into the scope or, when used off-line, power is automatically drawn from the battery pack. With Option 05, the Travelscope will operate for approximately two hours on a full charge. Recharge time is 14 hours and recharging (trickle charge) takes place

when the Travelscope is being operated from the wall-mounted AC/DC power converter.

The model 1022A dual-trace Travelscope costs \$895 (without Option 05); the 1012A single-trace Travelscope is \$765. Delivery is 45 days ARO. For further information, contact Ballantine Laboratories, Inc., P.O. Box 97, Boonton, New Jersey 07005.

Miscellaneous

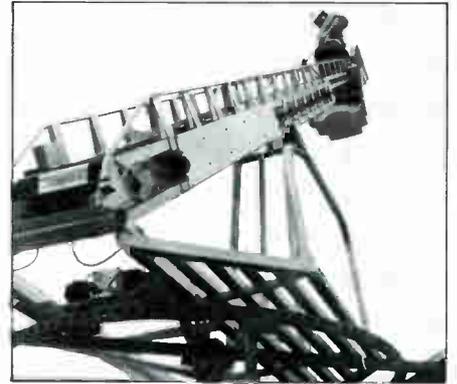
Lightweight Aerial New From Van Ladder

A lightweight, all-electric aerial ladder, designed to fit virtually every service vehicle (including small vans and many sub-compact pickup trucks) is available from Van Ladder Inc., Spencer, Iowa.

The "Van Ladder" weighs only 600 pounds, but offers the same lift and bucket capacity of units much larger and heavier.

It features a patented rolling fulcrum principle which allows the ladder to be supported at two points and eliminates the need to add more weight

and support to the service vehicle. A six-point mounting frame makes it easy to install without wasting valuable cargo space in the truckbed or van.



"Van Ladders" are available in four different sizes with height capacities from 23-inches to 32-inches (bottom of bucket) and side reach from 13-inches to 17-inches of lateral center.

The units are ideal for telephone and electrical service work, sign contractors or applications (outside or in-plant) requiring overhead service or installation work. For more information, contact Michael Penn, Van Ladder, Inc., Spencer, Iowa 51301, or call (712) 262-5810.

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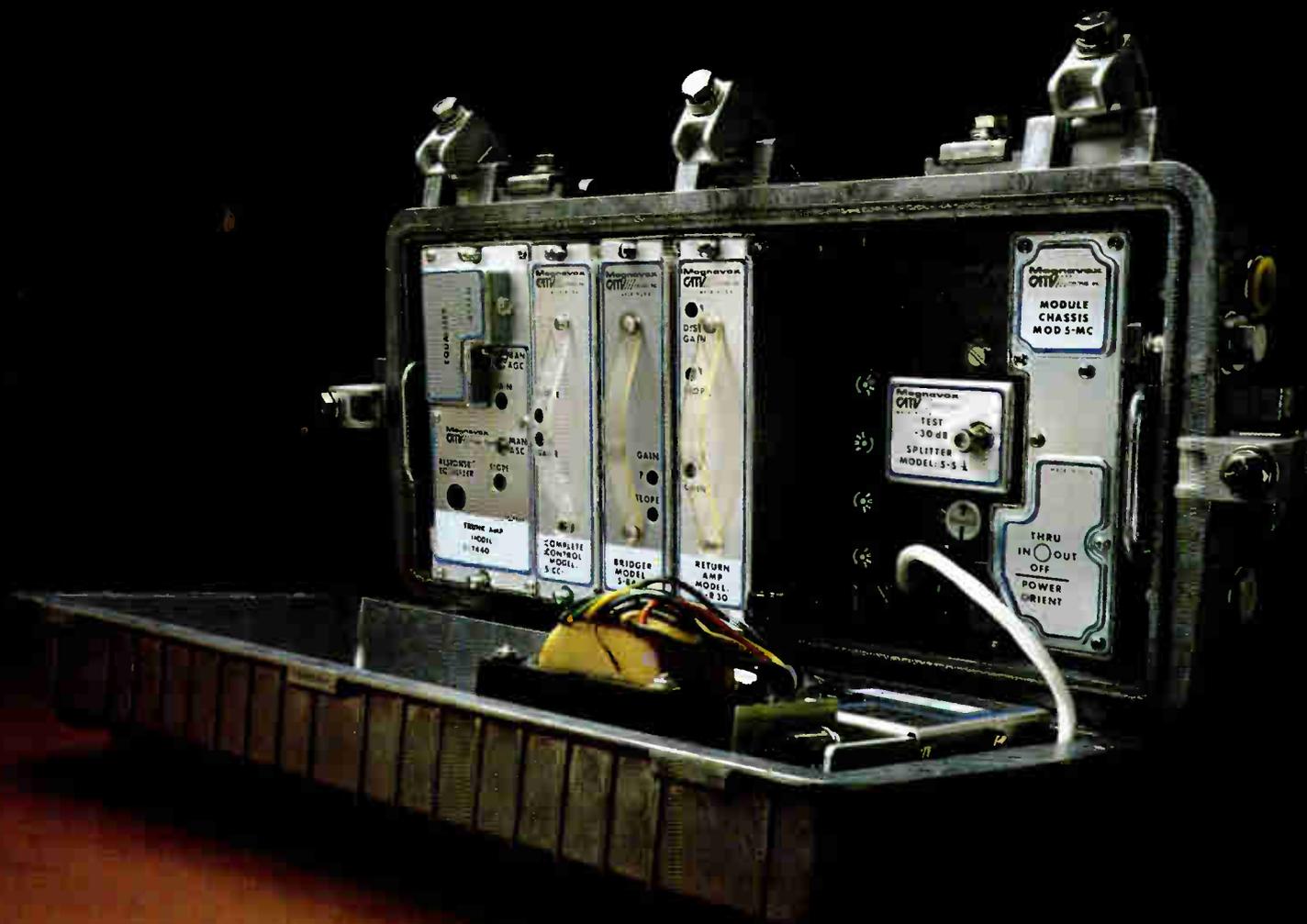


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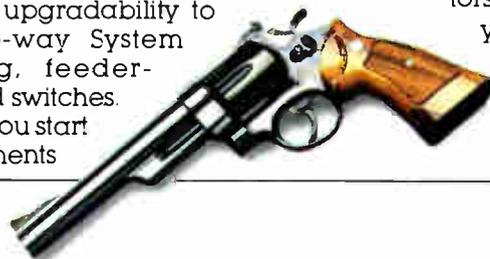
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The Magna 440 Amplifier, teamed with the new Magna 58 Converter/Descrambler, gives you added bandwidth capacity and profit potential for your existing base and opens up profit opportunities for new plant.

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Converter/Descrambler can individually convert all channels within the 54-440 Mhz bandwidth. It's compatible with most head-end equipment and requires only minor modifications of existing modulators to scramble premium channels.

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Contact your Magnavox representative for details on the new Magna 58 and Magna 9 Converter/Descramblers. You will profit from it.



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CANADA: rt communications ltd. (Markham). Phone 416-495-1030

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CED Reader Survey

Your opinion is Important! By participating in this first annual survey of *Communications-Engineering Digest's* readership, your voice will be heard along with those of 5,000 other members of our dynamic and energetic industry!

Instructions

In the first section of this survey (questions 1 through 116) circle the number on the Answer Card (facing page) of the correct answers to the questions.

In the second section of this survey (questions 120-192), fill the appropriate letter (A, B, or C) into the numbered box on the answer card.

I Background Information

How old are you? Please circle the number on the answer card that corresponds to your correct age.

1. Up to 21
2. 22-27
3. 28-33
4. 34-39
5. 40-45
6. 46-51
7. 52 and over

II Degrees

Have you received a Diploma or Degree? Please circle all that apply.

10. High School Diploma
11. Associate of Art or Science
12. Bachelor of Art or Science
13. Master of Art or Science
14. Doctorate
15. Continuing Education Certificates
16. Specialized Equipment Repair Schools
17. Life saving, CPR, Emergency First Aid

III Licenses and Certificates

Do you hold a technical license or certificate? Please circle the numbers on the answer card of those that apply to you.

20. Amateur Radio Novice or Technician
21. Amateur Radio General or Advanced
22. FCC Radiotelephone Second
23. FCC Radiotelephone First
24. FCC Broadcast Endorsement
25. FCC Ship Radar Endorsement
26. Certified Electronic Technician (CET)

27. Professional Engineer

IV Job Title

Please circle the number on the answer card that corresponds to the job title that best matches your job.

30. Corporate Chief Engineer, Head of Engineering, Vice President of Engineering
31. Regional Engineer, Division Engineer, Project Engineer
32. Chief System Engineer
33. System Engineer
34. System Technician
35. Construction Crew
36. Office Staff, Clerical
37. Sales, Service
38. Consulting
39. Educational

V Field of Employment

What fields are you currently working in? Please circle all that apply.

40. Broadcasting, MDS, STV
41. Cable TV
42. Programming
43. Manufacturing, Sales
44. Common Carrier

VI Personal and Professional Information Sources

Which publications give you the most useful information about your field, and your job? Which publications help you most in your job? Please circle the numbers on the answer card of the THREE publications which help you most.

50. BM/E
51. Broadcast Engineering
52. Broadcasting
53. CableVision
54. CATJ
55. Communications-Engineering Digest (C-ED)
56. Communications News
57. Coop's Satellite Digest
58. Electronics
59. MultiChannel News
60. r.f. design
61. Satellite Communications
62. SMPTE Journal
63. Telecommunications

64. TVC

VII Professional Organizations

Do you belong to any professional organizations? Please circle the numbers on the answer card corresponding to those organizations to which you belong.

65. IEEE
66. NCTA
67. SBE
68. SCTE
69. SMPTE

VIII Work History

How long have you been employed in your current major field? Please circle the answer number that corresponds to your correct answer.

70. 1-4 years
71. 5-8 years
72. 9-12 years
73. 13-16 years
74. 17-20 years
75. 21 or more years

IX Job History

How long have you been with your present employer? Please circle the correct number on the answer card.

80. 1-4 years
81. 5-8 years
82. 9-12 years
83. 13-16 years
84. 17 or more years

X Earnings Last Year

What was your job-related income for your last complete pay year, not including benefits? Please circle the number on the answer card that corresponds to the correct pay range.

90. \$10,000 to \$13,999
91. \$14,000 to \$17,999
92. \$18,000 to \$21,999
93. \$22,000 to \$25,999
94. \$26,000 to \$29,999
95. \$30,000 to \$33,999
96. \$34,000 to \$37,999
97. Over \$38,000

If not salaried, complete the above

anyway, then:

98. Paid by the hour

99. Paid on commission or piece rate

XI Earnings This Year

What will be your job-related income for this year (or pay period), not including benefits? Please circle the number on the answer card that corresponds to the correct range.

100. \$10,000-\$13,999

101. \$14,000 to \$17,999

102. \$18,000 to \$21,999

103. \$22,000 to \$25,999

104. \$26,000 to \$29,999

105. \$30,000 to \$33,999

106. \$34,000 to \$37,999

107. Over \$38,000

If not salaried, complete the above anyway, then:

108. Paid by the hour

109. Paid on commission or piece rate

XII Benefits (Not in salary or wages)

Do you receive any job-related benefits that are not reflected in your earnings (previous questions)? If so, please indicate on the answer card which benefits you have.

110. Paid Vacation, Sick Leave

111. Retirement Plan

112. Medical Insurance Coverage

113. Use of Automobile for Business

114. Equipment, Supplies, and/or Uniforms Furnished

115. Profit-Sharing or Stock Plans

116. Cost-of-Living Raises

XIII C-ED Magazine Selection Rankings

Which features and sections in C-ED do you most often read? Please fill the appropriate letter in the numbered box on the answer card with A for "always," B for "sometimes," or C for "never."

120. News At A Glance

121. Editor's Letter

122. Letters to the Editor

123. SCTE Comments and Chapter News

124. News Section

125. Intermod, by Glenn Chambers (introduced in October issue)

126. Feature Stories

127. Satellites Section

128. Cable Programming For The Month

129. Bibliography

130. Technology (New Products)

131. System Profile

132. Out of Sync

133. Canadian Comments

134. People

135. From Washington

XIV Your Information Needs

What kinds of information would you like your magazines to carry? What kinds of information would best help you do your job? Please fill in the numbered boxes on the answer card with A for "very useful," B for "sometimes useful," or C for "seldom useful."

140. How-To Articles on CATV Basics

141. How-To Articles on MDS, STV Basics

142. Engineering Articles on CATV System Problems

143. Profiles of Engineering and Technical People

144. New Product Information

145. News Items About Communications Engineering

XV Subjects of Interest

What subject areas would you like your magazine to cover? What areas of communications engineering would you like to see regular news articles on? Please fill in the numbered box on the answer card with A for "very interested," B for "sometimes interested," or C for "seldom interested."

146. Broadcasting, Radio and TV

147. Cable TV

148. Computers, Data Processing

149. Data Transmission

150. Digital Technology

151. Direct Broadcast Satellites (DBS)

152. Fiber Optic Systems

153. Microwave Transmission

154. Multipoint Distribution Services (MDS)

155. Satellite Communications

156. Subscription Television (STV)

157. Teleconferencing, Videoconferencing

158. Telephone Technology

159. Vertical Blanking Interval Applications

160. Video and Audio Production

161. Viewdata and Teletext Services

General Opinion Section

Please answer the following questions by placing the appropriate letter in the numbered boxes on the answer card. Use A for "yes," B for "no" or C for "no opinion."

XVI Licensing and Certification

170. The FCC currently maintains a system of licensing engineers for broadcast applications, including

Second-Class and First-Class categories, with Ship Radar and Broadcast endorsements.

Do you think that the FCC should abolish its current method of licensing broadcast engineers, as has been proposed? Use A for "yes," B for "no" or C for "no opinion."

171. If the FCC abolishes its system for licensing, there would not be a coherent national policy for licensing technicians and engineers.

Do you think that there should be a national system for licensing technicians and engineers? Use A for "yes," B for "no" or C for "no opinion."

172. If there is no national licensing procedure for engineers, should the CATV industry attempt to set up its own qualification procedures? Use A for "yes," B for "no" or C for "no opinion."

XVII Regulation

180. The regulatory environment in the U.S. has produced sharp distinctions between the services offered by common carriers (like the phone companies) and entertainment providers (like broadcasting and cable TV.)

In other countries, like Canada, Britain, and France, the functions of common carriers and entertainment programmers are combined into one agency.

Do you think that the separation of CATV and Telephone systems will ultimately provide better services to the subscriber? Use A for "yes," B for "no" or C for "no opinion."

181. Do you think that the combination of CATV and Telephone systems will ultimately provide better service to the subscriber? Use A for "yes," B for "no" or C for "no opinion."

182. Do you think that CATV systems and Telephone systems should be allowed to compete for the same services to the same subscribers? Use A for "yes," B for "no" or C for "no opinion."

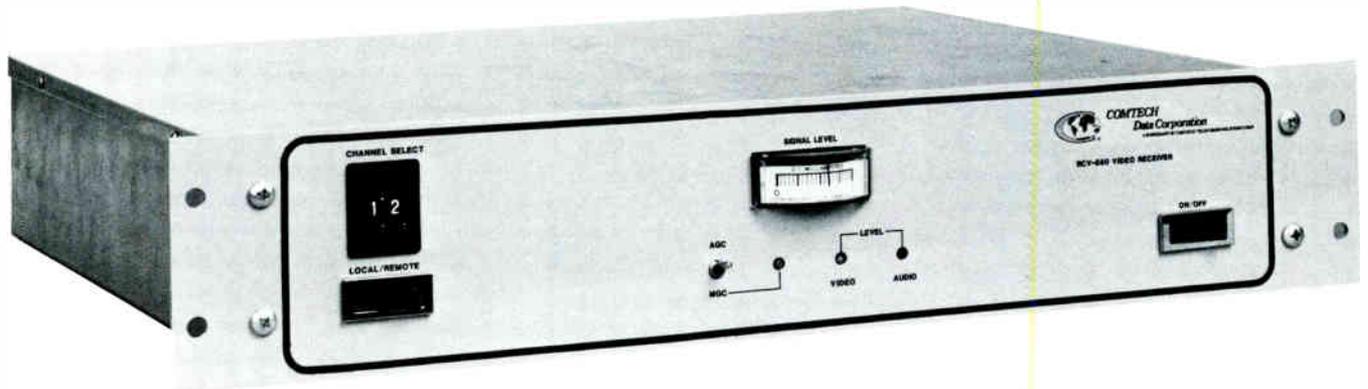
XVIII Miscellaneous

190. Do you think your prospects for career advancement are good if you stay with your present employer? Use A for "yes," B for "no" or C for "no opinion."

191. Do you think your prospects for career advancement are good if you stay in your current field? Use A for "yes," B for "no" or C for "no opinion."

192. Do you plan to stay in your present field? Use A for "yes," B for "no" or C for "no opinion."

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- **YOU** can benefit from our counsel on how to interview and from our knowledge of the job marketplace, i.e., salary, benefits and other compensation relative to job descriptions, geographical differences and competing services/ technologies.
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Contact:

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Chief Engineers

Times Mirror Cable Television, the sixth largest cable company in the Country, serving over 500,000 subscribers in 14 states, is offering employment opportunities for high caliber professionals. We currently have openings in Warwick, Rhode Island, where we are building a new system, and in Louisville, Kentucky, where a 2-year-old system is established. Both positions offer the Chief Engineers opportunity to work in modern, state-of-the-art systems. Each Chief Engineer would have total technical responsibility for the operation and maintenance of up to 800 miles of plant served by Amplitude Modulated Link microwave, including activation of bi-directional capabilities.

Qualified candidates should have a strong background in electronics and no less than 5 years direct experience in cable television work. We prefer a first-class radio telephone license, although persons possessing a second-class license will be considered. Since our Chief Engineers typically manage supervisory staff, individuals with prior supervisory experience are highly desirable.

At Times Mirror we believe in allowing our people independence and flexibility in management and provide them with the corporate support necessary to ensure their success. We have exciting plans for the future which include the commitment to lead the cable industry in technical capability and expertise. With the financial backing of a company which generates annual revenues of \$1.7 billion, we have the support we need. We offer an excellent compensation package including incentives, along with an outstanding benefit program. If you are an aggressive individual with the proven ability to succeed, we would like to talk to you about your future in cable.

Please send your resume including salary history in confidence to **Wrise Booker, Manager of Human Resources, Times Mirror Cable Television, Inc., P.O. Box 19389, Irvine, CA 92713.**

We are an equal opportunity employer and encourage women and minorities to apply.



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Needed by Large MSO

We are now seeking a qualified person to train for bench repair of CATV equipment and maintenance repair of outside plant. Must be willing to learn or have previous experience with handling and use of ladder and pole climbing equipment infield. Located in southern New Jersey. For further information and interview consideration, please respond by resume to Box C-ED-1180-1.

CONSTRUCTION COORDINATOR

Top 50 market expanding present 500 mile system. We are seeking an experienced construction candidate to coordinate and manage a large aerial and underground expansion. Experience should also include utility coordination, make-ready, strand mapping, apartment prewire and post wiring, material purchasing and all forms of burial of CATV.

Please submit resume with salary requirements to:

Director of Field Operations
Coaxial Communications
3770 E. Livingston Ave.
Columbus, OH 43227

CHIEF INSTALLER

A supervisory position for a person with cable television installation experience. The person qualifying for this position will be looking for advancement in the cable industry. The successful candidate will have 2-3 years experience in cable installation, know correct practices, demonstrate good customer relations qualities and be capable of handling scheduling functions.

For more information or a confidential interview, call or write: Director of Administration, Fresno Cable TV, 1945 N. Helm, Fresno, CA 93727, (209) 252-8210.

CHIEF TECHNICIAN FIELD TECHNICIANS INSTALLERS

Ground-floor opportunities with an expanding MSO based in Texas. Current openings exist in the Dallas-Ft. Worth area. If you are interested in the above positions, call or write:

Black Hawk Cable Communications
P.O. Box 1606
Hurst, TX 76053
(817) 589-7700

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Opportunity to get into a ground floor position with a new and dynamic, fast growing MSO. Presently building a 200-mile dual two-way 400 MHz system in Northern Illinois. Applicant must be heavy in hands-on head-end and systems operations, testing and repair. Minimum 5 years experience in a top technical position. Salary to \$24,000 commensurate with experience.

CONTACT: John Roeder or Carroll Wood
Multimedia Cablevision, Inc.
10636 South Cicero Avenue
Oak Lawn, Illinois 60453
(312) 636-9022

TECHNICIANS WANTED

New build system consisting of 900 miles has immediate openings for technicians. Salary commensurate with experience. Reply in confidence to:

General Manager
6214 Enterprise Drive
Knoxville, Tennessee 37919

TECHNICIAN

Four-5 years experience in two-way systems, head-end maintenance, FCC Proof of Performance. Located in central New Jersey shore area. Send resume in confidence to:

Clear Television Cable Corp.
P.O. Box 847
Toms River, NJ 08753

WANTED: TECHNICIAN

Applications being accepted by dynamic and rapidly expanding 50,000 subscriber CATV System.

The successful applicant must have hands on experience in CATV System operations, including Microwave TVRO system, installation, service, plant construction, maintenance and repair. First class FCC license helpful.

Send resume or contact:

Pat Frank
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(716) 849-6469
Courier Cable Co., Inc.
Statler Building Suite 600
Buffalo NY 14202



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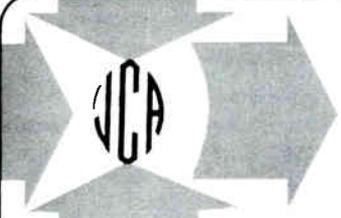
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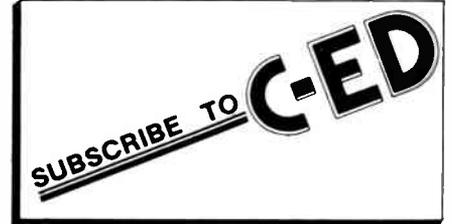
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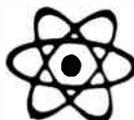
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Q. We have been using a programmable calculator to design system extensions and it really works well. I now want to design for a major system rebuild, and I need a more complete program. Do you know anyone who publishes a book of CATV design programs?

A. The only published book of CATV designs for programmable calculators that we can locate was written by Tom Polis and published by Magnavox. It is fairly expensive, but very well written. I suggest that you contact a Magnavox sales office for price and availability. Another source for good programs, although not written specifically for CATV, is Texas Instruments. Programs are for their TI-58 or TI-59 calculators.

There are a number of people who have written their own calculator programs. Many of them will share or swap with you, while others charge a small fee. You may be able to locate some programs by contacting area or regional SCTE members, or contacting Judy Baer at SCTE national offices. If any programs are sent to us, we will forward them to you.

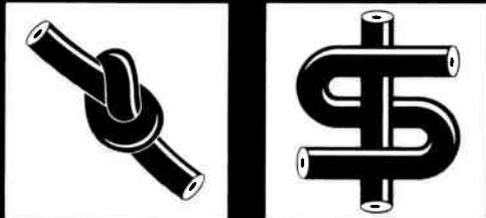
Many former programmable calculator users have moved up to a microprocessor (TRS-80, Apple, Pet, etc.) for ease of use and more flexibility. They are excellent for system design, as well as for inventory control, service call tabulation, and many other system records keeping. Besides, they are fun to use.

Q. I am Chief Technician in an older cable system. The system has been kept fairly free from signal leakage (radiation) until we connected our cable into the existing system in some large apartment buildings. Their cables are old and of poor quality. Signal leakage from them is causing lots of complaints among nearby non-subscribers who threaten to notify the FCC. The owner of the buildings has refused to rewire his system. My question is: Can the FCC hold us responsible for radiation from the apartments or is it their problem? My manager says it is their problem, but I say it is ours. Who is right?

A. According to the FCC, it is the responsibility of the cable system to prevent excessive signal leakage within their system. When you connected to the apartment system, it became an extension of your system. You are responsible. Since the apartmenthouse owner has refused to rewire the building, the FCC says you have two choices. You can rewire the building at your own expense (or otherwise correct the problem) or you can refuse service to the building until their wiring is corrected.

Out Of Sync is provided by **C-ED** as a service to our readers. **C-ED** and Titsch Publishing assume no liability for the implementation of any information presented in this column.

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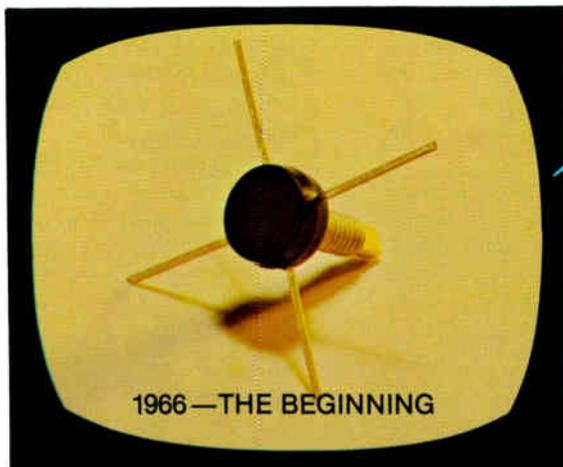
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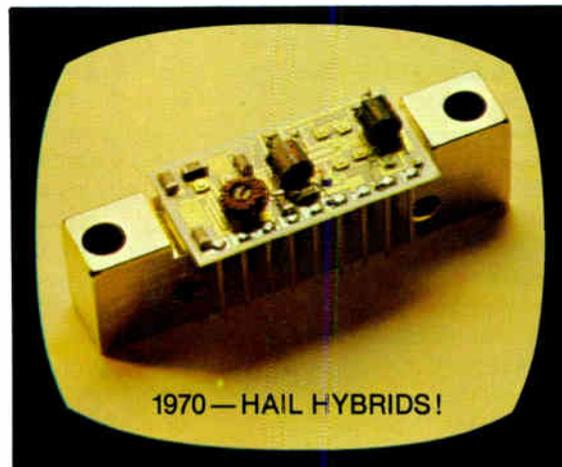
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First transistors made and characterized especially for CATV amplifiers.



TRW does it first. Again.

First hybrids for CATV. Elimination of interconnects provides inherent increase in reliability, ease of field repairs. Improved performance over discrete amplifiers.



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Year after year, TRW is the leader. Once again.

In 1980, we introduced extended band width.
In 1981, TRW R&D will present still another major milestone.

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★ **Tom Williams**, formerly employed at Scientific/Atlanta as Supervisor of Field Engineering, has joined **Arlington TeleCommunications Corporation's (ARTEC)** management team as Director of Engineering. Mr. Williams will be responsible for overall engineering operations and new product development for ARTEC's cable TV service (Metrocable).

★ **Larry Kenward** has been named Chief Engineer for the **Jenel Consultants Corporation** of Dallas, Texas, it was announced today by Elmer E. Smalling III, President.

Mr. Kenward's major responsibilities are to design both television and cable studio facilities, as well as, develop process control and computer automation systems.

Previously, Mr. Kenward was Assistant Director of Engineering at KERA-TV-FM in Dallas, Texas.

★ **California Microwave, Inc.** has named **Lyman, "Rusty" S. de Camp** Senior Systems Engineer for the Satellite Communications Division's Small Aperture Terminals (SAT) market segment. He provides technical support including system engineering and network design and implementation to California Microwave's East Coast Operations.

de Camp comes to California Microwave from Western Union, where he held the positions of Project Manager for Small Earth Station Development and Manager of Video Systems Development. Prior to joining Western Union in 1975, he was Director of Engineering for Midwestern Relay Company, a U.S. common carrier. At Midwestern, de Camp designed and implemented for the Midwest an entire network television distribution system. He has held engineering positions at Raytheon Data Systems, Jerrold Electronics Corporation and Bell Telephone Company of Pennsylvania.

★ Cox Cable Communications has announced the appointment of **James C. Vaughn** as divisional engineer for **Cox Cable Development Company**.

Prior to being assigned to this new position, Vaughn was Vice President for engineering of Cox Cable's Trans-Video Corporation operations in their West Coast Division.

Initially, Vaughn will be responsible

for guiding the engineering and development aspects in those systems being constructed by Cox Cable in Omaha, Nebraska; Oklahoma City, Oklahoma, and seven suburban Cleveland, Ohio communities.

Vaughn will be moving from San Diego to the Atlanta-based corporate headquarters of Cox Cable and will be reporting to Bruce Ellis, vice president and general manager of Cox Cable Development Company.

★ **Earl Langenberg** has joined **Daniels & Associates, Inc.**, a Denver-based cable company, as Director of Engineering. The announcement was made today by Chris Barker, Vice President Engineering.

Langenberg's responsibilities will include technical supervision of Daniels & Associates' cable systems, planning and development of engineering policy and practices and equipment



evaluation and specifications.

Prior to joining Daniels & Associates, Langenberg spent six years with Systems Communications Cable Incorporated, a manufacturer of coaxial cable. He has a bachelor of science degree in electrical engineering from Arizona State University and has completed work toward his master's degree at that school.

★ **The Cox Cable Communications' Science Center** staff has been expanded to more fully refine the potential of their computer-based INDAX system with the addition of two

senior design engineers—**James W. Thomas** and **Richard M. Lundy**.

Thomas will have the responsibility of developing unique future uses and enhancements of the Cox Cable INDAX two-way, interactive communications systems; and Lundy will be primarily involved in further defining the current potentials of the advanced cable television subscriber service.

Lundy received his BEE degree from Auburn University and his MSEE degree from the Air Force Institute of Technology. He has an extensive background in the design of both general purpose computers and dedicated microprocessor-based data acquisition and process control equipment.

Graduating from Georgia Institute of Technology with a BSEE degree, Thomas has been involved in the nuclear, aerospace, medical scientific and related fields since 1964. He has a diversified background in both R.F. and digital design and currently holds three patents with an additional four pending. One of his most recent developments was the first economical videotelephone system as well as a television digital scan converter.

★ **Michael N. Ruggiero** has been given the overall field responsibility of **Cox Cable Communications'** two MDS operations.

Ruggiero joined Cox Cable in June, 1979, as general manager of its MDS facility in Indianapolis, Hoosier Home Theatre.

A graduate of LaSalle College, Philadelphia, Pennsylvania, Ruggiero has an extensive background in cable television marketing and operations development programs.

People is a way for technicians and engineers in cable and communications to let friends and former co-workers know of important job changes. *C-ED* invites individuals and companies to keep us posted on changes and promotions in the technical and engineering professions. Send announcements to *C-ED People*, 2500 Curtis Street, Denver, Colorado 80205, or call them in to Dennis DuBe' at (303) 573-1433.

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Under The Toughest Conditions.

Designing innovative products that perform beyond the competition is fast becoming tradition at Eagle. Innovation in our tap starts on the inside with true performance to 500 and beyond. Our tap's insertion loss is lowest in the industry and R.F.I. far exceeds F.C.C. specifications. In addition, you'll also find our unique conductor seizure screw is firmly secured to prevent pullout or other damage to electronic components. Plus, the Eagle Tap is easily adjustable for either aerial or pedestal mounting.

Outside, the Eagle 500 MHz tap is built tough to protect against the harshest elements. Our exterior hardware has a sandbonded finish and our die cast housing is available with either a clear iridite coating or E finish with our exclusive brass F-connectors for severe conditions like salt spray, industrial pollution or other highly corrosive elements.

COMPARE FEATURES

- True performance to 500 MHz and beyond
- R.F.I. far exceeds F.C.C. specifications
- Lowest insertion loss in the industry
- Highest quality corrosion resistant aluminum alloy
- Moisture seal gasket
- Easily adjusted for aerial or pedestal mounting
- Sealed F-ports available in either machine threaded aluminum alloy or brass

- Modular design
- Available with either clear iridite or E coating
- Sand bonded finish hardware
- Ports are numbered for easy system audit

The Eagle 500 MHz tap, built for true performance under the toughest conditions ... inside and out.

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VALUE	5	11	14	17	20	23	26	29	32	35
MODEL	EC4-408	EC4-411	EC4-414	EC4-417	EC4-420	EC4-423	EC4-426	EC4-429	EC4-432	EC4-435
COLOR CODE	orange	gold	white	black	green	purple	yellow	red	silver	blue
TAP LOSS										
INSERTION LOSS										
5 MHz		2.2	1.2	.5	.4	.3	.2	.2	.2	.2
300 MHz		2.7	1.4	.7	.5	.4	.3	.3	.3	.3
400 MHz		3.1	1.6	.8	.6	.5	.3	.3	.3	.3
450 MHz		3.2	1.7	.9	.7	.6	.4	.4	.4	.4
500 MHz		4.5	2.0	1.1	1.0	.9	.7	.7	.7	.7
ISOLATION- out to tap										
5 MHz		30	32	34	40	43	46	49	52	55
300 MHz		30	32	34	38	41	44	47	50	53
400 MHz		28	30	2	35	38	41	44	47	50
450 MHz		25	27	29	32	35	38	41	44	47
Tap to Tap 5-400 MHz	300B Min									
RETURN LOSS- In Out Tap 5-400 MHz	200B Min									

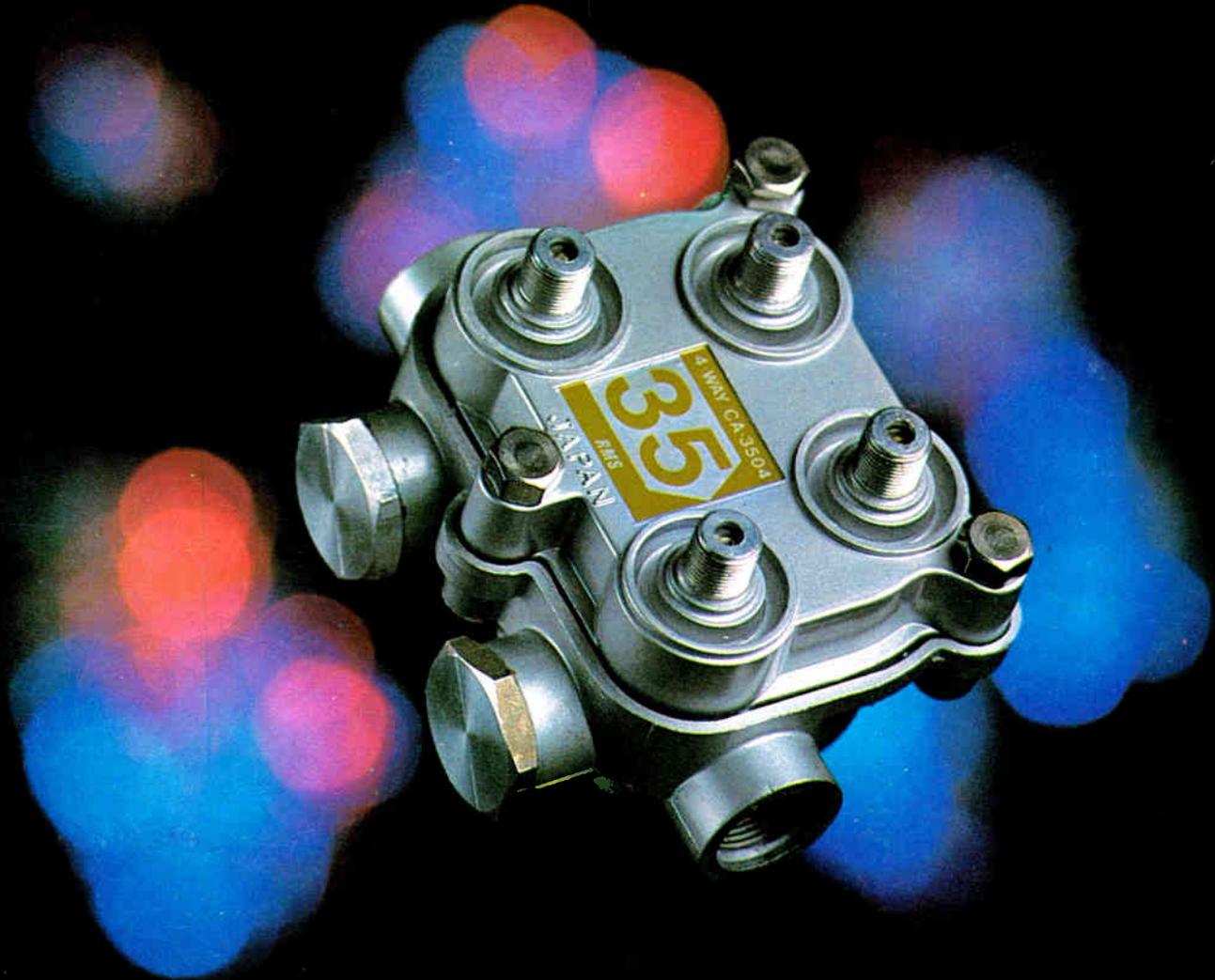


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