

JULY 1975

# BME

BROADCAST MANAGEMENT ENGINEERING

## DJ-CONTROLLED AUTOMATION.



STEREO PACKAGE SHOWN: KMOX-FM — ST. LOUIS, MISSOURI



## the ultimate in Turn-Key construction

The McCurdy approach to engineering and construction of a packaged system allows the user to easily locate his new equipment without the added burden of wiring to auxiliary equipment.

All aspects of the broadcast function, from news booth to music production center, can be assembled into a unique and functional package.

Each system is fully pretested as a total functional unit and will meet or exceed all broadcast specifications.

### FEATURES OF THE SYSTEM SHOWN ABOVE

- All inputs and outputs to the system are normalled through jacks and wired to blue ribbon connectors, (for convenience of service and transportation).
- Audio and D.C. interface to an automation system.
- Remote control of reel, turntable and cartridge machines.
- Program routing switcher to delegate audio to telco lines.
- Switchable A.G.C. control on all microphone mixers.
- Equalization can be delegated to any mixer or program channel
- Included in the package are tone and digital information generators which are used in the production of tape and cartridges for playback in automation systems.

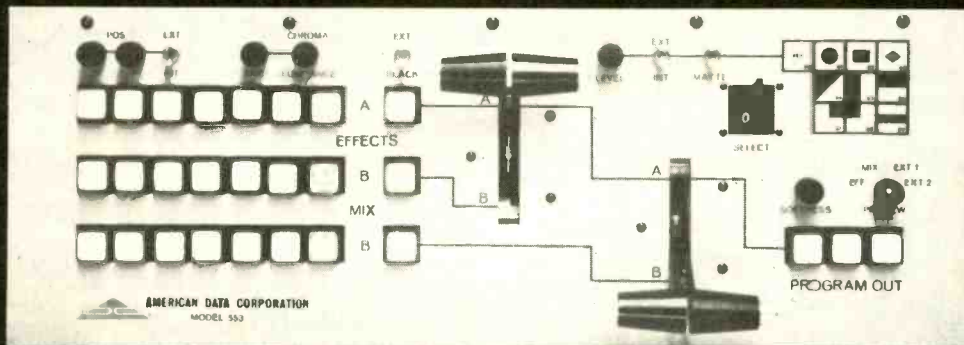
### McCURDY RADIO INDUSTRIES INCORPORATED

1051 CLINTON STREET, BUFFALO, N.Y. 14206 (716) 854-6700

108 CARNFORTH RD., TORONTO, ONT. M4A 2L4 (416) 751-6262



# THE ADC 553



## A TOTALLY NEW PACKAGE DESIGNED ESPECIALLY FOR:

- ★ THE LARGE MARKET
- ★ THE SMALL MARKET
- ★ THE MEDIUM MARKET
- ★ CABLE, CCTV, MOBILE
- ★ ONLY \$3,950

The ADC Model 553 Vertical Interval Color Production Switcher is designed to provide small studio and remote van operators with a broadcast quality switching system that incorporates the latest state-of-the-art advances. SOFT WIPE and LINEAR KEY are standard features, but a new development from ADC allows the combining of two 553 systems for a system of unmatched capability and economy.

The special effects generator provides nine wipes, including a circle, square, diamond, diagonal, H&V splits and corner inserts. In key mode, the special effects generator provides a choice of self or matte key on internal or external sources, and an external chroma keyer may be used on the external input. True SOFT WIPES are provided, with control for degree of softness. The keying system is LINEAR in nature so that edge crawl and key breakup are minimized.

The Model 553 is self-contained and designed to mount in a standard 19 inch console or rack housing. Input selector buttons are momentary contact, illuminated with relegendable lens caps. A blackburst and color background generator is included in the switcher to provide fades or wipes to any color or black, and in conjunction with the matte keyer, will provide colored insert keying.



AMERICAN DATA CORPORATION

AN AIRPAX COMPANY

315 WYNN DRIVE, N.W. P. O. BOX 5228 HUNTSVILLE, ALABAMA 35805 TEL. 205-837-5180

1729 WILMONT DRIVE  
ATLANTA, GA. 30325  
404-633-2100

5504 WATERWAY  
ROCKVILLE, MD. 20853  
301-460-1454

3250 WILSHIRE BL. STE900  
LOS ANGELES, CA. 90010  
213-387-7756

2908 MULBERRY  
PASADENA, TX. 77502  
713-941-7272

AIRFAX ELECTRONICS

Cambridge Division  
Cambridge, Md.

Circuit Breakers & Switches  
Controls Division

Ft. Lauderdale, Fla.

Tachometry & Control Instrumentation

# BM/E

BROADCAST MANAGEMENT/ENGINEERING



A station can be a "personality" station and automated at the same time. The DJ can switch-in selected sequences for faultless control.

**BROADBAND INFORMATION SERVICES, INC.**  
274 Madison Ave.  
New York, N.Y. 10016  
212-685-5320

Editor  
**James A. Lippke**

Associate Editor  
**Robin Lanier**

Washington Editor  
**M.L. Hollowell**

Contributing Editor  
**Robert Wollins**

Editorial Assistant  
**Karen Goudket**

Art Director  
**Gus Sauter**

Manager  
Publication Services  
**Djuna Zellmer**

Circulation Manager  
**Barbara B. Connolly**

FCC Counsel  
**Pittman Lovett Ford  
and Hennessey**

Publisher  
**Charles C. Lenz Jr.**

---

**JULY 1975/VOLUME 11/NUMBER 7**

---

## **6 Broadcast Industry News**

*Poll finds TV highly regarded*

## **26 Interpreting the FCC Rules & Regulations**

*The Amended Prime Time Access Rule*

---

### **Special Emphasis on Automation**

---

## **32 Making Automation Serve**

*How WBEN automated their systems but not their human operators*

## **38 Computer Provides "Programmers Automation"**

*CBS O&O's select large capacity computer system for programming flexibility*

## **44 Business Automation Surging Ahead**

*TV broadcasters now use the latest in computer technology*

---

## **48 Instant Ads**

*Using ENG equipment to make TV commercials*

## **52 The Great Idea Contest**

*Four more practical ideas from our readers*

## **59 Broadcast Equipment**

*New and significant products*

## **63 New Literature**

*Useful reading materials*

---

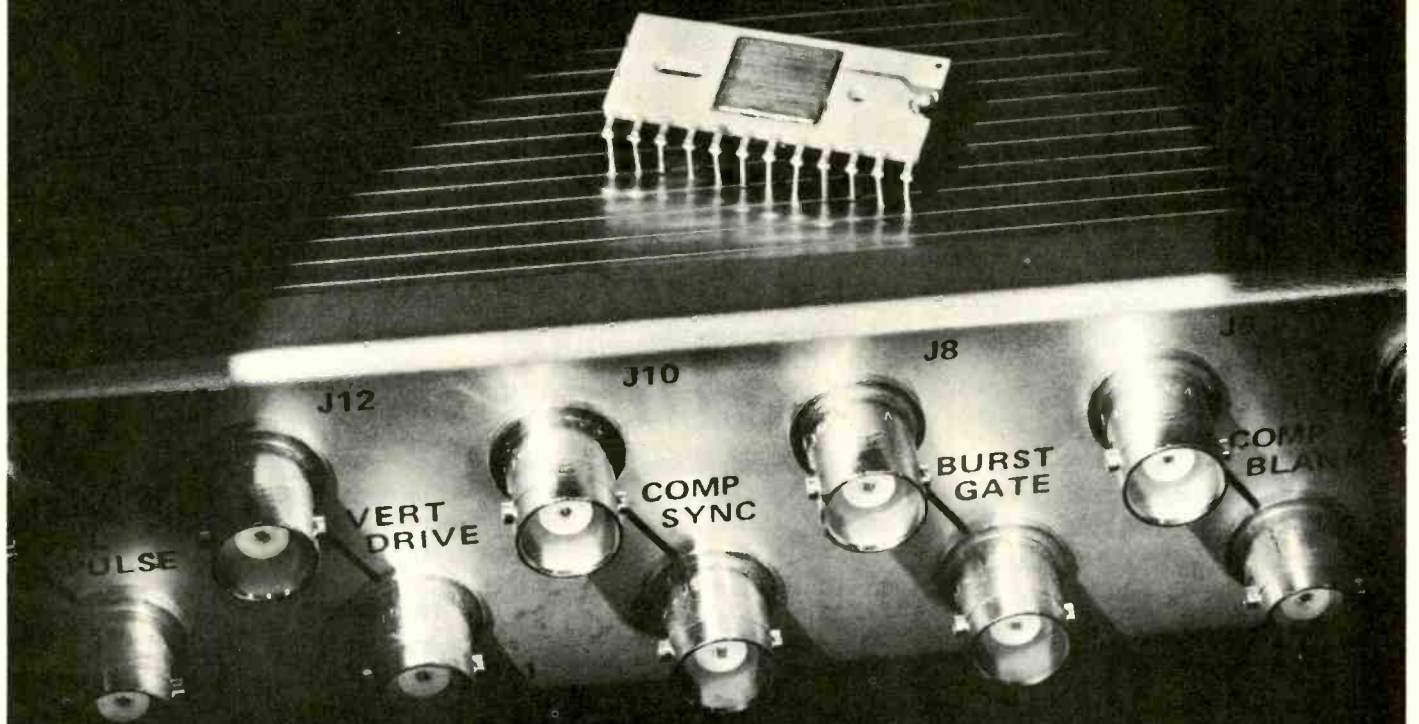
**Next Month: Special Emphasis on Automation—Part II**

---



BM/E, BROADCAST MANAGEMENT/ENGINEERING, is published monthly by Broadband Information Services, Inc. All notices pertaining to undeliverable mail or subscriptions should be addressed to 274 Madison Ave., New York, N.Y. 10016. BM/E is circulated without charge to those responsible for station operation and for specifying and authorizing the purchase of equipment used in broadcast facilities. These facilities include AM, FM, and TV broadcast stations; CATV systems; ETV stations; networks and studios; audio and video recording studios; consultants, etc. Subscription prices to others: \$15.00 one year, \$25.00 two years. Foreign: \$20.00 one year, \$35.00 two years. Foreign Air Mail: additional \$24.00. Copyright © 1975 by Broadband Information Services, Inc., New York City. Controlled circulation postage paid at East Stroudsburg, PA.

# 3250 SERIES SYNC PULSE GENERATORS



A newly developed custom LSI circuit provides the basis for a series of all-digital synchronizing pulse generation equipment. These sync generators are designed expressly for single line pulse distribution systems and employ a unique encoded reference signal for slaved generators. All models maintain color frame identity and have digital front panel phase controls with a continuous fine phase vernier. Models are available for both NTSC and PAL color television standards.

**THE GRASS VALLEY GROUP, INC.** 

A TEKTRONIX COMPANY

Station Plaza East  
GREAT NECK, NY 11021  
(516) 487-1311

4419 Van Nuys Blvd, Ste 307  
SHERMAN OAKS, CA 91403  
(213) 990-6172

1644 Tullie Cir, NE  
ATLANTA, GA 30329  
(404) 634-0521

P.O. Box 482  
MABANK, TX 75147  
(214) 887-118

810 W Bristol Street  
ELKHART, IN 46504  
(219) 264-0931

# BROADCAST INDUSTRY NEWS

## Roper Poll Finds TV Highly Regarded

Americans rate television as a source for factual information and community service higher than other institutions such as schools, local government, newspapers, the churches and police, according to the annual public opinion poll conducted by The Roper Organization, Inc., for the Television Information Service.

From 1959, the first year of the poll, to 1974 the percentage considering the performance of television excellent or good rose from 59% to 71%, while newspapers declined from 64% to 58%. Television also increased its lead as the most believable medium to 51%, with its closest competitor, newspapers, at 20%. Those polled cited television as their chief source of news by 65%, with 47% naming newspapers.

Other findings show that 81% of those polled, a larger percentage than ever, voiced opposition to government

control over television news. The principle of commercials on children's programs is endorsed by an increasing majority of 63%. Among parents the endorsement of commercials for children (66%) is greater than among the general population. Daily viewing hours of television by the typical adult is up from 2:50 to 3:02. And interest in pay television has declined from 24% to 20%.

## Majority of TV Homes View at Least 7 Stations

The Television Information Office reports that 63% of the 68,500,000 television homes in the U.S. are now able to receive programs from at least seven television stations. The percentage, tabulated by the A.C. Nielsen Co., is up 3% over 1972 and 6% over 1970.

The average household can tune in 7.6 stations, as of September 1, 1974, compared with 7.2 stations in Sep-

tember, 1972. Nineteen out of 20 TV homes can view four or more stations. Virtually all TV homes (98.5%) have a choice of three or more stations. One out of four homes can tune in 10 or more stations as compared to one out of five in 1972. The report indicates 86% of TV homes have the capability of receiving UHF signals.

The Nielsen data includes households which subscribe to CATV services. However, tabulations do not count channels that originate cable programming.

## Boston Engineers Schedule Convention

The Boston Chapter of the Society of Broadcast Engineers, Inc., announced that its second annual Mini-Vention for Broadcasters will be held September 26 and 27, 1975, at the Sheraton Yankee Drummer Inn, Auburn, MA. For further information contact Mr. Mike Goldberg, WGBH-TV, Boston, MA, or Mr. Steve Cohn, WSMW-TV, Worcester, MA.

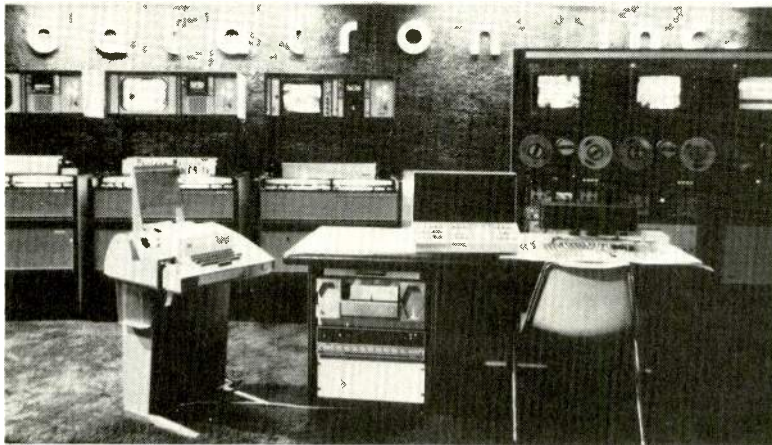
## Radio's Armstrong Award Winners

Programs about minority problems and the need for prison reforms dominated the list of winners of the 11th Annual Armstrong Awards for excellence and originality in FM broadcasting. Eight FM radio stations were named to share \$4000 in First Place prize money for the best FM programs broadcast in 1974, with 12 other stations receiving runner-up awards.

First Place Awards, \$500 and a bronze plaque, in the commercial stations division went to: WRFM, New York City, for "The Medical Trap," (Community Service); Gamut Productions, Chicago, for "The Great Idea of Man," (Education); WCCO-FM, Minneapolis, for "The Duke Ellington Legacy," (Music); and WASH, Washington, D.C. for "Special Reports: Freedom is my Woman—The DC Cellblock Takeover," (News).

The First Place Awards, also \$500 and a bronze plaque, in the non-com-

continued on page 8



**Computerized editing system being installed.** At NAB, Datatron unveiled a new configuration of its Vidicue 5050 editing system which could work with two or three machines—helical or quad—and operate on or off line. Low cost helicals could be used for off line work but the computer makes it possible to transfer in minutes to quad. First customer is Video Tape Associates, Fort Lauderdale, Florida who will use it with IVC's 9000 recorder. WXIA, Atlanta has also ordered the new system to use with existing tape machines.

# Now you can make Sony U-matic Videocassettes anywhere. Anywhere!

Now, all the ease and advantages of videocassette recording go portable.

Because Sony is introducing the VO-3800 VideoRanger™, the first portable ¾-inch U-matic Videocassette Recorder. For both color and black and white.

Shoulder strap it. Or back-pack it. Take it anywhere. Use a portable camera. (Ours is the Sony DXC-1600 color camera.) Play back the compact 20 minute cassette on the VideoRanger itself or any U-format machine. Edit, if you want, on the Sony VO-2850 ¾-inch U-matic Editor. Everything in one format. No generation gap!

If you're already using U-matic equipment, you'll really appreciate the broadened capability the VideoRanger gives you. If you're not, this gives you another good reason to start.

The VO-3800 VideoRanger is ideal for sales and personnel training. For product presentations. For field trips and special research projects. For reporting and electronic news-gathering, it has the Sony quality and reliability you know you can count on.

And Sony quality means you get features like:

NTSC Color and EIA monochrome standard signals.

A dropout compensator that corrects for tape flaws.

Automatic power shut-off when tape run is finished.

Audio-dub facilities.

Freeze-frame capability.

Remote control operation.

60 minute rechargeable battery. Also works from AC or external DC sources.

Playback capabilities through any TV set.

The Sony VO-3800 VideoRanger. Once you see it, you'll want to take it with you anywhere. Everywhere! Send the coupon today for all the details.

## Sony. The proven one!



Sony Corporation of America SN-202  
Video Information Center BME-075-202  
P.O. Box 1594, Trenton, N.J. 08607

Gentlemen:

- Please send me more information on the Sony VideoRanger.  
 Please arrange a demonstration.

NAME \_\_\_\_\_

TITLE \_\_\_\_\_

ORGANIZATION \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_

STATE \_\_\_\_\_ ZIP \_\_\_\_\_

PHONE (AREA CODE) \_\_\_\_\_

TYPE OF BUSINESS \_\_\_\_\_

**Sony® U-matic® Color  
Videocassette System**

Circle 102 on Reader Service Card  
for a demonstration

Circle 103 on Reader Service Card  
for literature



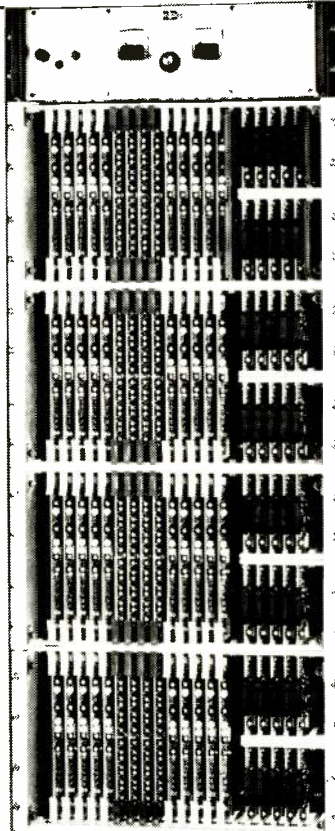
# THE COMPLETE VIDEO-AUDIO ROUTING SYSTEM

...only Datatek  
has all these features:

- Choice of matrix building blocks—12 x 10 (breakaway audio), 20 x 10, 20 x 15, 30 x 10 or 30 x 15
- Independent, simple and flexible control facility for each bus
- Front access operational adjustments (input and output gain, frequency response, cable equalizing) with modules in normal operating position (not on an extender)
- All connections are plug-in
- Front access video, audio and power test points
- Four section continuously adjustable cable equalizers on *both* inputs and outputs
- Plug-in matrix PC boards are all front mounting and vertically oriented for unrestricted air flow
- Crosspoint latch feedback tallies (BCD) and source (camera) tallies brought out as standard
- Simple expansion facilities (video, audio, control, tally and power connectors) provided as standard
- Soft clamp provided for video inputs
- Differential (hum bucking) bridging video inputs with high return loss
- Two video outputs and two +24dBm (150 or 600 ohms) balanced audio outputs per bus
- Multi-reference vertical interval or random switching facilities for each bus
- Rear access audio level systemizing pad facilities
- Highest quality non-proprietary multi-source components used throughout



1200 W. Chestnut St.  
Union, N.J. 07083 (201) 964-3656



## NEWS

mercial stations division, went to: WBAI, New York City, for "Coming Home There Was No Homecoming: Veterans After Vietnam," (Community Service); WOSU-FM, Ohio State University, for "Epilogue to a Revolution," (Education); KANU, University of Kansas at Lawrence, for "Charles Ives: The Unanswered Question," (Music); and KSJN, St. Paul, Minnesota, for "The Wounded Knee Epilogue," (News).

The Awards, the only ones exclusively for FM broadcasters, are named after Edwin H. Armstrong, inventor of FM broadcasting, and are sponsored by the Armstrong Memorial Research Foundation which is administered by Columbia University's Engineering School, where he was a professor and researcher.

### Radio Network Revenues Up But Profits Dip in 1974

The FCC reported today that net broadcast revenues of the seven nationwide radio networks (CBS, MBS, NBC and ABC's three AM and one FM network) and their 18 owned and operated AM stations were \$104.4 million, up 2% from 1973. However, profits (before Federal income tax) in 1974 declined by 38% to \$2.3 million.

Net broadcast revenues of the 14 AM stations and 4 AM/FM combinations owned and operated by the Networks increased in 1974 to \$64 million, up 4% from 1973. Profits, which amounted to \$8.4 million, declined by 7.3% in 1974 after a 8.4% drop last year.

The network operations of the seven networks showed a loss in 1974 of \$6.2 million on net broadcast revenues of \$40.7 million.

### Television Network Revenues Up in 1974

Revenues and profits of the three national television networks and their owned and operated stations increased in 1974, in spite of the business recession.

Figures released by the FCC indicate that net broadcast revenues of the television networks (ABC, CBS and NBC) and their 15 owned and operated television stations were \$1.9 billion in 1974, up 9.3% from 1973. Profits (before Federal income tax) increased 15% to \$331 million.

Advertising sales from network operations increased 9% to \$2 billion. New revenues from networking (after deductions for payments to affiliated stations and advertising agencies) were \$1.5 billion, up 10% from 1973. Profits

continued on page 10



# AT KY-3-TV, THE BRAND OF REPORTING AND THE BRAND OF FILM HAVE A LOT IN COMMON.

When the people in this picture wave 3 fingers in the air, what they're saying is, "We're number one" at Springfield, Missouri, Channel 3. Thanks to hard-nosed reporting and hard-hitting promotion, KYTV is the undisputed broadcast king in the Queen City of the Ozarks. By a margin of 3 to 1.

In addition to top-notch journalism, smart programming has meant taking maximum advantage of both videotape and film. And when the film cameras roll, the film they use is Eastman film.

Over the past year, Channel 3 news cameras unlocked the secret of behavior modification programs in a Missouri federal prison; dug up a problem in the underground water supply; whooped it up at a genuine hoe-down; and made friends with a mountain hermit whose only other visitors dropped in by UFO.

Besides winning viewers, their documentaries have won a



silver gavel from the American Bar Association, a certificate of achievement from the state medical association, and an Emmy nomination.

For station manager Don Moeller, film is a logical choice: the equipment is rugged enough for any job, portable enough for even the tightest spots, and the end product "looks absolutely great on the air."

When the KYTV cameras aren't recording news, the KYTV people are busy making it, through locally produced sports and entertainment shows. Take Virgil Ward (front row left) and the capable assistant you see perched on his lap. You can catch their weekly fishing show on 87

markets in the U.S. and Canada. And when Virgil packs his rod and reel, he includes a reel of Eastman film.

Then there's Promotion Director Clarence Martin (front row right). His 10-second-film ID spots for the station not only built awareness, but they helped develop a new market for locally produced commercials.

In the words of News Director Bill Williams (2nd row, 4th from right), "Film is essential to everything we do. After all, TV is *the* visual medium, and it wouldn't do to have a person on camera merely reading a piece of paper. We use film to tell our story. And, besides, our anchormen just aren't that pretty."

## FILM. THE BASIC MEDIUM.



Circle 104 on Reader Service Card

# The Mod One Is The Flexible One

Start With The Console Format You Need Now, Expand Later.

Modular design lets you select a wide range of input modules and plug-in amplifier cards as you grow. 10 mixing positions with up to 30 inputs. Modern vertical faders; silent operating switches; state-of-the-art circuitry.

Custom features and options with off-the-shelf availability. Monaural, stereo, or quad. Meets all FCC - AM and FM standards. UREI quality, of course.

Available through your UREI dealer.



UREI "Instrumental in Audio"

11922 Valerio Street, No. Hollywood, California 91605 (213) 764-1500

Exclusive export agent: Gotham Export Corporation, New York

Circle 105 on Reader Service Card

## NEWS

from networking represented a 21.8% increase to \$225 million.

The net broadcast revenues of the 15 stations owned and operated by the networks increased 6.2% from 1973 to a \$375 million level. Profits (before Federal income tax) increased 2.8% to \$106 million.

### Happy 75th Birthday Nipper

Oliver Berliner cranks trade mark model gramophone built by his grandfather, Emile, inventor of the disc



record and creator of the now world famous "His Master's Voice" trade mark, celebrating its 75th anniversary July 10.

### Ampex to Distribute EECO Products Worldwide

Ampex Corp. recently announced that it has reached an agreement with Electronic Engineering Company of California (EECO) for exclusive worldwide distribution rights to EECO time code editing and synchronizing equipment and related electronic indexing and display products. The two-year marketing agreement was effective March 31, 1975.

Ampex, which manufactures and markets audio and video recording systems and related equipment, feels that EECO equipment will both enhance their own service and will significantly strengthen the promotion and sales of the EECO products in both domestic and international markets.

### Drug Companies Sponsor Medical Radio Network

Six leading pharmaceutical firms are sponsoring a new private, pioneer medical radio network that they predict will reach 100,000 physicians in 28 cities throughout the US within two years.

Called Physicians Radio Network (PRN), it has been broadcasting for the past year medical information and news for the practicing doctor 24 hours a day, seven days a week, from FM station facilities in Cleveland, OH, and Rochester, NY, with Detroit added to the system last January. These pro-

continued on page 12

**NOW USED BY ALL 4 NETS  
AND A LARGE GROUP OF INDEPENDENTS**

# **IKEGAMI**

**HL-33 Mini-Portable Camera For  
Electronic News Gathering**



**JULIUS BARNATHAN,**  
Vice President in charge of  
Broadcast and Engineering, ABC  
says:

"We selected the IKEGAMI  
Portable Camera because  
we believe it is state-of-  
the-art and has excellent  
reliability so essential for  
electronic news gathering."

The HL-33 is completely self-contained; can operate a VTR from the back-pack. No CCU is required. The camera head weighs only 12 pounds, the back-pack 23 pounds including batteries. Its NTSC video signal can be used directly on the air, directly tape recorded or a combination of the two modes.

*For further information and/or demonstration, call or write:*

**IKEGAMI ELECTRONICS INDUSTRIES INC. OF NEW YORK**

35-27 31st Street, Long Island City, New York 11106/Telephone: (212) 932-2577

Circle 106 on Reader Service Card



grams are transmitted on frequency sidebands available for private broadcast and can be heard only by physicians who are provided special radio receivers free of charge by the Network.

Joining Roche Laboratories, sponsor during the first year, are CIBA Pharmaceutical Co., Eli Lilly and Co., Merck Sharp & Dohme, Smith Kline & French, and Warner/Chilcott.

### ENG Camera In Helicopter

A Sony DXC 1600 Tricon Color Camera is the latest equipment addition to KOOL Radio-Television, Phoenix, AZ, the first station in Arizona equipped to do on-location, live-color coverage of a news story. Using the station's traffic helicopter, the KOOL "Heli-cam" is a portable camera system able to travel to any location and provide high quality and color video.

With its accompanying video tape cassette recording unit, the Heli-cam

can be used both in flight or on the ground to tape news stories.

### Rodino Endorses Live TV Coverage of Senate

Chairman of the House Judiciary Committee Peter W. Rodino (D-NJ) recently spoke out in favor of the concept of live television coverage of Congressional proceedings but warns that thought should be given to the preventions of abuse.

Rodino feels that both the Congress and the broadcasting industry should make realistic judgements about the changes live television would bring and to formulate guidelines which would limit it to coverage rather than creation of Congressional events.

### Marconi to Supply CN Tower in Toronto

Broadcast equipment in the CN Tower, the new one-third mile high broadcasting and communications center for

**Let's talk it over-broadcaster to broadcaster.**

WRA Series Recording Amplifier      3D Series Reproducer

You want to know something about tape cartridge equipment . . . such as our 3D Series multi-reproducer and the WRA Series recording amplifier. Sure . . . you want to talk to an engineer who knows his equipment. But you also want to talk to someone who understands **your** problems as a broadcaster. We combine both. Our men are former broadcasters and engineers. You'll get straight answers as to which of our equipment will solve your problems best. We think you'll be pleasantly surprised at how much we can help. That's why we have a standing offer to any broadcaster with a question to call us **collect**. And after you buy, we're always as close as your phone. So, let's talk it over — broadcaster to broadcaster . . . today.

**CALL 309-828-1381 COLLECT**

**IT** INTERNATIONAL TAPETRONICS CORPORATION  
2425 South Main Street • Bloomington, Illinois 61701  
Marketed exclusively in Canada by McCurdy Radio Industries Ltd., Toronto



the Metropolitan Toronto area, will be supplied by Marconi Communication Systems, Ltd. The order, placed by Master FM Ltd., which is comprised of five FM broadcasters—CBL-FM, CHFI-FM, CKFM, CHIN-FM and CHUM-FM, calls for the supply of a combining unit which will take the outputs of all the FM radio stations operating in the city and broadcast them from the tower through a single aerial system.

This order, together with the three continued on page 16

# **“Going ENG all the way is an idea whose time has not yet come.”**



An Open Letter to the TV News Industry  
from Ed DiGiulio, President of  
Cinema Products Corporation.

There's been a great deal of uncertainty during the past year about the impact of electronic news gathering. And, as a result, a great deal of indecision and inaction regarding the acquisition of needed new equipment.

However, there were no dramatic design breakthroughs in ENG equipment at the recent NAB show. And there's nothing in the experiments of the network O&O's who've gone "all electronic" to indicate that ENG is valid as a complete replacement for a well balanced film and video news gathering operation.

**So, if you're thinking about going ENG all the way, think twice. Think hard. And think money.**

Because the TV news industry, like any other industry, is a day-to-day "hard-nut" dollar-and-cents proposition that must be economically justifiable in terms of performance and quality. Most important, the overall cost effectiveness of converting to a new system must be carefully considered.

True. There's no way you can beat ENG coverage transmitted *live*. Especially on late-breaking news developments during prime time television. However, there just aren't that many dramatic "SLA Shootouts." And it is a far cry from these relatively rare situations to a justification for going "all electronic."

Consider also that the quality of ENG improves greatly as the camera equipment gets larger and more expensive. At their best, when they're working reliably, the higher priced video cameras can provide a TV image every bit as good as 16mm newsfilm.

But high quality video cameras like Ikegami, Fernseh, RCA, etc., may cost as much as seven or eight times as the low cost/lower quality Sony or Akai-type units, whose price is roughly equivalent to a 16mm newsfilm camera.

**But the price of the video news camera is merely the visible tip of the financial iceberg submerged in the true total costs of converting to ENG.**

We never seem to get a full breakdown on the costs of the related ancillary systems required: the specially equipped vans, the special studio editing equipment, the time base correctors, the microwave relay systems and necessary fixed installations, etc.

Nor do we hear of the complexities involved in setting up a remote pick-up for a live transmission to the studio. Nor of the time it takes and the skilled manpower required to achieve all this.

Nor do we hear much about the problems of keeping this electronic news equipment in good working order. Nor

how well it holds up in the daily beating news equipment gets in the field.

**All we do hear is that going ENG all the way will pay for itself.**

Presumably, through the cost savings of video tape which requires no processing, and, theoretically at least, can be re-used again and again.

But what news director will be foolhardy enough to predict how much of the taped coverage of important news events should be erased — rather than stored for future use in special reports and historical documentaries?

**Even so, without realistically accounting for consumable video tape, it is claimed that it will take you as long as five to seven years to recoup your initial investment.**

But technology will not stand still during those critical five to seven years. By then ENG systems will probably be far more sophisticated and reliable — and considerably cheaper. (After all, look what happened to electronic pocket calculators.)

**The fact is that going ENG all the way is an idea whose time has not yet come.**

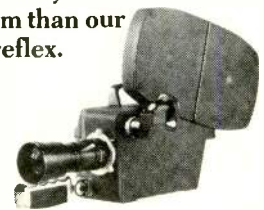
As an electronics engineer myself, and because of the heavy emphasis on advanced electronics in all of Cinema Products' development efforts, I recognize that great advances will be made in the foreseeable future, and ENG may yet become economical enough, and perform reliably enough, with the high quality one expects on the Six O'Clock News.

**In the meantime, no matter how much money your station has available for new equipment, you should keep a good newsfilm operation going.**

Because the fact is that for day-to-day news gathering and documentaries, the most convenient, economical and highest quality system available today is 16mm film. Especially when you work one-man-band. And Eastman Kodak's new *video news film* (7240) will make newsfilm cameramen ever more efficient and flexible in dealing with low light level assignments and meeting broadcast deadlines.

If you must be the first kid on your block with total ENG, be my guest. But if you want to manage a rational news operation, I urge you to consider 16mm newsfilm as the mainstay of your news gathering operation.

**Needless to say, I believe that you couldn't choose a better newsfilm camera system than our standard CP-16 or CP-16R reflex.**



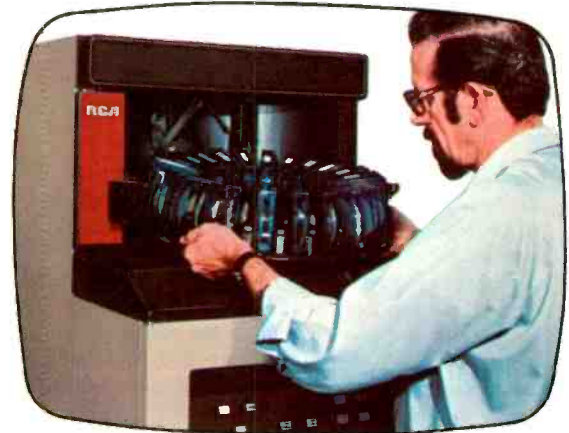
**cinema E products**  
CORPORATION  
Technology in the Service of Creativity  
2037 Granville Avenue, Los Angeles, California 90025  
Telephone: (213) 478-0711 ■ Telex: 69-1339 ■ Cable: CineDevco

Circle 108 on Reader Service Card

# RCA announces of the film



A special Mylar leader is spliced onto each film segment. Film is inserted into a cartridge—no further film handling.



Each cartridge can contain from ten seconds to two minutes of film, with complete cartridge flexibility.



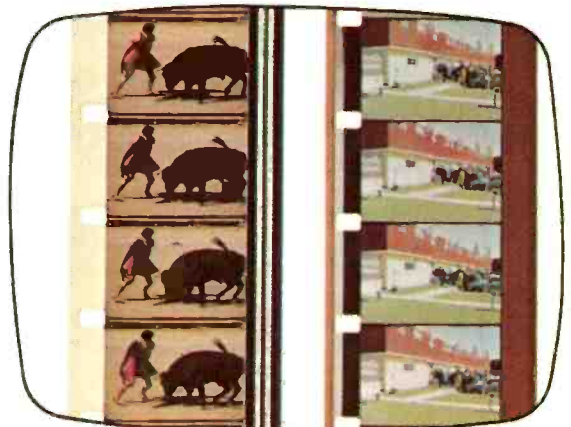
A cartridge is drawn into the machine on cue, shown by one of the two projectors, then rewound, all automatically.



As the first reel rewinds and is replaced in the magazine, the second projector runs film from the next cartridge.



The TCP-1624 will play one cartridge and stop, or will play cartridges continuously until it receives an order to stop.



The TCP-1624 switches automatically from optical to magnetic soundtrack, then returns to optical mode.

# ances the end clip slip-up.

Now you can put miscues, make-goods, and imperfect film color all behind you. Do away with time-consuming, costly film clip cataloguing, storage, retrieval, dubbing, splicing, threading, cueing, playing, unsplicing—and the chances for error that go with them. The RCA TCP-1624 Cartridge Film Projector is here. In full production now.

A survey of TV station logs shows that 89% of film segments run from 10 to 120 seconds—the film lengths the TCP-1624 is made to handle. Its magazine holds 24 16mm. film cartridges, each of which can be cued, played and rewound with push-button or computer control, with full intermix; even last-minute changes can be made. Once film clips are cartridge-loaded, no further film handling is needed. You play the film spot on film, without dubbing. Spot reel makeup and breakdown are eliminated; each break can be programmed in any order.

The TCP-1624 is part of a new, problem-solving telecine system from RCA.

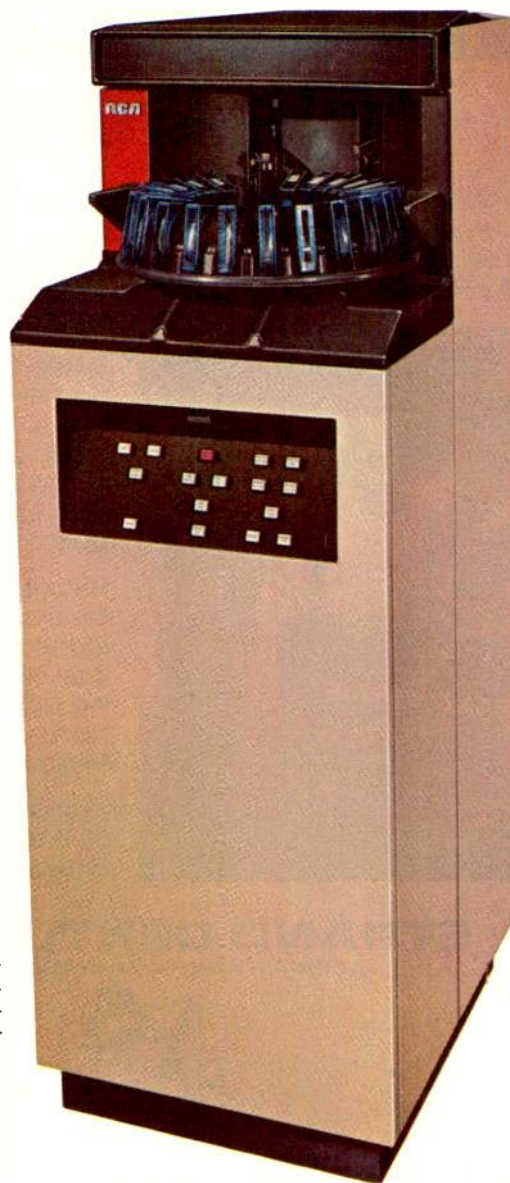
The TCP-1624 Cartridge Projector features two identical, self-threading projection systems with automatic cue, zero pre-roll, automatic switching between optical and magnetic sound tracks, and automatic film rewind. It can operate in "automatic sequential" or "single event" modes.

The RCA TCP-1624 can do for film what cartridge systems do for tape. In fact, the TCP-1624 is fully compatible with a cartridge system, to give you automatic station breaks using both film and tape.

In addition, the system offers consistent color quality in real time, automatically, with optional

ASCET (Automatic System for Correcting Errors in Telecine). ASCET is available as part of a TK-28 film island. With this new automatic color correction option, you can put a high-quality picture on the air with less than high-quality film.

Whether or not you saw the RCA TCP-1624 at NAB, contact us now. Your RCA Representative will gladly demonstrate the end of the film clip slip-up.



RCA TCP-1624  
Cartridge Film Projector.  
You've seen it at NAB.  
You can buy it now.

**RCA** Broadcast  
Systems

## NEWS

Marconi high power UHF television transmitters which are also being installed in the building, brings the total value of the company's involvement in the project's broadcasting aspect to \$1 million.

### Frost & Sullivan See Pay Cable as "Brightest Star"

As a further boost to the spirits of pay-cable developers, Frost and Sullivan,

market research firm in New York City, have issued a report which calls pay cable the "brightest star" on the horizon, with a strong future and no basic handicaps.

The report predicts that the number of cable subscribers will more than double to about 22 million in 1983. To get to that level, the cable industry will spend about \$5 billion on goods and services, and subscribers will pay fees totalling more than \$16 billion over the same time period. Pay-TV subscribers, says the report, will go from the present 280,000 to about 6 million by 1984.

# Cool kits for hot camera crews.

Only famous Janiro lighting fixtures, (the ones you get in Strand Century lighting kits), give you cool-to-touch fiber glass housings, for safe, comfortable handling at any time. And only Strand Century kits give you superbly rugged carrying cases for years of trouble-free use.



Strand Century kits offer the best kit value available anywhere. Light weight. Sturdy, durable stands. Easy to adjust during use. Smooth, even light distribution. Quick heat dissipation for fast pack up.

For use on location, and in the classroom, or wherever rugged portables are needed, insist on Strand Century lighting kits. Write for details to National Director of Television/Motion Picture Sales,

Strand Century Inc  
20 Bushes Lane,  
Elmwood Park, N.J. 07407.

## STRAND CENTURY INC

A COMPANY WITHIN THE RANK ORGANISATION



Circle 109 on Reader Service Card

Frost and Sullivan say that raising the level of monthly fees, plus elimination of franchise requirements which are unrealistic, will restore financial health to the CATV industry.

### NBC Orders Console for New York Studios

NBC-TV recently ordered a comprehensive 36 channel console for their New York Studios from Neve, Inc. with delivery scheduled for late summer. The custom console's design resulted from close cooperation between the two companies with Neve engineers working at the NBC studios to determine their requirements. Suggestion and counter-suggestion by both parties resulted in the design which Neve is now manufacturing. Next fall some TV programs originating in New York will have their audio mixed on the Neve console.

### Pay Cable to Go to Texas Via Microwave

Optical Systems Corp., California pay-cable programmer, has contracted for the services of West Texas Microwave Company in distributing Channel 100, the pay service, to cable systems in cities in west Texas. The programming will originate in Abilene, Texas, and will go initially to Sweetwater, Big Springs, Midland and Odessa. Later, expansion of the microwave service will take the programs north to cable systems in Lubbock, and south to an existing Channel 100 facility in San Angelo, Texas. When the West Texas network is operative, it will be the third such network using Channel 100 programming: one is underway in the northern California area of Monterrey Peninsula and San Francisco Bay, and one (the original operation) currently has more than 20,000 subscribers in the San Diego area.

### Teleprompter and Home Box Office Announce Plans to Expand Pay TV

Teleprompter Corp. and Home Box Office, Inc., Time Inc.'s pay TV programming network, recently announced an agreement in principle to offer HBO's program service to approximately 800,000 Teleprompter subscribers nationally.

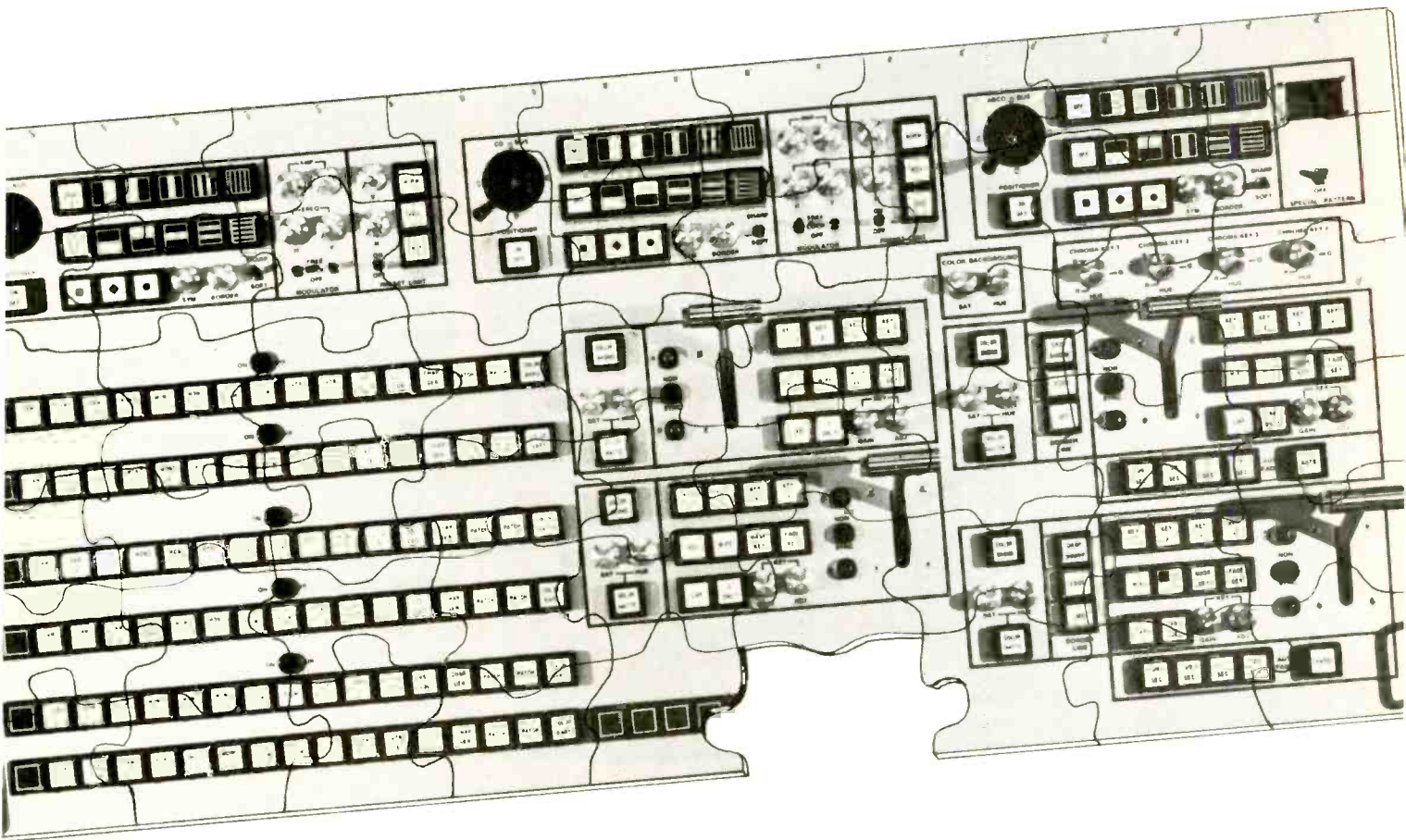
The agreement in principle is subject to the execution of a definitive agreement which both Teleprompter and HBO expect will be signed shortly. When the new HBO service is fully implemented, approximately 870,000 of Teleprompters 1,060,000 CATV subscribers (82%) will have pay cable service available.

continued on page 18



Puzzle:

# How do you get a lot of SWITCHER for a little MONEY?



Answer: The Computer Image "Pre-wired" Modular Video Controller System.

Now there is a way to plan for the ultimate in switching potential with the least initial outlay.

If you can afford the industry's finest broadcast quality switcher with all the latest state of the art techniques and capabilities... fine! Computer Image will deliver a Model 7243 with 7 buses, 24 inputs, four mix/effects amplifiers, preview and program buses with computer compatible control, and save you money!

If however, your budget is tight, then you may choose a Computer Image Model for as low as \$10,000—have it pre-wired for options you know you'll need and have a broadcast quality switcher today that will not soon be obsolete.

Computer Image Video Controllers are designed with circuit-element building blocks... to give you every advantage of add-on capabilities, and reliability of functions. Your basic purchase can be pre-wired for the options found in the most complete switching system.

If your future requirements can be estimated at the time of ordering a basic unit, all the add-on options can be pre-wired for only 10% of each option. And, any options ordered within six months of initial delivery will be credited that 10% pre-wire charge! The installation of any option, because it's pre-wired and completely modular, is almost as simple as plugging in the morning coffee pot!

COMPARE THE VIDEO CONTROLLER WITH ANY OTHER SWITCHER... AT ANY PRICE! Ask about price, performance, versatility, reliability, guarantee and delivery... and ask about some very happy Video Controller users!

**Represented nationally by:**

**Broadcast Communications Devices, Inc.**  
1850 Warburton Avenue  
Anaheim, California 92807  
(714) 528-9505

**Broadcast Communications Devices, Inc.**  
1850 Warburton Avenue, Suite 203  
Santa Clara, California 95050  
(408) 984-6614

**Didier/Denver**  
P.O. Box 1599  
Evergreen, Colorado 80439  
(303) 674-6000

**H. M. Dyer Electronics**  
31185 Ten Mile Road  
Farmington Hills, Michigan 48024  
(313) 478-2157

**Landy Associates**  
12 Buxton Road  
Cherry Hill, New Jersey 08003  
(609) 424-4660

**Landy Associates, Inc.**  
20 Winslow Street  
Plymouth, Massachusetts 02360  
(617) 326-6050

**Radford Associates**  
3203 Lanier Drive  
Atlanta, Georgia 30319  
(404) 237-6097

**The Gene Sudduth Company**  
2809 Raintree Drive  
Carrollton, Texas 75006  
(214) 242-2690

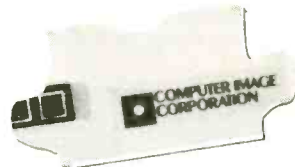


For further information call or write:  
Vice President, Marketing, Video Controller Division



**COMPUTER IMAGE CORPORATION**

2475 West 2nd Avenue, Denver, Colorado 80223  
(303) 934-5801



Computer Image, 1972 Emmy winner for outstanding achievement in engineering development for its unique electronic animation systems for television.

# Canon 34x LONG RANGE ZOOM

One-Inch Plumbicon Color Camera Zoom



© N.V. PHILIPS

PV 34x 24B DZ

## 24mm to 800mm; f/1.8

- Continuous 34X Zoom
- Double 17X Zoom
- f/1.8 For Night Pickups
- Built-In Filters
- Built-In Zooming Range Extender
- Change Range "On The Air"
- Most Efficient Long Zoom Available
- Excellent Quality
- For All Color Cameras

**Canon**

BROADCAST OPTICS

CANON U.S.A., INC., 10 NEVADA DRIVE, LAKE SUCCESS, N.Y. 11040

(516) 488-6700

Circle 111 on Reader Service Card

## Accurate Field Strength Measurements Can Be Easy

With the Model FIM-21, electromagnetic field strengths can be measured to within 2% across the entire 535 to 1605 KHz AM band. And to intensity levels as low as 10  $\mu$ V/m. Its integral shielded antenna in the cover, front panel speaker, large illuminated mirrored meter, and ganged oscillator/receiver tuning, make it easy to operate in the field. An optional telescoping stand adds convenience. It's also a versatile instrument — use it as a tuned voltmeter for RF bridge measurements.

Contact us now for complete details on our line of field strength meters.



# POTOMAC INSTRUMENTS

932 PHILADELPHIA AVE.  
SILVER SPRING, MARYLAND 20910 (301) 589-3125

Circle 112 on Reader Service Card

## NEWS

### FCC Broadcast Action Changes Rules

As a result of the continuing study by its Task Force on reregulation of broadcasting, the Commission has revised, deleted and relaxed certain provisions of Parts 1 and 73 of its rules.

The changes are:

**Auxiliary and alternate main transmitters**—Licensees who retain old transmitters for auxiliary or alternate main purposes after installing a new main transmitter, no longer need file an application or pay a filing fee for such use. Instead they must notify the FCC and the Engineer in Charge of the district in which their station is located within three days after the former main transmitter is ready for auxiliary or alternate main use.

**Defective antenna (phase) monitors**—Paragraph (c) to section 73.69 was amended to state that if conditions beyond the control of the licensee prevent restoration of the monitor within the allowed 60 days, an informal request must be made with the Engineer in Charge for such additional time as may be required for completion of repairs.

### Programming Briefs

Syndicated program signings have increased significantly following this year's NAB Convention, according to Dick Starr, general manager of **Century 21 Productions, Inc.**, Dallas, TX. Starr reports more client inquiries than ever before regarding syndicated programming and features . . . . A half-hour national adult television special dramatizing the story of **THE LETTER PEOPLE**, St. Louis-based post-Sesame Street beginning reading series for children, will be produced by **KETC-TV**, Channel 9. **THE LETTER PEOPLE** series, still in production at **KETC-TV** has already been booked for airing on 43 public television stations in 12 states . . . . **TODAY'S WOMAN**, a bi-weekly service aimed at women 18 to 49 portraying lifestyles and individual pursuits, is currently being offered by **JWT Syndication** . . . . "Wings That Serve," an **Aviation/Space Writers Association** film about public benefits of airplanes and airports, is now available on a free loan basis through the Film Library services of the Federal Aviation Administration. The cartoon character **J. Quincy Magoo** will be used in **General Electric's** "Salute to Independence" television program to show dollar savings and energy efficient lamps and

continued on page 20

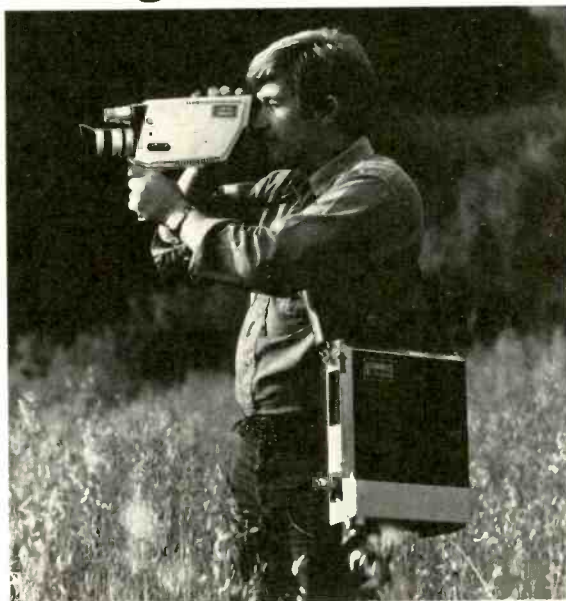
# When you've got something as good as the Akai VTS-150, you change it.

## Introducing the Akai VTS-150B.

We call our VTS-150B the Hustler. And it has 5 things our VTS-150 doesn't (servo vertical lock, video AGC and sync stabilizer, battery condition warning blinker, exposure indicator and RF output for dropout compensator).

But some things you don't change.

The Hustler is just as small as our VTS-150 (the 16 pound recorder



fits into one neat little package you sling over your shoulder).

It's just as light (the camera weighs a mere 6 pounds).

And just as easy to use (pull the trigger, edit the tape automatically, dub in new sound).

The Hustler from Akai. It's been a change for the better.

**AKAI**<sup>TM</sup>

2139 E. Del Amo Blvd., Compton, Ca. 90220

Circle 113 on Reader Service Card

# Big Markets

Colorado Springs, Fort Myers, Sarasota, Tallahassee, Columbus, Elgin, Springfield, Belleville, Elkhart, Peru, Owensboro, Golden Meadow, Shreveport, Lewiston, Beacon, Jamestown, Utica, Asheville, Greensboro, Bismarck, Medford, Salem, Lebanon, Scranton, Wilkes-Barre, Austin, Everett, Fond du Lac . . .

# Small Markets

Los Angeles, San Francisco, San Jose, Hartford, Miami, New Orleans, New York, Raleigh, Tulsa, Portland, Seattle, Toronto, Windsor/Detroit, Sydney, Australia.

# BAT Systems Are Working!

They do all the Billing, Accounting, Traffic and Payroll work for AM's, FM's, AM/FM's, TV's, Radio/TV's, and Groups. And they do it faster, more accurately, and at less cost.

Get more information on these in-house, complete mini-computer systems. Write or call . . .

**PAPERWORK SYSTEMS INC.**

P. O. Box 38 2000 "A" St., Bellingham, WA 98225 (206) 733-8510

Circle 114 on Reader Service Card

## NEWS

lighting. It is planned as the beginning of a two-year campaign tied to the nation's Bicentennial Celebration and efforts to achieve Energy Independence . . . . **GRT Music Tapes** has announced its entrance into the TV broadcast promotion field with three new packages: "The Everly Brothers (26 Hits)," "Basic Black (25) R&B Hits)," and "Country Music (27 Hits)." . . . Tane Productions is now offering free half-hour talk programs to stations throughout the USA and Canada. The shows spotlight politics, the current entertainment scene, the occult, sports, science and rock music. For more information contact Ian Carlin, Syndication Director, Tane Productions, 15 East 40th St, NY, NY 10016 .

## People

**Arthur A. Schubert, Jr.**, was appointed director of engineering for Ward-Beck Systems, Ltd; he was formerly Chief Development Engineer for Neve Electronic Laboratories . . . . **Joe Warner** became general manager of station WCEC-WFMA, Rocky Mount, N.C., succeeding his father, Mel Warner, who retired March 16th . . . . **Wayne R. Hauser** was named vice-president and general manager of Community Cablevision, which serves Irvine, Newport Beach and Tustin, CA.

**John Leah**, manager of technical systems for Imero Fiorentino Associates, was named Chairman of the Engineering committee, East Coast Division, of the National Academy of Television Arts and Sciences . . . . **Klee C. Dobra** is the new station manager and **Donald Wiese** is general sales manager, both for Station KLIF, 50-kw AM in Dallas and Ft. Worth . . . . **Gerald Goldman** was appointed national sales manager of Video Data Systems, Inc.

**Dave Schnuelle** is the new ass't chief engineer for Television Production Center, Inc., Pittsburg . . . . **Steve Currie** is ass't general manager, operations, and **Bill Roversi** is ass't general manager, commercial, for WCBF-TV, Charleston, S.C.

**Peter H. Dohm** was named chief engineer of WWOK and WIGL-FM, Miami; both stations are owned by Mission Broadcasting Co . . . . **Dick Morrison** is the new general manager of KXOL-AM, Ft. Worth, TX . . . . **Thomas Schattenfield**, of the Washington law firm of Arent, Fox, Kinter, Plotkin and Kahn, was named general council of the National Association of FM Broadcasters.

**J.B. Emerson**, formerly director of communications for Magnavox CATV, has formed Marcom Marketing Communications, Inc., which will offer marketing consultation for firms selling to the CATV industry; headquarters is Fayetteville, N.Y. . . . . **Lt. Com. Gary B. Gross**, USN (ret) was appointed technical representative for Cinema Products Corp., while in the Navy, among other assignments, he was White House staff motion picture photographer for Presidents Kennedy and Johnson.

**Harvey Johnson** became director of sales for Teleprompter Cable TV, largest cable MSO . . . . **Allan J. Behr**, general manager of Videomax; and **Donald E. Prather**, general manager of CMX Systems, both were appointed vice-president of Orrox Corp., parent company of Videomax and CMX.

**George H. Williams** was named general manager of WKBD-TV, Kaiser station in Detroit; he had been vice-president and general manager of WABC radio, in New York . . . . **Richard E. Putman** is East Coast sales representative for Rank Precision Industries, directing sales of the company's lenses and other optical product sales to television broadcasting, cable television, and the motion picture industry.

**Stephen A. Merrill** became General Manager of American Cable Television's system serving Eloy and Casa Grande, AZ . . . . Appointment as vice-president of W. and G. Instruments went to **James Normoyle**; he had formerly been an engineer with the A.T.T. Long Lines Department.

Waterman Broadcast Corp. (KTSA Radio in San Antonio, TX) announced the appointment of **Kenneth Dowe** as executive vice-president . . . . President of Weather Science, Inc., makers of digital storage and transmission systems, is **Arthur J. Steele** . . . . **George W. Sullivan** is vice-president and general manager of the transmission and switching systems division, Collins Radio Group of Rockwell International; the new division manages the commercial telecommunications business of Collins.

Fuji Photo Film named **Al Bedross** eastern regional sales manager, and **S.F. Henderson** western sales manager, for sales of Fuji videotape to broadcasters and video production firms . . . . New manager of display device engineering for Conrack Corp. is **C.D. Beintema**.

Jim Donovan Associates, Inc., recently formed Boston audio-video consultants and producers, named **Irvig I. Goldmacher** a vice-president . . . . **Masakazu Sekine** became

continued on page 24

Circle 115 on Reader Service Card →

**When it comes to  
computer editing...  
If you haven't  
spoken to CDL,  
you're getting  
less than half  
the story.**

We've been a recognized leader in T.V. Automation and Video Switchers and we should be the recognized leader in Computer Editing.

After all — we started it all back in '69. We were and *still are* the innovators in the field . . . but we haven't been telling you about it . . . and we apologize.

As a matter of fact . . . our PEC-102 is the *State-of-the-art!*

Its technical virtuosity permits creative people to accurately and efficiently make artistic decisions with complete freedom.

CDL Computer Editing Systems are in use in the U.S. and around the world for the production of Prime Time Shows, National Network Commercials, "Talk" Shows and Children's Programming.

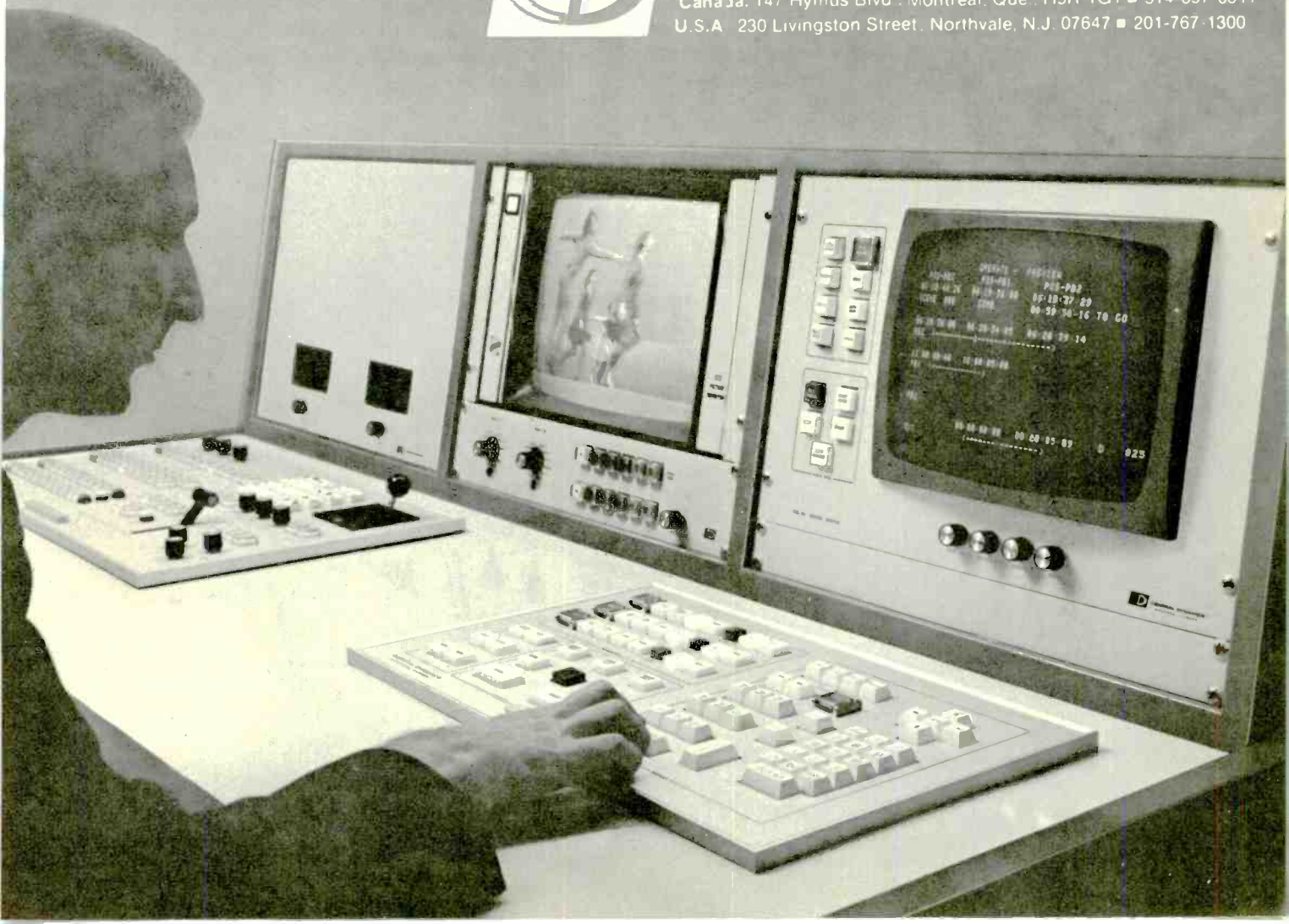
*We have a 13 minute color video cassette which shows you what is being done every day with CDL Computer Editing Systems in production and post production facilities . . . and what you could be doing.*

*If you would like to see it, write to us on your company letterhead; c/o Sales Dept. BM/E or give us a call. Or, ask for our Computer Editing Brochures.*



**CENTRAL DYNAMICS LTD**

Canada: 147 Hymus Blvd., Montreal, Que., H9R-1G1 ■ 514-697-0811  
U.S.A. 230 Livingston Street, Northvale, N.J. 07647 ■ 201-767-1300



# PANASONIC PRESENTS A OF COLOR

So you don't have to pay for



**WV-2200: Battery-run featherweight – for color anywhere!** The ultimate in economical portability. About \$4,500, including 6:1 zoom lens. Two vidi-cons. 1½" viewfinder. Ideal for scouting store locations, plant sites – or next week's sports opponent.

**WV-2100 P: Color for schools and industrial studios.** (Over 400 were purchased last year.) About \$5,500\*. Two ⅔" separate mesh vidicons, one for luminance, one for chrominance.

**AK-900: Self-contained, broadcast color for less than \$30,000.** Three 1" Plumbicons (Trademark N.V. Philips), 10:1 F2 zoom lens. Separate color signals. Tilting viewfinder. Horizontal resolution of 500 lines at center.

\*Lens additional.

# WHOLE NEW SPECTRUM CAMERAS.

more camera than you need.



**WV-2800: Color for film chain, remote, security uses.** Lightweight camera without viewfinder. It's simple to operate, and can be used with any NTSC color system. Horizontal resolution 400 lines at center. About \$3,500\*.

**WV-2300: Mobile color for schools and industry.** About \$3,800\*. Less than 10 pounds! Simple operation. Two vidicons. High S/N ratio. Tally lights. Needs only 50 footcandles.

For more details and specs, write:  
Color Cameras, Panasonic Video Systems Division,  
One Panasonic Way, Secaucus, New Jersey 07094

**Panasonic**  
just slightly ahead of our time

Circle 152 on Reader Service Card

# Something New --- It's

# BIAS

Now the heart of the Bias system is a Burroughs 6700 computer—one of the largest computers around today. That means we're faster and more efficient than ever before. So we've designed new programs and re-designed old ones to take advantage of our new capacity.

What's more, Bias is a "real time" computer system. Whether it's sales, traffic, billing, or any other station operation, you get the information you need when you need it. And that's just one of the reasons why Bias is the largest "real time" broadcast computer service in the world.

For more information call 901-332-3544 collect; ask for Pat Choate, Director of Marketing.

BROADCAST INDUSTRY AUTOMATION SYSTEM  
a division of Data Communications Corp.  
3000 Directors Row, Memphis, Tennessee 38131



Circle 116 on Reader Service Card

## NEWS

video sales coordinator for TEAC Corp. of America . . . . Newly created position, director of creative services, for the McGraw-Hill Broadcasting Co. was filled by appointment of **Robert F. Rimes**.

### News Briefs

**Camera Mart** has announced that WNET/Educational Corp. will film a 13-episode series, "The Adams Chronicle," at their Stages 1 and 2 West, the former Fox stages at 460 West 54th St., N.Y.C. . . . . The Broadcast Products Division of **Harris Corp.** has recently received two orders for television RF and studio equipment totaling \$540,000 from School District No. One, City and County of Denver and Grayson Enterprises, Inc., Dallas . . . . **Marconi Communications Systems Ltd.**, a GEC-Marconi Electronics Co., is to supply u.h.f. color television transmitters worth approximately \$466,000 to the Canadian Broadcasting Co. and the South African Broadcasting Co.

**SMPTE** has announced that more than one-half of the exhibit space has been sold for the upcoming SMPTE Conference Equipment Exhibit to be held in Los Angeles, Sept. 28-Oct. 3 . . . . **International Video Corp.** has installed two IVC-9000 broadcast videotape recorders at Rombex Productions, NYC, and five IVC-9000's at Video Tape Assoc., Ft. Lauderdale, FL . . . . The Broadcast Products Division of **Harris Corp.** recently sold a 100-kilowatt short wave transmitter to Trans World Radio, Chatham, NJ, and a 50-kilowatt short wave transmitter to the Government of East Central Nigeria.

**Theta-Com** of Phoenix, AZ, a subsidiary of Hughes Aircraft Co., has been awarded the contract to design and install a complete CATV system for Village Communications, Inc., operator for the Illinois towns of Romeoville and Bolingbrook, at a cost of nearly \$1 million . . . . **Inter-Technical Group, Inc.**, Irvington, NY, is now offering an expanded line of mono and stereo cassette and cartridge magnetic heads brought about by a manufacturing and marketing agreement between Magnetic Components Ltd. of England and Wolfgang Bogen GmbH of West Germany.

**Jerrold Electronics Corp.** has announced new CATV system-design services available with their Starline 20 and Starline 300 distribution equipment; they will provide "as-built" distribution-system drawings for bill-of-material sales projects . . . . The Na-

tional Academy of Television Arts and Sciences presented **SMPTE** with a citation at this year's Emmy Award ceremony for the technical development of the universal videotape time-code . . . . **WJNO Radio**, West Palm Beach, FL, which broadcasts middle-of-the-road music, has become the **CBS Radio Network's** newest affiliate . . . . **TeleConcepts In Communications, Inc.**, 145 E. 49th St., NY, NY, a multi-disciplined communications company with broadbased marketing concepts, has been formed to provide marketing oriented methods and systems to business, medicine, industry and other non-broadcast communicators. James W. Johnson is President of TeleConcepts and Robert A. Bleyer is Executive Producer and Chairman of the Board.

The Arkansas Educational Television Commission has ordered an **RCA** TV transmitting system, valued at approximately \$950,000, to provide educational and cultural programming to viewers in the northeast section of the state . . . . **Mobile Video** of Sacramento, CA, has moved into a new, custom designed mobile unit that accompanies up to 4 cameras (CEI 280's and a 290), has a full Ampex quad on board, 13KW generating power, separate controlroom facilities, and a Grass Valley 1400-12 switcher with colorizer . . . . The **20th Century Fox Studios** will hold a "hands-on" equipment demonstration on the last day of the upcoming SMPTE fall conference, Friday, Oct. 3, 1975 . . . . **John Weeks and Associates** will represent C-COR Electronics, Inc., in the sale and distribution of cable television equipment and systems in the Southeastern states of North Carolina, South Carolina, Georgia, Alabama, and eastern Tennessee.

**Ampex Corp.** has announced a contract with ABC for the delivery of over \$500,000 in videotape recording equipment to the network's affiliate stations in New York and Hollywood . . . . **Coastcom** of Concord, CA, has been awarded a contract, in excess of \$500,000, to provide a program multiplex for the National Iranian Radio and Television network . . . . **Conrac Corp.** has formed Conrac GmbH as the principal element in a major expansion of its foreign marketing program for Western Europe and the Mideast; the wholly owned subsidiary will act as the sales outlet for all the company's U.S. manufactured products in those territories . . . . The American Forces Radio and Television network has ordered **RCA** color TV cameras, film originating systems and other equipment, valued at approximately \$700,000, for installation in its program production center in Frankfurt, Germany.



# Why is Datatron the leading supplier of Electronic News Gathering Systems?

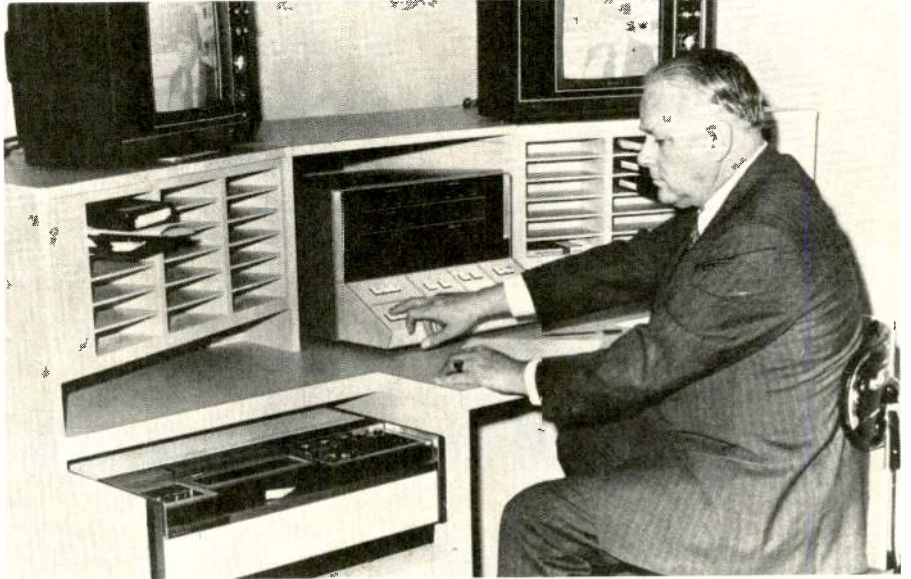
## Here are five good reasons

1. Viducue is the simplest system to operate
2. It offers complete expandability
3. It can be interfaced to any servo controlled VTR — Quad, helical or audio
4. It can operate manually or automatically under computer control
5. It features our exclusive jam-sync eliminating pre-recording of SMPTE edit code on tape

## Here's what WLAC-TV says about Viducue

We asked Ralph Hucaby, Vice President & Director of Engineering at WLAC-TV why Datatron's editing system was chosen.

"Because it's more accurate and easier to use," replied Hucaby. "Single frame accuracy is very important — particularly in audio where we often need to edit between words. Also we found we could easily train non-technical



Ralph Hucaby, Vice President & Director of Engineering at WLAC-TV, Nashville, Tennessee operating his Electronic News Gathering System which includes a Datatron Model 5050.

people to use the editor. Several of our news personnel became very proficient on the Viducue with only a short period of training."

### System can be expanded at will

The beauty of the Datatron editing system is its simple expandability. It defies obsolescence. You can expand from two to three machines at will. Or move up in logical steps to a completely automatic on-line, off-line system where edit times are stored in a computer and a punched tape prepared. Using this tape, a precisely edited show can be automatically transferred from low cost helicals to quads in minutes. Our system can handle up to 9 VTR's. And special effect switcher too.

### A complete system including VTR's for \$32,000

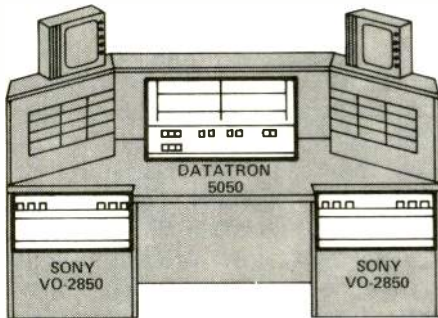
Here's an offer you shouldn't refuse.

Datatron's \$25,000 Model 5050 Viducue Editing System and a pair of \$6000 Sony Model 2850 Cassette Recorders, all interfaced and ready to save you time and money for only \$32,000!

Why are we making this offer? To give you an incentive to move into Electronic News Gathering now. We think it's one of the most powerful tools a TV station can have. And forward thinking stations like WLAC-TV in Nashville agree.

With portable minicams, mobile vans equipped for microwave transmission and Datatron's 5050 Editing System, Electronic News Gathering is revolutionizing the nightly newscast and providing instant coverage of important events as they occur.

So phone Datatron today. Or send for our complete list of features. There are many more than we've described here.



Datatron offers this complete Electronic News Gathering System including a \$25,000 Viducue editor and two \$6000 Sony Model 2850 Cassette Recorders for only \$32,000.

# datatron, inc. EDITING SYSTEMS DIVISION

1562 Reynolds Ave., Santa Ana, California 92705 (714) 540-9330 • TWX 910-595-1589  
Mailing Address: P.O. Box 11427, Santa Ana, California 92711

Circle 117 on Reader Service Card

# INTERPRETING THE **FCC** RULES & REGULATIONS

## The Amended Prime Time Access Rule

The Commission adopted version three of the prime time access rule (PTAR III)<sup>1</sup> in January, 1975, only to be told by the United States Second Circuit Court of Appeals<sup>2</sup> to amend it in several respects. This the Commission did in a *Report and Order*<sup>3</sup> that: (1) declared the amended PTAR III effective as of September 8, 1975; (2) declined to place an overall ceiling upon how much time stations may devote to network or off-network programming broadcast during the access period pursuant to the children's, documentary and public affairs program exemptions; (3) prohibited the use of any network or off-network material (pursuant to the exemption in (2), above, or to the feature film exemption) during the access period on Saturday night; (4) amended its Rules to permit broadcast of feature films during the access period on other weeknights regardless of whether previously shown on a network; and (5) adopted a definition of "public affairs" programs.

Broadcasters not directly affected by PTAR III should be familiar with the rules if only because they determine the composition of an important part of their competitors' programming. Cable operators are interested, no doubt, because many CATV systems carry network-owned or affiliated stations licensed to the top fifty markets.

Presented hereinbelow is the prime time access rule in its current form together with six important exemptions.

### I. The Rule

The Commission has succinctly paraphrased the prime time access rule as being:

... an hour of prime time each evening "cleared" of network or off-network programming, for stations in the top fifty markets which are network-owned or affiliated.

The Second Circuit's decision<sup>4</sup> clearly affirmed the

Commission's adoption of the rule in general. But it did find problems with the Commission's formulation of some exemptions to the rule. Several of the new exemptions represent a significant easing of the access hour rule.

### II. Exemptions

#### (A) Children's Programs, Documentaries Or Public Affairs

The Commission's Rule<sup>5</sup> permits television stations subject to the prime time rule to broadcast network or off-network documentaries, public affairs, and children's programs (termed "exemption (1)" programming by the *Report and Order*) during the access hour. For the first year of PTAR III (1975-76) there will be no "ceiling" as to how many weekly hours of this "exemption (1)" programming may be televised. But, at the same time, documentaries, public affairs and children's programs cannot be televised at all on the Saturday access hour during 1975-76. The Commission intends to keep an eye on "exemption (1)" programming to determine whether a ceiling is warranted after the 1975-76 season due to excessive use of network or off-network material rather than independently produced programming. Consideration will also be given to the continued usefulness of the Saturday ban on "exemption (1)" programming.

And finally, in response to the Second Circuit's directive, the Commission adopted the following definition of

continued on page 28

<sup>1</sup>Second Report And Order In Docket No. 19622, \_\_\_\_\_ FCC 2d \_\_\_\_\_, 32 RR2d 697 (1975)

<sup>2</sup>National Association of Independent Television Producers and Distributors et al v. FCC, Case No. 75-4021, April 21, 1975 (Slip Opinion).

<sup>3</sup>Third Report And Order In Docket No. 19622, FCC 75-542, adopted May 13, 1975.

<sup>4</sup>See fn. 2.

<sup>5</sup>Section 73.658 (k).

# Start Shooting with Our Versatile, Low-cost Portable Broadcast Color Camera

## ASACA ACC-3000



The ASACA ACC-3000 is an extremely lowcost yet highly practical portable broadcast color camera developed for outdoor news gathering and use as an indoor studio sub-camera.

The ACC 3000 incorporates such features as 3-tube optical system (RGB), standard C-type lens mount, 4-position filter disc and three different field lenses which can be used for any type of C-mount zoom lenses. The camera head, VF, backpack and power control unit are all included as standard equipment, and the backpack output is an NTSC (PAL) signal. In addition, the 2/3-inch low-lag type chalnicon tubes have a sensitivity triple that of a plumbicon, not to mention their flat spectral characteristics and superior color reproduction. The deflection yoke incorporates electrostatic focus and electromagnetic deflection, so registration adjustment is simple and no time is lost in set-up. Finally, the cable between the camera head and the backpack can be up to 30 meters long, another great advantage.

#### Features:

- 2/3-inch low-lag chalnicon tubes
- Standard C-mount system with 3 interchangeable field lenses
- 5.8kg (12.7 lbs) camera head with VF, 8.5kg (18.7 lbs) backpack
- Electrostatic focus, electromagnetic deflection
- Automatic iris, auto white balancing and speed-controllable power zoom
- The cable between the camera head and the backpack can be extended up to 100 feet.

WE CREATE CHANGE

# ASACA®

For further information please write to:

**ASACA CORPORATION, TOKYO JAPAN**

3-2-28, Asahigaoka, Hino-shi, Tokyo, Japan

Phone: 0425-83-1211, Cable: ASACA HINO TOKYO

Telex: 02842338 A/B ASACA J

**ASACA CORPORATION OF AMERICA**

1289 Rand Road, Des Plaines, Ill. 60016, U.S.A.

Phone: 312-298-4380, Telex: 72-6351 A/B ASACA DSP

Circle 118 on Reader Service Card

## FCC RULES AND REGS

public affairs offerings for the purposes of "exemption (1)" programming:

... talks, commentaries, discussions, speeches, editorials, political programs, documentaries, forums, panels, roundtables, and similar programs primarily concerning local, national, and international public affairs.

The definition is identical to that contained in the Commission's logging rules. While redundant in that it includes "public affairs" in the definition itself, the Commission observed that there has been no broadcaster difficulty in ascertaining its meaning in the past.

### (B) *Feature Films*

The Commission's January 1975 *Report and Order* (PTRA III) added a new exemption to the rule: feature films that have not previously been shown on a network may be telecast during the prime time access hour. The Second Circuit held that the rule distinguishing between network and off-network feature films on the one hand, and films never before shown on a network on the other hand, is "arbitrary." In response to the Court's ruling, and after concluding that feature films have negligible impact upon the access market, the Commission amended its rule to permit use of any feature films during the access hour. As with "exemption (1)" programs, feature films may *not* be telecast on Saturdays during the 1975-76 access hour. Similarly, if the Commission concludes that the 1975-76 season indicates "a need to preserve the prime time access market on other nights from

[the impact of feature films], an appropriate restriction will be considered for adoption."

### (C) *Network News Half Hour*

A television station subject to the prime time access rule may telecast up to one-half hour of network news during the access hour *provided* that it is preceded by "a full hour of continuous locally produced news or locally produced public affairs programming." This exemption has been carried over from past formulations of the access rule.

### (D) *Fast-Breaking News*

In the face of a fast-breaking news event of interest to the viewing public, a television station may broadcast network news programming and any "political broadcast by or on behalf of legally qualified candidates for public office" during the access hour without having it count toward the three hours of daily network programming permitted by the prime time access rule.

### (E) *Sports Runovers*

The Commission continues to recognize that trying to predict the time of conclusion of a sports event is an impossible task. Very often late afternoon sports events run beyond 7 p.m. In view of this problem, and of the great interest viewers take in these games, the Commission created a *live* sports runover exemption. If the sports event is scheduled (under normal circumstances) to end by 7 p.m., but fails to do so because of extended play (i.e., double overtime in basketball), the portion of

continued on page 30

# The 750 ...it speaks your language

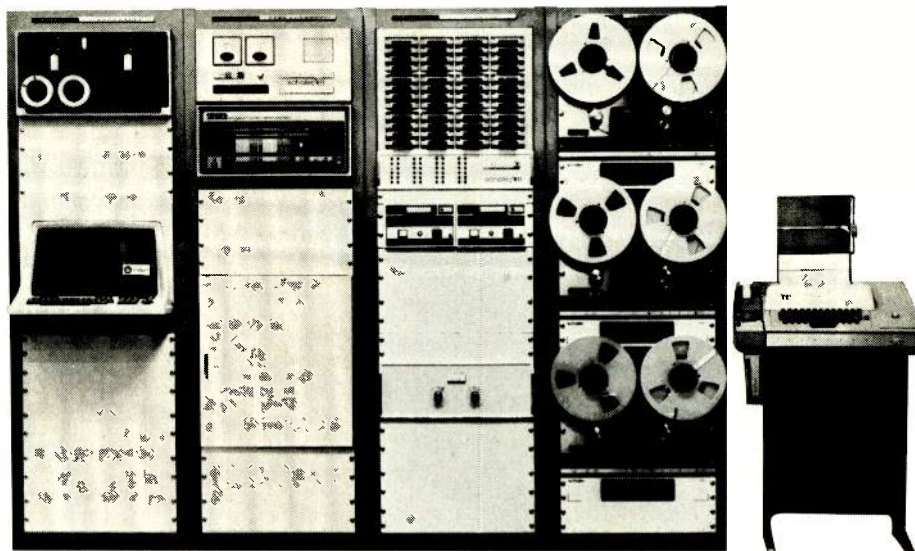
## Meet the Schafer/NTI 750 Computer.

The 750 displays every event of your programming in clear, readable English. It prints your program log in English, and automatically shows discrepancies on the log.

The 750 talks your language in many other ways: It has storage for seven full days of programming. It can access just your commercial availabilities without disturbing music and other programming. ... and that's just the beginning!

The Schafer/NTI is one of a family of four full computer models you may choose. Each 700 model is totally different in size and capability, but each uses the same basic computer, so even the smallest 700 may be expanded into the largest. You simply cannot outgrow a Schafer/NTI series computer system.

If you'd like to learn more about the 750, or any of the family of Schafer/NTI 700 computers, call or write today. You'll find that, at Schafer, we talk your language, too.



# schafer

ELECTRONICS CORPORATION

75 Castilian Drive • Goleta, California 93017 • (805) 968-0755

Circle 119 on Reader Service Card

# HOW CAN WE CONVINCE YOU TO BUY A BETTER CAMERA WHEN YOU ALREADY HAVE THE BEST?

**Canon Professional Motion Picture Division**  
10 Nevada Drive, Lake Success, New York 11040  
123 East Paularino Avenue, Costa Mesa, California 92626  
**Canon Optics & Business Machines Canada, Ltd.**  
3245 American Drive, Mississauga, Ontario

I'm interested. Please send me more information about the new Canon Scoopic 16M, as well as the name of the nearest dealer participating in your one-week free trial and trade-in program.

Name \_\_\_\_\_

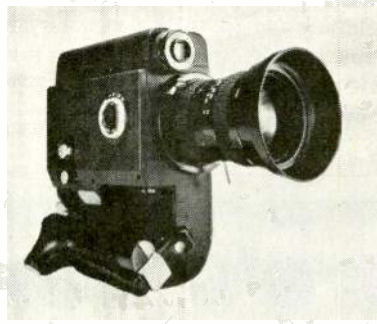
Title \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Offer ends September 30, 1975



## TRY A BETTER SCOOPIC. FREE.

If you're in the news, documentary or industrial field, chances are you've already become attached to our camera. (After all, 8 out of 10 TV stations and literally thousands of producers and cameramen own them.) But now that the original Scoopic 16's performance and reliability have convinced you what a good camera it is, we'd like to *un*-convince you. With something better.

Meet the new Scoopic 16M...with all the good features and dependability of the original, and more. Starting with more lens, for greater versatility: a 12.5-75mm *Macro Zoom* that focuses as close as 3½" Rack focuses *continuously* to distant objects. And optically dollies forward and back, with constant field size.

To keep you in action longer, there's a more efficient battery/transport system that runs *sixteen* 100' rolls on a single, faster charge. Has even greater ruggedness (though some say that's impossible). And gives you greater comfort, too, with smoother operation and better balance.

All this is just the beginning. Because the new Scoopic 16M offers many features you'd expect in a \$4,000 camera—at an under \$2,000 price.

But why take our word for it, when you can prove it to yourself—on-the-job and *free*. For a limited time, at participating Canon dealers,\* you can try a new Scoopic 16M for a week. With one tiny, friendly catch. Once you try our new camera, you'll want to make it *your* new camera, no matter how attached you've become to the one you're using. To make the deal

even harder to resist, you'll find your Canon dealer eager to help, with a generous trade-in allowance on your Scoopic 16.

If that's no problem, send in the coupon for more information, or see your local Scoopic dealer...and let him spoil you for anything else.

\*Participating dealers determine exact terms of trial offer and trade-ins, in your area.

## Canon<sup>®</sup>

**Canon Professional Motion Picture Division**  
10 Nevada Drive, Lake Success,  
New York 11040 (516) 488-6700  
123 East Paularino Avenue, Costa Mesa,  
California 92626 (714) 979-6000  
**Canon Optics & Business Machines  
Canada, Ltd.**  
3245 American Drive, Mississauga, Ontario  
(416) 678-2730

Circle 120 on Reader Service Card

## FCC RULES AND REGS.

the sports event running past 7 p.m. does not count toward the television station's three hours of nightly network programming. The exemption applies only to the sports event itself, and not to post-game shows (wrap-ups and/or interviews).

### (F) Time Zone Difference Situations

The Pacific and Mountain Time Zones have a problem resulting from nationwide network feed from the Eastern Time Zone. Live network programs which are broadcast *simultaneously* throughout the continental United States and running, for instance, from 8 to 11 p.m. Eastern Time would preempt the normal Pacific and Mountain Time access hours. The Commission recognizes the public's interest in receiving the entire live program in these western time zones, as well as the impracticability of formally requiring provision of an access hour after the program is completed. For these reasons, the Commission formulated an exemption permitting:

... such stations [to] assume that the network's schedule that evening occupies no more of prime time in these time zones [i.e. Pacific and Mountain] than it does in the Eastern and Central time zones.

Thus, a live, nation-wide program running from 8 to 11 p.m. Eastern Time (6 to 9 p.m. Mountain Time and Pacific Time) would count as one hour toward Mountain Time Zone stations' three hour network program limitation and no hours toward Pacific Zone stations' limita-

### tion. (G) Special Programs

Another exemption retained from prior access rule formulations is for "special programs" for which a network devotes *all* of its prime time to such programming. The exemption applies to: (1) "Network broadcasts of an international sports event (such as the Olympic Games)"; (2) "New Year's Day college football games"; and (3) "any other network programming of a special nature *other than* motion pictures or other sports events." [Emphasis supplied.]

### III. Conclusion

The Commission has amended PTAR III per the Second Circuit's recent decision and, in the process, substantially liberalized the rule. Feature films of all types (network, off-network and never-shown-on-network) may now be shown during the access hour. "Exemption (1)" programs (children's, documentary, and public affairs) may be used without limit during access hours. However, to protect independent program producers, the Commission is prohibiting broadcast of feature films and network or off-network children's programs, documentaries and public affairs programs during the Saturday night access hour throughout the 1975-76 season. Four other exemptions (as outlined above) are continued in effect from PTR A III. And finally, after the 1975-76 season unfolds the Commission stands ready to review the rules permitting unlimited use of "exemption (1)" and feature films during the access hour if independent program sources suffer materially from their use.

BM/E

# Here's Our Video Switcher



Video Switcher  
Special Effects Generator  
Model 7000

**DYNASCIENCES**  
CORPORATION

video products  
TOWNSHIP LINE ROAD, BLUE BELL, PA 19422  
Telephone: (215) 643-0250 • Telex: 84-6358

13 **Here Are A Dozen Ways To Use It**

**we've added color matting!**

Vertical Interval Switching (8-input) • Horizontal Wipes • Vertical Wipes • Corner Wipes • Keying • Matting • Mixing • Fading • Lap Dissolve • Superimposition • Internal Black Burst • Remote Control Capability • Auto Preview Capability • Tally Switch Capability • Sync Adding Capability • No drive pulses required • plus it is a 3-buss unit which accepts 8 synchronous inputs and 5 non-synchronous inputs • For further information, contact: Dynasciences Video Products.

## Introducing the TC-50 live color camera!

The new TC-50 is a top-of-the-line broadcast quality prism camera at medium-line price.

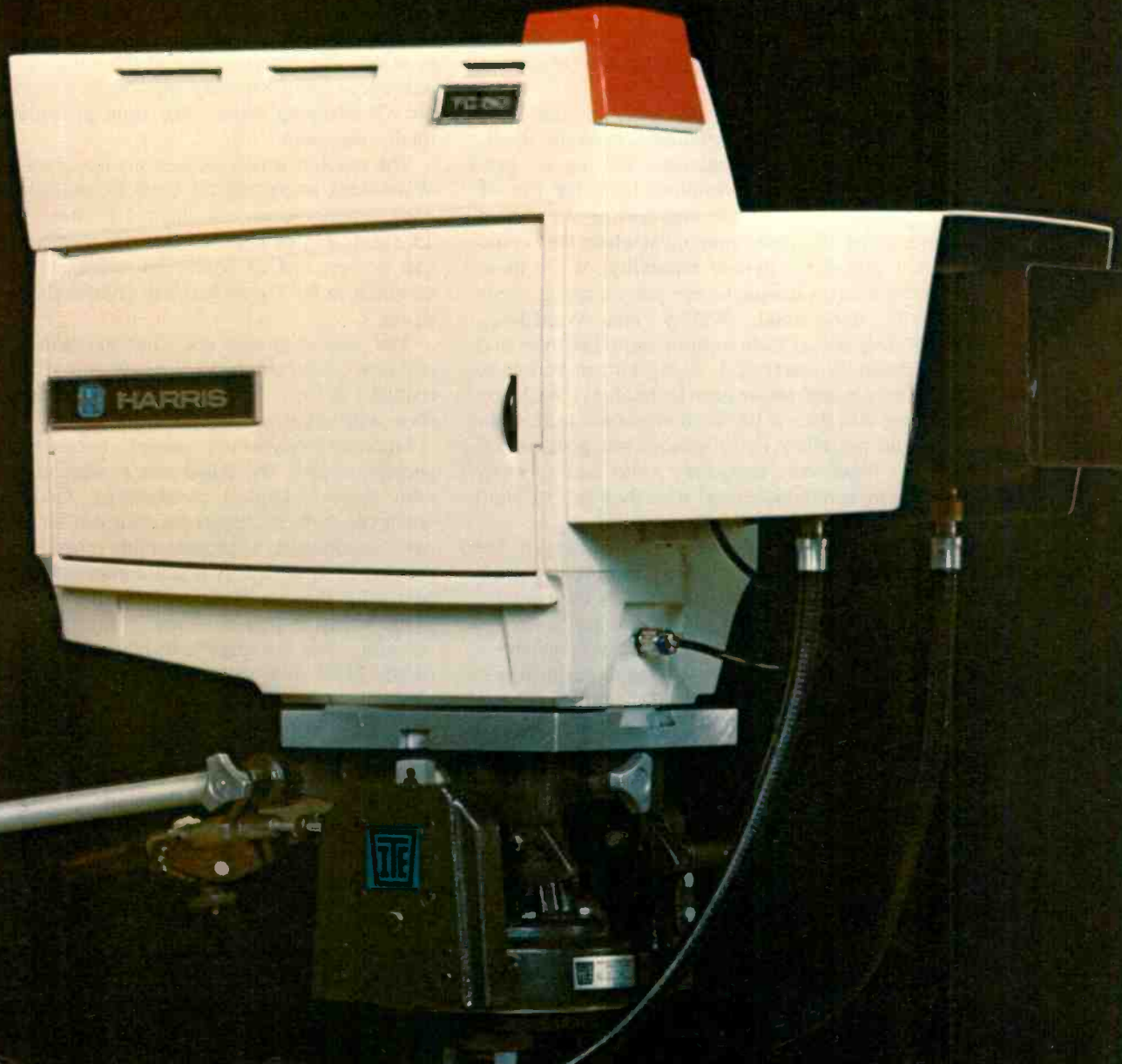
A neat trick? Right—Harris has applied imaginative design to give you superb color fidelity and picture sharpness, along with operator convenience and flexibility, without unnecessary frills or seldom used automatic features.

Let us give you complete information. Write Harris Corporation,  
Broadcast Equipment Division, 123 Hampshire Street, Quincy, Illinois 62301.

**HARRIS**



COMMUNICATIONS AND  
INFORMATION HANDLING



# Making Automation Serve The Human Element

By Gerald G. Klabunde

A complete re-design at WBEN AM and FM, in Buffalo, produced control systems for both AM and FM that marry automation to the human operators, giving them the freedom to create, conceive and enjoy being broadcasters.

At WBEN AM/FM what began as another simple re-building exercise turned into a dynamic project giving meaning and depth to the word "engineering." In fact, "engineering" cannot stand alone when used in reference to our studio project. "System engineering" and "human engineering" became the philosophies we embodied; disciplines that had to be blended effectively to create one of the most modern digital-oriented broadcast facilities anywhere.

A major goal was to take the mundane, the repetitive, the time and energy consuming burdens from the shoulders and minds of the technicians and on-air personalities. Through designs resulting from the use of system engineering and human engineering we shifted these duties to the electronic equipment where they could be executed with accuracy and reliability. When these and other parameters unique to our programming needs were finally understood, WBEN and Ward-Beck Systems of Toronto set forth to build radio facilities that would successfully marry real, living human beings to digital electronics and automation technology. We knew that anything less than a 100% commitment to this approach would not allow us to achieve our goal, so we built a fully functional, temporary radio facility away from the site to be remodeled and were then able to begin our task.

Several years have passed since the project began, but our commitment never varied and we believe our goals have been achieved. What has resulted is an exciting, truly fascinating state-of-the-art broadcast facility.

The concept and design of each studio became a matter of individuality because each had to perform specific functions for either the AM or FM stations. Therefore our approach, though electronically similar throughout in many ways, was also different according to the anticipated duties of each room.

## Automatic sequencing in AM Master Control

The console in AM Master Control incorporates a full random-access automation system. The board is designed to be operated either "combo" by the air talent or with a technician at the controls and talent in an adjacent studio.

Since all our music and commercials are recorded on

cartridges, we placed three ITC 3-decks in the control room. Most of the programming is fed from this 9-channel source. The tertiary tone is used to trigger a visual warning signal near the end of a recorded piece and the standard 150Hz secondary tone is the EOM pulse. As in any well designed automation system, every cartridge is recorded with a sense of creative production in mind. The leading edge of the EOM tone starts the next event and the trailing edge drops the channel off the air. Overlapping segues and tight production becomes totally automatic.

The random-access sequencer, designed and built by Ward-Beck as part of the console, is loaded by simply depressing its respective channel's "arm" button. Up to 15 events can be kept fed into the sequencer; a channel can be repeated as would be necessary with a jingle cartridge to be woven between commercials, music and so on.

The sequencer will also start turntables and reel-to-reel tape machines, but a "manufactured" EOM tone is required at their conclusion and is produced by a one-shot multivibrator.

Once the sequencer is "armed" to carry out a series of specific events, the talent can control all its activities with three "simple" pushbuttons. CANCEL dumps whatever is in the sequencer so it can be re-armed with new commands; a programming change can be implemented immediately without interrupting what is presently on the air. HOLD places the sequencer into a mode where it does not "see" the next EOM tone and therefore does not react to it; however, the trailing edge of the EOM tone still kills the audio of the respective channel. RESTART produces a "manufactured" EOM tone, instantaneously restarting the sequencer and its next previously stored event.

By properly back-timing a cartridge, the console will automatically switch into network. The board can be operated manually by depressing the desired channel's start button located just below the fader. The button not only turns the channel on, but it starts the respective source, whether it be cartridge, reel-to-reel tape or turntable. On either side of the start buttons are LED's—one red, one orange. When the red, on the left, is on, it indicates that its fader is not only in an off position, but is clicked into its cue position. The LED opposite, called the "bookmark," lights up only when a cartridge has

---

Mr. Klabunde is Technical Director, WBEN AM/FM.





To the left and below right, are two views of the master control at WBEN. Top view shows the adjustable height overhead turret, which holds remote control and monitoring equipment for AM and FM transmitters. Below view shows a corner of the console and the cart machine bank.



Author Klabunde sits in front of control console. This unit is actually in Production Room #2 but is exact duplicate of master control console, and can take over the master control function if necessary. Buttons used by DJ to control automation functions are on panel at far end of console (see story).



The bank of nine ITC cart machines serve as the program source for most of the regular programming. Carts can be set up for automatic sequencing in any order; sequence can be held, restarted, dumped by operator.

actually run. In any series of events an operator is apt to forget whether a jingle, commercial or song did actually run. This bookmark LED system is an immediate visual answer.

This system provides a maximum of aid, and a minimum of technical responsibility, to the announcer or disc jockey charged with carrying out WBEN's "personality" approach. He goes on the air "live" with his discussion, with the next sequence of events all set up. He starts the sequence by pushing the one button; while it is running he is free to create his material for a later sequence. He can hold the sequence for more talk whenever he wants, with one button, and can restart it by pushing another button; he can make changes without interrupting the on-air segment. This has given us the fruitful combination of "human" with "engineering" that we were after.

### Other features of AM Master Control

In addition, the console has a built-in intercom system interconnecting all the rooms in the studio complex and even the traffic manager's office. Cartridge recording and reel-to-reel controls are also at the operator's fingertips.

On the upper section of the console, along with the usual VU meters, are a number of LED readouts. One of the displays shows what events have been stored in what order into the sequencer, as well as what it is currently playing. The status of the sequencer—hold, ready, manual, etc. is also shown.

Other readouts display various conditions such as EANS, teletype alarms, AM or FM carrier alarms, FM automation silence sense. The real time, synchronized through a TFT master clock system to traditional round

## AUTOMATION SERVES

face clocks is also digitally displayed as is the outside temperature. There's also an elapsed time stopwatch which automatically resets to zero and begins counting every time an event starts, manually or automatically. There's a digital readout for CBS NetAlert whose reset switch illuminates in red when a CBS feed above "3" is about to be transmitted. The readouts are designed so that they are not visible until the actual condition exists. The operator isn't forced to search through a bank of readouts; it will appear and become visible only when the condition is present.

Just above the console is a massive U-shaped unit housing all remote control and transmitter status equipment plus microwave switching and modulation monitors. A winch, controlled by a switch on the console, raises and lowers the unit to a height convenient to the operator. Both the AM and FM plants are automatic with redundant transmitters and automatic switching. Trans-

mitter logging is also automatically accomplished by two Moseley ADP-220's.

### News control—automatic switching for up to a week

The news control console displays most of the features found in the master control console, but in a somewhat condensed form. Our AM news format calls for CBS news taken delayed, but preceded by two minutes of local headlines. The news package begins on the hour. In order to maintain a "hands off" operation, the news and several other network feeds that are broadcast at a later time in the day or week, are delayed through the use of two digital time-gates which control switching, etc. on a real-time basis. Though we don't wish to digress from our original plan of a studio-to-studio explanation, this is a perfect point to explain their function as it relates to our overall operation.

The time-gates, which are broadcast products real-time automation units very substantially altered by us for our needs, perform many functions. They will place a tape unit into a record mode, start the unit at an exact

*Control console for Production Room #1 is a full 16-input, 4-output board capable of quad, stereo, mono mixing.*



*Production studio equipment includes turntables and cart machines, equalizers, Dolby noise reduction units, reverb, Nakamichi cassette machine, Multisync.*



*Bank of Scully tape machines in Production Room #1 includes models for 4-track, 2-track and mono recording.*



*Console in news control room is tied in with automatic time gates that set up sequence of non-music programming for as long as a week in advance.*

predetermined second, place EOM tones, stop and rewind up to 12 reel-to-reel and cartridge machines. Because of this large capability, machines from any or all studios can be electronically tied to the gates. The tape machines can take feeds from any source, ours being primarily CBS network news, weekly programs and UPI audio. We can program the gate for an entire week for any number of duties that will be carried out faithfully, flawlessly, automatically. We have two units programmed exactly the same, one for back up in case of failure.

Getting back to how the gates relate to our news programs. Just before every hour, two delay cartridge machines located in news control are loaded with two minute cartridges. The time gate starts the two delay machines one minute before the hour's news and places them in the record mode. On the hour our local headlines begin "live." At exactly two minutes past the hour the delayed CBS news begins playing back through a channel on the console. Two minutes after the network newscast, the digital time-gate shuts down the two ITC cartridge delay machines. This happens every hour we carry network news, every day, every week, month after month, all automatically and all controlled by the digital time-gates. CBS Mystery Theater is recorded every day reel-to-reel. In fact, to itemize the number of feeds the gates handle in a given week would be like reading a large part of our program log. The time-gate is programmed for a week's duties just once, and except for keeping erased carts loaded in the decks and tape threaded in the transports, it will continuously carry out the multitude of jobs hands off.

#### **Production studio number 2—master control duplicate**

This production studio has a console that is a duplicate of AM Master Control, but also includes equalization and reverb, each assignable to one of its three mono channels. The reason for the duplication is that in the event maintenance of the console or any studio equipment in master control becomes necessary, it would cause disturbances and distractions.

Should this happen, the announcer or operator can

quickly vacate the room and continue the show from Production 2. The layout and functions of the board are immediately familiar to him. Line-of-sight, microphone channels and intercoms to both the announce and news studios are also maintained. An unexpected or scheduled change in studios will result in minimal stress, so the chance of operational or judgemental error is reduced drastically.

#### **Production studio number 1—all-out recording flexibility**

Here is a professional multi-track recording studio in every sense of the word. As is the case with every console, it in no way resembles or is limited to the functions of a standard broadcast board. It's a full 16 input, 4-track recording console, capable of normally handling up to 30 separate sources for producing Quad, 4-track, 2-track stereo, and mono material.

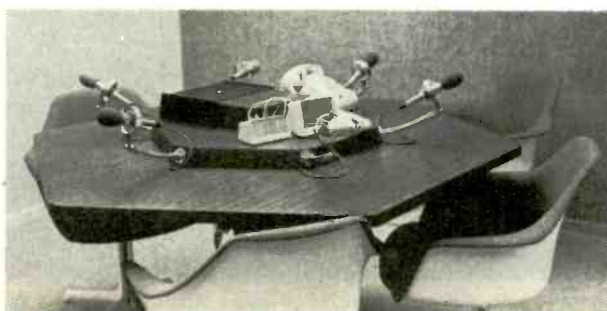
Studio equipment includes full Dolby, Multi-Sync, echo, reverb, equalization, compression, quad joystick, stereo pan pots, plus provisions for practically unlimited expansion in both the console and physical studio. Tape machines include 4-track, 2-track, full track reel-to-reel, stereo and mono cartridge record and playback plus even Nakamichi's impressive rack-mounted cassette deck.

#### **The AM/FM interface—talk show studio**

This room is physically the largest in the plant. Its



*Studio A control room has turret for controlling talk shows.*



*Studio C can feed talk shows to either AM or FM, through AM-FM interface control.*

## AUTOMATION SERVES



The SMC DP-1 automation system feeds most of the programming to the FM station, but any origination point in the plant can feed either the AM or FM transmitter.



The AM-FM interface board, with the talk studio in background. The console is a completely dual board, for either stereo or mono—two programs can be handled simultaneously.



Central equipment rack, with Tom Whalen, technician, changing heads on Ampex 351 tape transport.

adjacent announce studio is big enough to handle the many programs recorded daily that each include half a dozen or more guests. Again, not to digress, but to emphasize and underscore the kind of quality and uniformity we try to maintain throughout the facility, we have employed a total of 30 Neumann condenser microphones. U-87's are used at every point other than Interface's large interview studio. In this studio we routinely have guests unfamiliar with good microphone technique and simply nervous, resulting in constant motion. Here we've chosen Neumann K M-84's. They have the same sound quality as the U-87's, but off-axis or not these mics maintain a uniformly crisp, linear response. Each KM-84 has a windscreen color coded to its individual mixing channel on the Interface board and employs a stereo pan pot that electronically positions each along the horizontal stereo plane.

The console itself is quite unusual in that it is a dual stereo board. Two completely separate stereo and/or mono programs can be recorded simultaneously.

### FM control

This studio houses the only discrete quad/stereo board that we know of. At present, a Sony SQ encoder is being employed and a Sony decoder is also used. But the board is ready to go discrete quad if and when the Commission gives it their stamp of approval. This room has 4-track and 2-track reel-to-reel, an ITC stereo 3-deck playback and an ITC stereo record center. Because of the uncertainty of what quad method will be employed in tomorrow's technology, we've elected to remain stereo in the turntable area, but have the option of going discrete quad in the future. Both the Quad console and Interface console have all the required visual information in LED readouts, including temperature, real time and elapsed time displays, plus CBS NetAlert status.

There are seven announcer and producer turrets with mics, controls, full intercom facilities and various digital displays. Every room in the complex is tied together in such a way that total interplay between control rooms and announce booths is accomplished without patching.

### WBEN-FM

WBEN-FM Stereo Rock-102 is a 24-hour operation as is our AM facility, all 24 hours of programming being done with an SMC DP-1 automation system. The system consists of 9 ITC reel-to-reel playback decks, 4 Carousels, 4 single play cartridge decks and two time announce units with drop-in capability. The DP-1's computer is digitally loaded with magnetic tape. The language employed is ASC II.

This covers our new studio facilities and FM operation, but we're not finished yet. We have a completely portable, professional, on-location recording studio that includes a Ward-Beck 12-channel stereo/mono console, Scully 2-track reel-to-reel tape, full Dolby, Neumann U-87 and KM-84 microphones, Klipsch monitor speakers. We've also rebuilt our entire newsroom from floor to ceiling. Each could be a separate story in itself because the same design philosophy and realistic disciplines imposed on our main studio project were maintained throughout every phase of the additional projects.

We've married automation and the human element into a harmonious, relaxed atmosphere. The result is freedom, to conceive, create and enjoy the business of being broadcasters.

**BM/E**

# Today's Programmed Automation Can Increase Your Sales ...and Profits.

## HERE'S HOW.

The Broadcast Industry has leapfrogged into the Age of Automation. You have got to believe that automation is the wave of the future in our business. In 1975, stations will spend over 14-million dollars on equipment and programming. The business side of broadcasting is also automating with English printout logging and computer billing. It is projected that 90% of all stations will have some type of automation by 1977.

### An Automation System for Your Station.

Control Design has the right system, whether AM or FM, monaural or stereo, 1 kw or 100 kw, established or new licensee. *What is the best size for automation? Any size!*

### Why Lose Weekend Sales?

More sales are lost on weekends than you realize. The prospective account, that you pitched all week, can be lost on a Sunday if your station suffers from "weekend personality letdown". That's the only time many businessmen have available to tune you in. *Automated programming has consistent high quality.*

**Improved Format.** Whatever your style . . . Rock, Country Western, Middle-of-the-Road, Rhythm & Blues, or Ethnic, there's a wide choice of automated formats from the leading producers. *Automation brings the top talents, the top features, and the top music to your area.*

### The Right Commercial at the Right Time.

If the log shows a commercial spot at a specific time, rest assured it will appear exact. There is no error because of the confusion of the moment, no missed or delayed events, no disgruntled sponsors, no makegoods. *Automated programming is accurate and precise. And, good business.*

### Control Your Costs 24 Hours a Day.

It makes no difference if it's 3 PM on Tuesday or 3 AM on Sunday. Automation constantly gives the same quality, at the same cost, and with the same thorough attention to time and detail. The equipment can be programmed for 7 days of hands-off operation, sequencing up to 8,000 events from a multitude of sources. *Automation controls costs.*

### People Are Important.

Each of your key men wears many hats. By eliminating the tedium of the day-to-day operations, they are freed for more profitable assignments . . . special local programming, sales, market planning, financial management. *Automated stations have better personnel utilization, higher pay scales, more job security.*

### Meet Competition Head On.

The automated station is in the best possible posture. It can provide top talent and entertainment like the largest conventional station: programming that is out of the reach of competitive size stations. It has firm control over costs. It frees personnel to better meet the radio needs of the community, and to more effectively sell and service customers in its marketing territory. *The automated station has the competitive edge.*

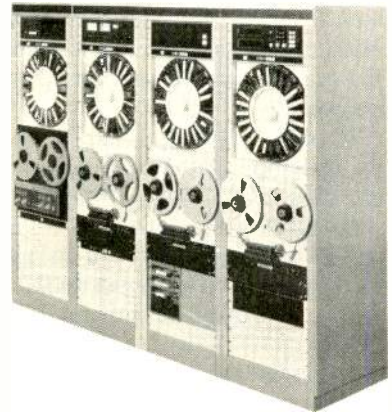
### Increased Sales, Higher Profits.

The automated station, through tighter cost controls, better personnel utilization, and improved programming, produces higher sales, increased revenues, better profits. *Automation builds profits.*

Control Design specializes in automation equipment and our name is fast becoming synonymous with broadcast automation. Many of our products are now the standard of the industry. Our systems are specified or used by leaders in broadcasting, including: Rust Communications Group, Sarkes Tarzian, Singer, and many others.

### An Invitation.

Broadcast automation is a good investment. At CDC, we're experts in automated systems and can help you with design, financing and leasing. For complete information phone 703-751-5650 today, or complete the coupon below. We'll rush you complete data.



**control  
design  
corporation**

205 South Whiting Street  
Alexandria, Virginia 22304  
Phone: 703-751-5650

## Yes, I'm Interested.

name \_\_\_\_\_ title \_\_\_\_\_

station/company \_\_\_\_\_

address \_\_\_\_\_

city \_\_\_\_\_ state \_\_\_\_\_ zip \_\_\_\_\_

phone \_\_\_\_\_ date \_\_\_\_\_

TYPE OF STATION  AM  FM  AM/FM

Please have CDC representative call.

Just send literature.

MY REQUIREMENT IS:  Immediate.  3 to 6 months.

For information only.

Circle 123 on Reader Service Card

# Computer Provides "Programmer's Automation"

At CBS owned WEEI-FM, Boston, a Schafer/NTI automation system with computer control and a large memory gives tremendous aid to the program director and operating personnel in producing "live" programs, fine-tuned to the market.

When the Columbia Broadcasting system decided to automate all seven of their owned FM stations, they were clear about what they wanted: no syndication, no change in the system of having programs made right in the station, with the disc jockey and his store of music sounding "live." Bob Cole, CBS vice-president in charge of the FM stations, says that the automation was to be a *tool*. They did not want the operating people to have to alter, curtail, confine, adapt themselves to the machine; the machine was to adapt itself to, and give aid to, the people.

In order to get that kind of automation, CBS studied the operation of the stations in complete detail, an exploration that took nearly a year. Operating personnel were asked to sit down and tell exactly what they did, minute by minute, through an operating day. CBS also thought about what the operators might want to do in the future, to extend the programming policies of the stations.

Ralph Green, director of engineering for CBS Radio, was in charge of getting the automation systems planned and installed. He emphasized to BM/E that automation at this level cannot be planned or used without that detailed, preliminary study of just what the station wants the automation to do. He is convinced that the CBS year of study was essential—and successful.

When the whole story had been recorded, summarized, put in order, CBS went to the automation manufacturer and said, "This is what we want the automation to do. Can you do it?"

The manufacturer in the case was IGM (later Schafer/NTI). CBS wanted computer control, with the flexibility to be had by putting the operating system into the software—this was necessary because the different stations to be served use different musical formats and operating procedures.

Thus it is the Schafer/NTI Model 770, which includes

\*In the restructuring of the "old" IGM in 1974, the company was taken over by Northwest Technology, Inc., a subsidiary that designed and manufactured the 700 series. At that time Schafer Electronics Corp. was named the exclusive marketing organization for this series in the U.S. and internationally except for Canada and Australia.

the Digital Equipment Corporation PDP-8 computer as the controlling element, that was chosen by CBS for the job at all the owned FM stations. Dwight Herbert of Schafer points out: "The software is what allows a computer to be the highly expandable unit that it is . . . by slightly modifying the software and adding . . . external storage the relative capability can be expanded 100 or 1000 times or more, overnight."

CBS uses the large external memory system on magnetic discs available with the Schafer/NTI 770. Together with the memory on the computer itself, this provides the following up storage capacities in the system: 19,200 program event instructions (or eight full days of programming at 2400 events per day); 9999 descriptions of music, PSA, ID's and commercials; up to 7 days of complete program logs, showing material actually broadcast; a pre-log based on planned programming.

The material to be broadcast is nearly all on carts, which are played by six Instacarts included in the system, with standard capacity of 48 carts each. Also integrated into the system are two reel-to-reel machines, and automatic program logging.

How this is put to use can be seen in a short description of the operation at WEEI-FM, Boston, the first of the seven stations to go on the air fully automated. Cut over at WEEI-FM was in August, 1974; the system has been performing at full capacity since then.

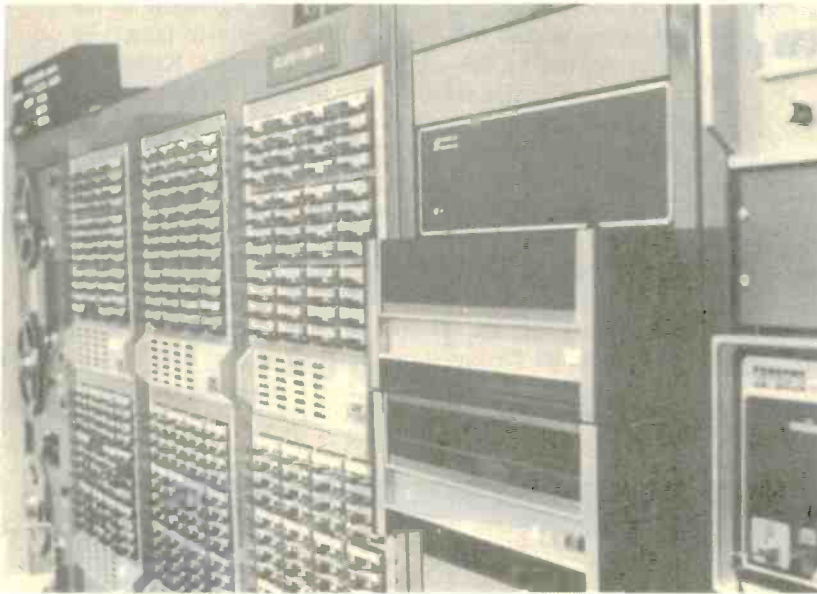
David Klahr, Program Director, explains his operation as follows: the format is called Adult Contemporary Music, and includes the various categories usually thought of: current hits, oldies, instrumentals, easy listening, etc. Basically, it is a dj sequence with news on the hour all day long.

Klahr chooses the music, which is continuously put onto carts in the station with 1000 to 1500 ready carts on hand at any given time. The available music can thus be kept "fresh" and up to the minute, with new material steadily added, old dropped out.

As each cart is recorded, it also gets the operation and cue tones, plus an elaborate identification in digital code: title, performer, year of popularity, category, tempo,



The automation system at WEEI-FM is a showpiece operating behind sliding glass doors. Young lady in foreground is sitting at receptionist's desk.



The Schafer/INTI 770 at WEEI-FM has 288 cart positions supplemented with two reel-to-reel tape recorders. Prominently shown is the dual disc system. The 770 is largest of the 700 series.



The 770 includes the PDP-8 computer which has a 20K computer word memory. One disc adds another 1600K. Pictured is Dir. of Tech Ops Larry Conti.

Operations and Traffic Manager Millie Laby enters a commercial event.

Program Director David Klahr uses computer to help him choose music from the inventory.



## PROGRAMMER'S AUTOMATION



CRT display of upcoming events is located at the master control board.



Another CRT display informs the newscaster of events and times.

playing time, intro time, restriction code (in some cases—never to be played in the morning, for example). This cart “identification” goes into the computer memory, along with a number code for the location of the cart, in storage and on the Instacart.

When Klahr wants to prepare a program segment, he can ask the computer for a list of all music then on carts of a certain type. The computer uses up to 20 parameters to make its choices. The carts Klahr chooses from the computer list are put into the Instacart spots indicated for each, and the sequence is entered into the computer via a keyboard, with CRT readout for editing and confirmation. (See photo).

The programming can be done for an hour, a day, or a week at a time. But any element of it can be changed at any time, up to a minute or two before that piece was to go on the air. The software allows for skips, holds, returns.

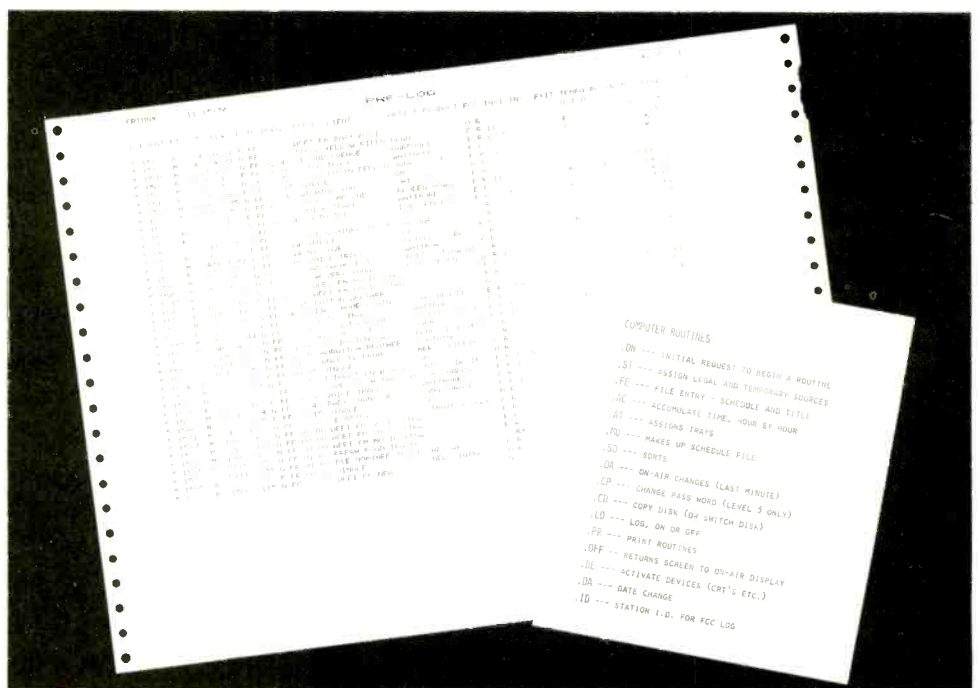
The disc jockey can operate in any of three modes, after the program has been chosen by Klahr and the sequence established; he can pre-record a voice track to go with the sequence, he can go on “live” with the system turning him on and off at the proper times; he can go “manual,” overriding the automation and calling up each cart himself with pushbuttons. Mixtures of these three modes are possible, too.

In other words, the system can meet the desire of the operating person fully, while being ready to take over whatever part of the job he wants it to take. Klahr emphasizes the great sense of freedom this gives the creative personnel and operators. “They know they can do the routine part of the job in very short time, and the computer will take on all the grubby, time consuming work,” he says. “This allows them to be far more creative and effective in their jobs. Once a disc jockey has worked with this kind of an automation system, he hates to go back to straight handwork.”

Commercials are all on carts too, with identification entered when the carts are recorded. Commercial iden-

continued on page 43

This composite illustration shows a pre-log. Overlaid on it is a list of the computer programs available to the station.





# PERFECT YOUR CCTV SYSTEM WITH COSMICAR® LENSES

NOW AVAILABLE . . . . . COSMICAR ES SERIES LENSES, newly developed high sensitivity VIDICON LENSES with AUTOMATIC IRIS that operate for the ranges from 1.4 ft-c to 100,000 ft-c. SMALLEST in sizes, ECONOMICALLY priced and provide VERY WIDE APPLICATIONS.



## NEW COSMICAR ES SERIES LENSES

- F.L. 8.5mm f/1.5—ES for 2/3" cameras
- F.L. 12.5mm f/1.4—ES for 2/3" & 1" cameras
- F.L. 16mm f/1.6—ES for 2/3" cameras
- F.L. 25mm f/1.4—ES for 2/3" & 1" cameras
- F.L. 50mm f/1.8—ES for 2/3" & 1" cameras



## COSMICAR OPTICAL CO., LTD.

424, Higashi-Oizumi, Nerima-ku, Tokyo, Japan

Cable Address: "MOVIEKINO TOKYO"

Representative & Service Office: Asahi Optical (America) Inc. 15 East 26th Street, New York, N.Y. 10010, U.S.A.

Circle 124 on Reader Service Card

## Flexible, solid-state audio switching **NOW under \$10 per crosspoint**

Input-output configurations are virtually unlimited with this modular, building-block solid-state, audio switch. And . . . this flexibility comes at reduced cost.

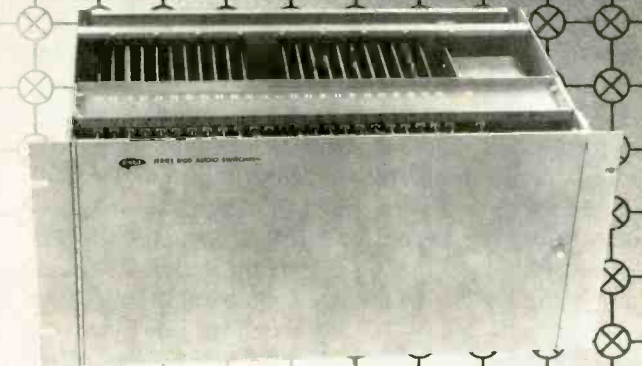
Starting with a single 8¾-inch by 19-inch rack frame assembly, the user can build to a 20-input by 20-output configuration through selection of plug-in switching and amplifier boards.

Still using the same basic frame assembly, other configurations such as 20 by 5, 10 by 20 or combinations in between can be assembled. Greater capacities, including dual inputs or outputs, are just as easy . . . just add.

Control? . . . a snap! pushbuttons, thumbwheels, dials, touch pads . . . even a computer.

Performance is outstanding. Using field effect transistor switching and integrated amplifiers, the Series 8100 handles -6 to +8 dBm levels through its balanced transformerless inputs. Flat within ±0.15 dB (20 Hz to 20 kHz) ±1.0 dB (1 Hz to 50 kHz), crosstalk (better than 70 dB below output), harmonic distortion (less than 0.15%) and hum and noise (85 dB below maximum output) the 8100 compromises nothing for its flexibility.

Best of all, users will really appreciate the economy. By specifying the initial capability for any remotely-controlled, switched audio distri-



bution network, the buyer saves now and isn't penalized later. High reliability solid-state audio switching costs can be cut to as little as \$10 per crosspoint . . . significantly less than competitive switching systems.

### DYNAIR ELECTRONICS, INC.

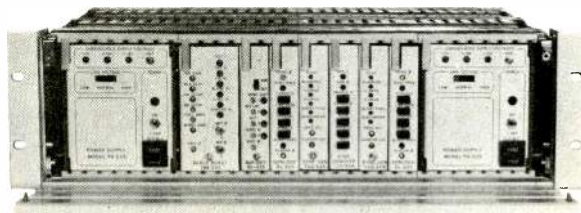
6360 FEDERAL BLVD., SAN DIEGO, CA. 92114  
PHONE: (714) 582-9211; TWX: (910) 335-2040

DYNAIR

Circle 125 on Reader Service Card

# Instrumentation Precision in Broadcast Terminal Products

## TeleMation's *Precision* Line Terminal Equipment



Within TeleMation's "525 Series" audio and video terminal product line, certain units are designated *precision* as distinguished from their *broadcast* counterparts. The *precision* designation is much more than a simple "marketing label". *Precision* is a demarcation assigned through TeleMation R&D that puts a particular product into a separate, unique attention category, from design concept through manufacture and quality-assurance verification. All this to assure the buyer that the product not only meets or surpasses all known competitive products in its performance parameters, but also that it is designed to operate for months and even years without need for periodic adjustment or any other routine maintenance. This philosophy and practice, then, take the *precision* units in the 525 Series terminal equipment into a quality/stability/reliability realm that is usually associated with instrumentation electronics.

TeleMation has used a number of design techniques in accomplishing the high performance and stability achieved by these products. For example, one-percent-tolerance resistors having a temperature coefficient of 20PPM/°C are generally used as gain-determining elements and wherever drift would affect stability. They provide both freedom from temperature drift and freedom from the effects of aging that are common to the less expensive resistors normally used in video products. Junction matching — each PN junction being matched with an NP junction to cancel the characteristic 2.2mv/°C drift of silicon junctions — is also employed to improve stability and prevent offset drift in DC-coupled outputs.

Feedback is extensively used in *precision* grade units as a means of insulating performance characteristics from the effects of component variables. Audio amplifiers are typically high-gain op-amps inside 100-dB feedback loops, while video amplifiers are typically transistor pairs inside 40-dB feedback loops. In these applications, a 2:1 change in the gain characteristic of any active component will have negligible effects on overall circuit performance.

The advantages of push-pull, cascode, and complementary symmetry circuits are exploited to provide low distortion, wide bandwidth, and high signal handling capability. Current-sourcing techniques are also employed as a means of minimizing distortion that otherwise can result from operating semiconductor junctions over wide current ranges.

TeleMation engineers also have successfully coped with capacitor leakage (another source of long-term drift) in the *precision* series designs. Capacitors are either operated with minimum DC voltage drop or the effects of increased leakage with age are otherwise eliminated, as in the TVA-524 and TVA-525 video distribution amplifiers where the capacitance of a small capacitor having extremely low leakage current is "amplified" by a high-gain op amp; the result—longer time constant, less tilt, and greatly improved long-term stability.

Our TVA-525 video distribution amplifier, whose performance characteristics are listed below, is a representative application of the quality and stability factors inherent in the *precision* series product.

### TVA-525 PERFORMANCE SPECIFICATIONS

	TYPICAL	PUBLISHED
Differential Phase @ 3.58 or 4.43MHz	0.12°	0.2°
Differential Gain @ 3.58 or 4.43MHz	0.11%	0.2%
Frequency Response to 5.5MHz	0.05 dB	0.1 dB
Frequency Response to 10MHz	0.20dB	0.25dB
Hum and Noise	72dB	66dB
Distortion, 50Hz Squarewave DC Mode	.1%	<.15%
Distortion and Tilt, 50Hz Squarewave AC Mode	.20%	<.25%
Output return loss @ 5.5 MHz	38dB	35dB
Input return loss @ 5.5 MHz	43dB	40dB
Bounce and Overshoot DC Mode	1%	—
Bounce, AC Mode (Monotonic)	8 sec.	5 sec.
Overshoot, AC Mode	None	None
K Factor	.25%	0.5%
Input Offset Compensation Range	>3VDC	>2VDC
Common Mode Rejection, 60Hz	>70dB	>60dB
Common Mode Rejection, 5MHz	>43dB	>40dB

A functional schematic of this amplifier along with a product description is available on request. We suggest you compare this circuit to that of any competitive product. We feel you will agree that the stability and long-term quality performance intrinsic to our *precision* design will justify whatever small additional initial cost might be involved through including such quality electronic devices in your broadcast system.



**TeleMation**

P.O. BOX 15068, SALT LAKE CITY, UTAH 84115  
(801) 487-5399, TELEX: 388-352

## PROGRAMMER'S AUTOMATION

continued from page 41

tifications go into the computer along with the music, PSA land ID description codes, and are made part of the program sequence when it is laid out.

The 770 can sort titles of music, commercials and PSA's in different ways for music rotation, and commercial rotation without fear of competitive products being placed back to back. Actually the 770 allows three different levels of command entry. One level is by the program department, the other is by the traffic department and the third is by engineering for technical routines. Each department has its own pass word which gives it access to its area of the computer.

At WEEI-FM, the program director and operations/traffic manager work in concert in approving the schedule—the pre-log.

The pre-log, showing the planned sequence, is available at any time, and remains in the computer memory as a check on the actual performance. If a cart played is different from the cart shown on the pre-log, the computer makes a note of it, and whenever asked will print out a list of "failures" for any given period within the memory span (up to about 7 days), which is an authentic guide for make goods.

The system has a number of refinements that help make the on-air sound "smooth" and "live" at the same time. There are three rates for fading from one segment to the next, selectable by pushbutton. When voice is on, the next music segment can come in 6 dB down and stay

there until the voice stops, when the music comes up to level automatically. Conversely, if music is on when the voice starts, and the operator wants a "voice over," the music is automatically dropped 5 dB, again staying there until the voice stops.

The disc jockey doesn't need to listen in advance through all the music chosen; he can hear any part of it he wants, but also gets a copy of the pre-log with all titles, times, etc. From this, he can make a voice track, with exact timing. With a little practice, Klahr reports the disc jockeys learned to make voice tracks that sound completely "live."

Alternatively, if the announcer *is* on "live," he can orient and time himself from the CRT readout at the master control desk (photo), which tells him just what the upcoming sequence is at all times. He has prepared himself by studying the pre-log, in any event.

The logging system prints out not only the identification code for each item put on the air, but also a full English description, whether it is music, commercial, ID, PSA, or whatever.

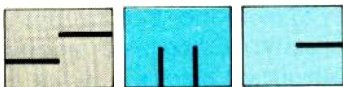
In sum, the Schafer/NTI system has been put to work by CBS in such a way that each program director can fine-tune the programming for *his* market, altering it for any hour, day, or week, with the greatest ease and with tremendous help from the computer. He can enter new music in the system, or keep any part of what he already has, according to his own judgement of the needs of the station in satisfying the local listener. This puts a lot of the station's success on his shoulders, but the record of the CBS owned FM stations has been generally excellent—the men chosen have been up to the job. **BM/E**

## Profitable programming begins with Automated Systems from SMC

Make the most profit possible. Automate with a complete system from SMC—world's largest maker of broadcast automation equipment.

Choose from digital or sequential systems, or a customized system built and designed to meet your specific needs to help you realize more profit plus greater format control.

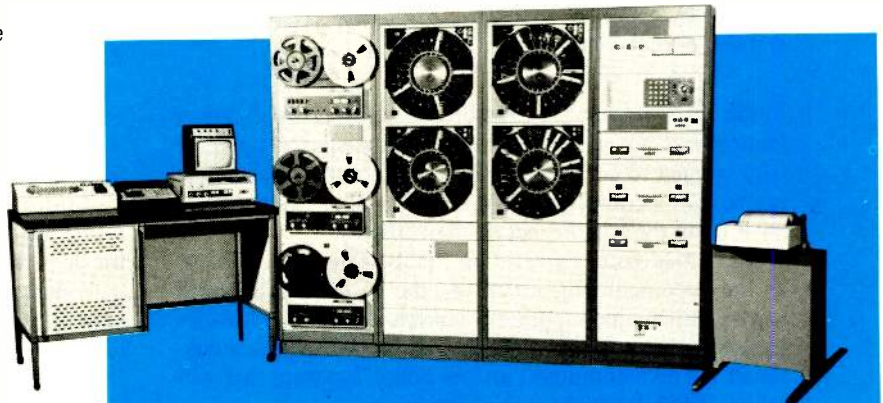
SMC can help you plan *and finance* an automated system that fits your budget and operation. SMC also has information on every major music format. Phone us today—or return the coupon below.



### Systems Marketing Corporation

1019 West Washington Street  
Bloomington, Illinois 61701  
(309) 829-6373

*Broadcast Automation—our only business*



**YES! I want to profit through automation.**

Send complete information  
and have your Representative call me.

Name \_\_\_\_\_

Station \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_ Zip \_\_\_\_\_

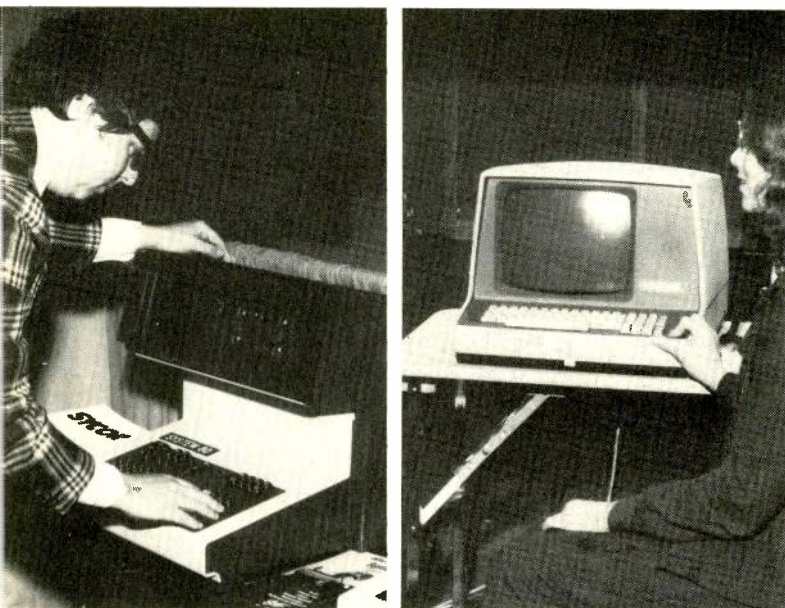
Phone (area code) \_\_\_\_\_

75-102

Circle 127 on Reader Service Card

# Business Automation: Surging Ahead On Three Fronts in TV

Whether it is "in house," "on line," or "distributive processing," business automation today is doing more than ever for broadcasters, using the latest generation of faster, more powerful computers. Complicated problems of TV are being readily solved.



Terminals were a familiar sight at the NAB Convention in April. At the left is the System 80 terminal used by Jefferson Data. At right is a Compu/Net terminal.

In the beginning (which for broadcasting business automation was not so many years ago) the station operator who wanted to computerize his sales, traffic or accounting bought a computer—just as many other businessmen have done throughout automation history.

The broadcaster can still do the job that way. In fact, as the accompanying article on the Cox Data Systems shows, this major supplier of automation to broadcasters has recently decided to concentrate on selling each customer his own computer, an "in house" system that will be exclusively for the use of the buyer.

But other important automation suppliers do it differently. Several system designs are based on the use of a large central computer, owned and operated by the supplier, and linked to customers by telephone lines. The subscribers get the computer services on a "time shared" basis and pay a monthly charge. The logic is that the user gets computer power and storage capacity far beyond anything he could afford to buy himself. "Sharing," as readers will know, does not mean lengthy waiting in line to get on the computer. Processing is so fast that jobs from different inputs can be handled, for all intents and purposes, practically simultaneously.

The central-computer design comes in two forms. The "on line" variety has the subscriber connected to the

central computer at all times, with dedicated telephone lines that are open 24 hours a day. The "distributive processing" scheme uses a mini-computer at the station for immediate, on-call attention to current jobs—sales availabilities, daily log, etc.—that are needed at any minute, and quickly. The larger jobs, requiring more computer power than the mini has and needed only periodically, or involving large-quantity, long-term memory storage, are handled on a "batch" basis by the central computer, which can come "on line" at stated times during a day or a week.

Currently, the most successful on-line marketer is Data Communications Corporation with its BIAS, which at press time was connected to 126 stations, more than any other automation supplier has signed up. The accompanying article by Patrick Choate of DCC describes a revised system, BIAS II, just now going into service with a new, super-speed central computer, the Burroughs B6700, recently installed at DCC headquarters in Memphis. The logic of the on-line system, with instant access to a very large computer, is set forth in some detail by Mr. Choate.

The largest supplier of "distributive processing" is Kaman Sciences of Colorado Springs, with their Broadcast Computer Service (BCS). A new BCS system, called BCS1100, is just going into service. Details on that, and on the special advantages claimed for distributing processing, are given in a following article.

Another supplier using distributive processing is Jefferson Data Systems of Charlotte N.C.; BM/E told about the Jefferson operation in the July, 1974 issue.

A strong believer in the value of a large central computer is Compu/Net which has at its Los Angeles center two twin "super-computers" operating on-line with each station. Compu/Net is affiliated with Control Data Corp. and has a national network going into the top 80 markets. While Compu/Net has been most active in the radio area, it now is ready to move into TV. Because of its large computer capacity, Compu/Net stresses *dynamic scheduling* which means emphasis is put on how to orbit, and rotate commercials and handle run-of schedule.

The in-house system is given a somewhat different look by Paperwork Systems, Inc., who have developed some lower-cost systems based on the smaller mini-computers. The systems developed by PSI cover a range of prices down to about \$40,000, and are adapted to stations that do not need nor want the complex processing and super-speed available with the larger computers.

This highlights an obvious fact that the buyer of "in house" systems cannot avoid: the smaller, less expensive computers will have definite limitations as compared with the larger ones. In a great many cases those limitations will be completely acceptable to the station operator; but he should be aware of what he is, and is not, buying.

Thus it is important for a station to consider what it really wants. Accounting and invoicing services are easy to come by. Avail can be shown by all systems. If one is not sure of the future, services that you can lease are attractive sounding—if monthly cost is not out of line.

One should not be thrown off-track by the philosophies of the various suppliers regarding the proper mix of computers, and on-line vs. off-line. Equally impressive arguments can be mustered for each side.

What is most important is that the customer decide how much manual work will be done by station personnel particularly as it relates to scheduling. After you

call for the log, how much editing will you have to do? The computer can help you maximize income by helping you with rotations (vertical and horizontal) and by avoiding conflicts (both sponsor and product). Investigate the capabilities carefully.

As forecast in a number of earlier articles in BM/E (and elsewhere), a major event that business automation is moving toward is the hard-wired hook-up with switching automation, to produce the totally automated broadcast station. As this article was written, BCS had just completed such a hook-up with a Central Dynamics Laboratories automated system at TV station WCTN, in Minneapolis. A short news item on that is on another page.

DCC, as Mr. Choate reports in his article, is actively working on a universal interface that will allow similar hook-up of BIAS to automatic switching. It looks as though 1975-76 will be the years in which total station automation really begins to move.

---

## **BIAS II: How a New Super-speed Computer Is Enlarging Service to "Shared-time" Customers**

By Patrick Choate

---

BIAS is serving (as this is written) 126 stations in the United States with its shared-time, on-line business automation system. When Data Communications Corporation launched BIAS a little more than five years ago, not even its most ardent supporters (including the president, Norfleet Turner) anticipated such a rate of growth.

One major result of the present scale of operations is that DCC has been able to introduce "BIAS II," a second generation system based on a new, super-speed computer, Burroughs B6700, one of the largest computers on the market, an investment of about \$4 million. Through the 80,000 miles of dedicated telephone circuits set up for BIAS, users will be linked to the B6700 in Memphis every minute, 24 hours a day.

Installation of the B6700 entailed the awesome task of redesigning and rewriting all 200 programs in the old computer. Getting every customer reprogrammed for the totally redesigned and enhanced BIAS system took 30 people about two years. For a smooth changeover, the programs were written to allow the old computer to transfer the stored data on each customer directly into the new B6700.

This transfer process started in April and will take, according to present scheduling, until August to complete. The first station to go live on BIAS II was WBRC-TV in Birmingham, Alabama, which ran a program log on the 6700 on April 25, 1975.

One major enhancement of the service is pure speed. The 6700 is at least five times faster than the older computer—it is one of the fastest general computers on the market. BIAS II customers will get the data they call for even more quickly than before.

Another advantage is practically unlimited storage capacity. BIAS is storing 15 to 20 million characters for each customer, and can expand even that if necessary with the B6700. The user has instant access to any part of the data stored for him.

A few of the new service options introduced with BIAS II are: 1) on-line invoicing and management reports (presently all invoices and month-end reports are generated in Memphis); 2) a total accounting package—accounts payable, payroll and general ledger—also on-line; 3) the capability of using portable terminals, such as the Termiflex unit.

The Termiflex is a hand-held portable computer terminal, easily carried in a brief case, that allows a station representative to call up his station by telephone (a local call) and get from the Memphis computer an up-to-the-minute rundown on any program information he needs. The data coming back from the computer is shown on a small display panel—the unit has a 1000 character memory. Uses for the Termiflex will include sales availabilities, general account information, billing facts, among others. DCC plans to make the Termiflex available to BIAS customers later this year.

BIAS II is now available in two main configurations. The first is based on the use of a Burroughs TC3500 terminal for input and output at the subscribing stations. The terminal is supplied to any broadcaster who signs up for the service and does not want the second option (to be described). The Burroughs TC 3500 includes a mechanical memory, a keyboard, and hard-copy printout of information going into the system and coming out. When data is being entered, the terminal accumulates the material until the memory is full, and then shoots it over the telephone line to the computer in Memphis. Information called for comes back and is held in the memory while being printed out.

Monthly charge for the standard service varies with the service contracted for; \$3500 is a ball-park figure for medium to large television stations.

The optional system uses a mini-computer at the station—the one chosen is a Nova II, which has a 32K character memory. It is supplied with three CRT-key-

## BUSINESS AUTOMATION

board input units and two print-out units. The mini-computer is on-line with the main computer in Memphis at all times. Its advantage is that information can be sent to, and received from, the main computer at very high speed.

The following are some of the general advantages of the BIAS II on-line, "shared time" automation system. As the foregoing makes clear, the user has instant access to the computing power and storage capacity of a very large computer, many times as powerful as any computer he could afford to buy himself. The supplier can afford to keep the system up to date, by incorporating advances in hardware and software as they become available and desirable. The field is moving so fast that in two to five years almost any stand-still system will be lacking in available efficiency. The user has full back-up against failures—he is never left "dead in the water" because service personnel for his particular computer are several hours or even a day away, since BIAS maintains a full service organization at the "host" computer, in addition to having an elaborate set of backups as proof against failure.

DCC has currently two important projects underway that look toward the future. We are investigating a number of new ways of using the net of dedicated telephone lines for communication to and from users. These lines are "open" 24 hours a day and the computer needs only a part of the available time. It is simple good sense to get some benefit from the presently unused line capacity.

Already underway is the development of a computer/communications tie-in between broadcasters, station reps and advertising agencies. This is a joint effort involving Data Communications Corp. and Donovan Data



*New Termiflex brief-case terminal permits a salesman on the road to query the station's computer.*

Systems, a computer services company serving advertisers "on-line" with information and paperwork related to spot TV radio media and accounting. John Blair and Co. has been selected as the pilot rep firm to be tied into the on-line computers of DDC and DDS. Phase 1, to be completed this month, permits reps to query agency's computer. Phase 2 will include giving reps variance reports; phase 3 will permit rep order entry into BIAS station's computer. The latter two phases are expected to be operational by the end of 1976. Their completion will cut drastically the paper work that now must pass between the three entities.

Also far-reaching in its final effect is our work, by a research team under DCC vice-president James Ziegler, toward a universal interface for linking BIAS II with any automatic switching equipment on the market today. If all goes according to plan, before 1975 passes, BIAS II will mean total automation—sales, traffic, accounting, and engineering.

**BM/E**



*Shown here is the \$4 million B6700 Burroughs computer installed at DCC headquarters in Memphis.*



*Programmer sitting at control panel of B6700 computer which handles both radio and TV stations.*

## Why Cox Data Systems Has Adopted In-House Automation

Cox Data Systems is one of several companies that emerged in the middle 60's as a supplier of on-line computer systems for the broadcasting industry. These companies have grown and achieved a level of success (some

more than others) in both acquiring additional customers and revising and improving the service they offer to the broadcaster.

After the initial design and installation in several

“user” stations and as improvements to the systems were made, two major factors limiting these improvements emerged. One is the overwhelming dependence on telephone lines as the communications link; the second is the speed limitations of these telephone lines, which transmit at 4800 baud (480 characters per second total for all terminals using that line). The constant cry of the computer programmers of these various companies was “We could do so much more if we had more or faster lines of communication.”

Other disadvantages also appeared:

Some stations had to completely change the way in which they ran their business (although in some cases this was a blessing in disguise).

In an on-line environment all stations must handle all computer input the same way.

Long printed reports (comprehensive avails, comparative sales reports, invoices, statements) had to be processed at the central computer site and mailed to the user stations requiring at least a two-day delay. (Editors Note: See description of report handling by BIAS II, preceding article.)

When the host computer experienced mechanical problems (a computer is a machine) all the user stations were inoperable. The mini-computers do a job similar to that of general computers, but more efficiently and with a less drawn-out process. And they don't require personnel backups who must work around the hardware.

As technology and acceptance for the mini-computers advanced their prices started declining. The new economical price of the mini-computer provides an excellent alternative to the fixed or increasing lease costs of an

on-line system. Stations can now purchase an entire system and depreciate it over a five to eight year period, which is the accepted standard depreciation period for the computer equipment. Costs during the depreciation period are comparable to those of an on or off-line leased system and after this period the costs will drop almost three quarters, leaving only maintenance and soft-ware support charges.

CDS is one of the companies that has chosen the mini-computer route. They have found the capacity of the mini-computer is large enough to accommodate all the station's data, including prior year data used to produce comparative reports, and still have plenty of room left for future applications and expansion.

The mini-computer system is very easy to operate and doesn't require a specially trained programmer or operator. The existing station personnel can easily be trained to operate the entire system. In addition, the mini-computer does not require a specially air-conditioned or humidity-controlled room.

All terminals (cathode ray tube input devices and printers) communicate directly with the computer at 4800 baud (480 characters per second) simultaneously. The present system has the capacity to handle up to eight terminals. This number can be increased but present operating conditions do not indicate the need for more than eight terminals.

Because it is a complete in-house system, unique individual station programs can be developed at the station's request. The station can operate its system as it desires. For example, invoices can be printed and mailed the day after a billing period ends.

---

## **Business and Switching Computers Joined By BCS For Total Automation At WTCN**

---

Planned for more than a year (BM/E, July, 1974), the hard-wiring of a business automation system to a TV automated switching system was completed at Metromedia station WTCN-TV, in Minneapolis, and the system went “live” on May 30, 1975.

The business system is Kaman Sciences' BCS-1100, which uses “distributive processing” (see introduction, with a mini at the station linked to the main BCS computer in Colorado Springs. The TV switching automation is carried out by a Central Dynamics APC-610/200. The interface between the two was worked out by a joint effort of Kaman and CDL.

The mini computer in the BCS-1100 is the Digital Equipment Corporation PDP-11. The CDL AFC-610/200 is also run by the PDP-11 mini computer. This had certain advantages for the personnel of Kaman and CDL who worked out the software allowing the two computers to talk freely to each other—to exchange data at high speed.

However, the development of total automation of this kind is not dependent on having identical computers at the two ends of the linkup—both Kaman and Data Communications Corporation (see preceding story on BIAS) are developing interface systems that can be used with any switching system on the market. The pressure for total automation will before long bring most of the available switchers into such combinations.

Some examples of how things go now at WTCN will show why total automation has a tremendous future in broadcasting. Traffic program schedules are transmitted directly to master control; as-aired log verification comes back automatically to the business system, which makes for extremely fast and accurate billing reconciliation. Thus all operating information comes from the same data and errors are reduced. The log file is stored in both computers, which is good backup security for the station.

In the August issue BM/E will have a more complete story on the WTCN-TV total automation operation, the first fully operating example of the “future of automation.”

The BCS-1100, the latest development in Kaman Science's service for business automation, has also been installed recently at KOOL-TV in Phoenix, and at WPIX-TV in New York. The system allows a station to have numerous CRT terminals and remote printers at many locations. It has “selective printout,” which keeps the station from being buried in unwanted data printout. The system, of course, provides the very fast handling of traffic, programming, availabilities, accounting, etc., which are spreading business automation rapidly through the broadcast industry. The BCS-1100 is also able to interface with the Grass Valley APC-2000 automated switcher.

**BM/E**

# "Instant Ads": This By-Product of ENG Is Running Strong With Regional Advertisers

Getting TV news on the air fast is the big plus of electronic news gathering. Getting TV ads made in hours, rather than days or weeks, is a big plus for ad agencies and TV stations, collected with the same equipment as "instant news."

Recently a group of Managers of Young and Rubicam affiliates from various parts of the country assembled at the Tampa International Airport for a meeting with executives from the New York headquarters. They were met at the plane by Bill Zemp, President of Zemp Advertising, the Y&R affiliate in Tampa-St. Petersburg, and escorted to a meeting room. When they were all seated the lights were turned off and the group was shown a tape—a tape which showed them getting off the plane, being met by Bill Zemp and escorted to the meeting room.

The closing scene of the clip was Mr. Zemp opening a door saying, "This is where our meeting is going to be held." A statement he had made just minutes before and which was now being shown in brilliant clarity to the advertising management group.

The impact of the six minute "instant screening" showing on the visiting advertising managers was impressive and instantaneous. And as Bill Zemp later pointed out, was a dramatic example of a new trend developing in regional advertising agencies which is giving these agencies an economic and operational lift of utmost importance in today's chaotic marketing situation.

The trend, according to Harry Elstermann, Senior Broadcast Producer for the Zemp Advertising Agency, who was responsible for the instant six-minute playback of the arrival of the ad management group, is towards increasing utilization of tape in producing commercials rather than the use of film.

"The six-minute scene we shot for the visiting agency people," said Mr. Elstermann, "was a perfect example of the advantages of tape in the production of viable, air quality pictures. The shooting time of this event, from the opening scene of Mr. Zemp meeting the other agency executives was less than a half-hour. The unit we used was from the independent TV station here in the Tampa-St. Petersburg market, WTOG-TV, which is the only TV station in the market to have a "mini-cam" unit by which we can shoot, check and process the tape immediately. It also gave our visitors, we hope, some ideas on commercial production concepts via the instant screening, which they can adapt in their own areas."

The unique "instant screening" presentation put on by the Zemp group was in no way an experiment according to Harry Elstermann. "We've been using the WTOG-TV unit for some time now for several of our

clients including Hood's Dairy, the Publix Stores, Florida Federal Bank and others. The simplicity of the TV station set-up, in comparison to a filming operation, is fantastic. WTOG-TV sends out a small truck unit completely equipped with everything we need. The Mini-cam is handled by one man and we can see immediately via tape playback if we've got what we wanted. No re-shooting, no waiting with baited breath to see if the film got the scene we wanted was flawed in processing or other film problem; no two-hour set-up before we're ready. As a matter of fact, we find very few if any, problems and have a maximum amount of time for creative development of our ideas."

To say that Mr. Elstermann is enamored of the new instant action tape process, is putting it mildly. "For regional advertisers, like Zemp, which is the largest agency in Florida, units like the one used by station WTOG-TV are a boon," he said. "They are about one-third less expensive than film would be, but more important is the time element. We can be on the air with a whole series of excellent quality commercials for our client during the time we would be waiting for the film processing; even before we could give it an OK for showing."

For retailers, says Mr. Elstermann, the system is manna from heaven. "In a competitive situation, a retailer who has to make a price change in a hurry can call the WTOG-TV remote unit, get his commercial with the price change included shot in a matter of hours and have a fine commercial showing his shop interior and product in the process. All this with no extensive preparations, no huge remote trucks, no special lighting, no disturbance of customers or shooting at 4:00 am or Sunday morning. The mini-camera is small, unobtrusive, carries its own special lighting gear and is operated by one man. It's a retail advertisers dream machine. It's something he can identify with."

Many creative advertising specialists said Mr. Elstermann are "hung up on film and the film look. It's a throwback to the days of the old-line advertising managers who used to stack up their full-page ads as physical evidence of their accomplishments. Using the tape process, with the proper filters, we can provide the 'Film Look' the creative people love so much. In addition, the challenge of doing your client's commercials personally and immediately is a great one."



Creative people are beginning to show a fascination for the new "mini-cam" commercials according to Harry. "They're beginning to look on it as a "fun" tool," he says, "and beginning to target their creative talents to the flexibility and potential of the tape commercial. We had a recent commercial for Hood's Dairy," said Elstermann "which was shot outdoors with 30 kids. We were able to shoot the commercial we wanted for air use between 8:00 am and 3:00 pm. Even the creative talent were impressed with the final product. Had we used film it would have taken us nearly that amount of time to set up for the final shooting and then wait a week or more for the prints. With the WTOG-TV unit, the remote truck monitor showed us exactly what we wanted—at the instant it was shot.

The introduction of the new instant tape concept into the Tampa-St. Petersburg market was largely due to Mr. Elstermann's interest, according to George Orgera, Chief Engineer for WTOG-TV, the independent station in the market which has the only mini-cam remote unit for commercial production in Florida.

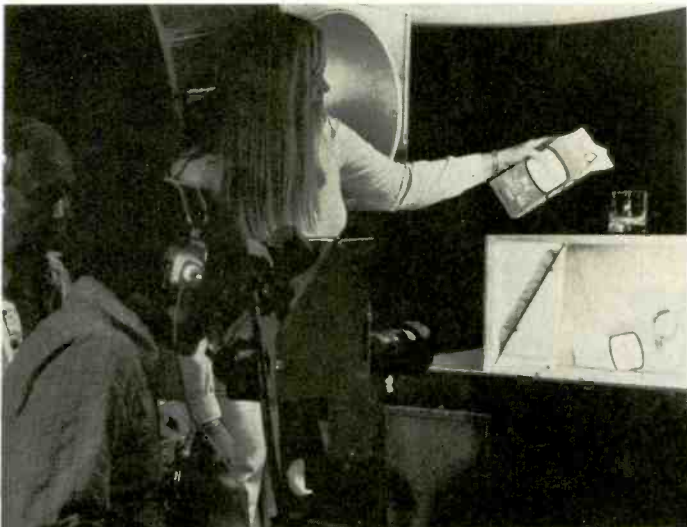
"Harry was impressed with the quality and convenience of the hand-held camera concept for shooting instant commercials," said Orgera. "He kept bugging me

and I kept bugging my boss, Jim Dowdle, General Manager of WTOG-TV until he finally came through with the unit. Since that time, in addition to the work we've been doing for the Zemp Agency and other agencies in the state, we have been inundated with smaller advertisers who have never used TV before."

WTOG-TV doesn't hide its light under a bushel basket. Jim Dowdle, who sees the potential of the remote hand-held instant commercial concept becoming more of a reality every day, has created a Market Group to handle the new business and, using his own medium in the way his advertisers use it, has created a series of commercials advertising the concept on the air, an idea which has paid off in increased business for WTOG-TV.

"About 95% of the local agencies lean heavily toward the hand-held, remote unit commercial concept," said Mr. Dowdle, "and they all have been impressed with the convenience, quality and relatively low-cost of the production. It's given a number of advertisers the first chance to compete in the TV medium they've ever had."

For Mr. Elstermann, the success of the introduction of the new instant tape concept is a confirmation of his prophecies. "It's an ultimate tool for every regional advertising agency in the country." **BM/E**



Early client to use instant ads using mini-cam equipment is Hood's Dairy.



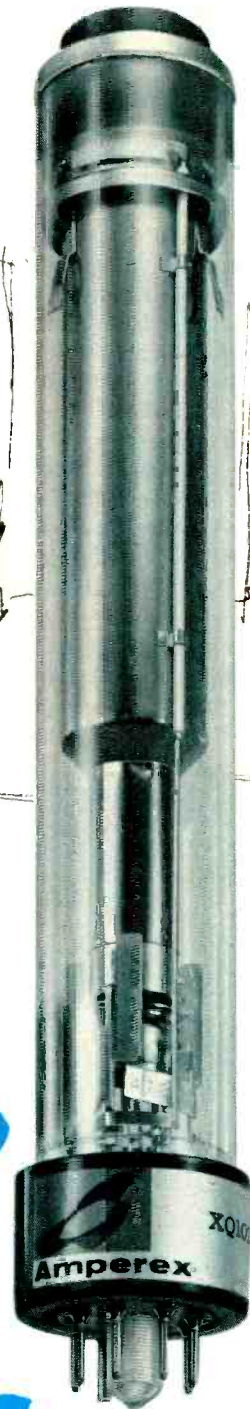
Portable equipment is a retailer's dream. Commercials can be produced in a store or warehouse without disrupting the routine.



Harry Elstermann of Zemp Advertising describing the virtues of the Editel mini-cam, and the Ampex portable VTR model 3000.



Instant viewing of what is shot, made this commercial for Hood involving 30 kids a snap.



**Some day,  
somebody  
may imitate  
the Product...**

# ...but nobody will ever duplicate the Service!



## And in TV Broadcasting, it's the service behind the product...that keeps the product out front

On the way to selling more than 30,000 Plumbicon\* TV camera tubes, we learned how important Service is to the broadcaster. The first thing we learned was about availability — No TV station, commercial or educational, can ever afford to shut down an operation while "waiting for parts." Plumbicon tubes are instantly available, at all times, through local franchised distributors and through Amperex factory sales representatives.

And we learned the importance of the name Plumbicon to TV stations who have come to depend on it as their assurance of consistent performance and quality.

Because no product is ever "good enough," we taught ourselves to build smaller and smaller Plumbicon tubes that provide performance standards similar to the original (we're down to  $\frac{2}{3}$  inch tubes now,) and we learned to produce tubes with reduced comet tailing, with higher resolution and modulation depth, with extended-red response, and with minimum lag. Contemporary camera tubes outperform the original Plumbicon by a wide margin.

We learned that the TV camera user is concerned about the operation of his camera... not merely about the performance characteristics of our tubes. So we provide him with a wide range of expert and valuable information, in print and via our field engineers, to help him get the most out of his TV camera-system. Plumbicon users who are about to install a new camera need only give our

field engineering staff a call and we'll have an expert there to help with the job.

Our franchised distributors, (your own local businessmen,) are carefully selected for their ability to support Plumbicon TV camera systems with on-the-spot customer support and service. We, in turn, support our distributors with two kinds of "seminars" for Plumbicon camera users. One is on video tape, the other is presented "live" by an Amperex field engineer. The purpose of both is to maximize the value of Plumbicon camera systems.

Finally, we learned that the best way to deal with warranty questions was to design the warranty for the customer's benefit — not to protect ourselves... and even then, to interpret the warranty in the customer's favor whenever possible. For example, a customer may return any Plumbicon tube for testing (even one that's technically out of warranty) and we'll subject it to a complete technical evaluation at our expense... and send the customer a detailed engineering report on the tube.

Yes, we've learned a lot about the importance of Service in the ten years, in the more than 30,000 tubes sold, in the 600-plus TV stations served, since the Plumbicon tube won the Emmy award. Little wonder, then, that the Plumbicon, after all this time, still offers the best all-around package of performance, price, reliability and service available. Little wonder, then, people keep on saying, "There's only one Plumbicon."

Electro-Optical Devices Division, Amperex Electronic Corporation, Slatersville, Rhode Island 02876, Telephone: 401-762-3800

## Amperex®

A NORTH AMERICAN PHILIPS COMPANY

## There is only one Plumbicon

\* Reg. T.M. of N.V. Philips of the Netherlands

# GREAT IDEA CONTEST

## 17. Collegiate FMer Goes Stereo Without Going Broke.

Robert Groome, Chief Engineer,  
WBWC-FM, Berea, Ohio

**Problem:** To convert a mono FM facility to FM Stereo for the least dollar outlay. After it was decided to convert WBWC-FM from mono to stereo, we were able to purchase a used type-accepted stereo generator and a used pair of limiters for a reasonable price. However, we could not afford a stereo console.

**Solution:** We constructed an outboard unity-gain summing amplifier to use with our existing equipment: a Gates Gateway 80 console, Two CB-77 turntables, and a Magnecord type 1022 deck. By use of lever switches the stereo sources will be either routed to the Gateway as an L+R signal, or sent to the outboard summing amplifier for further amplification and processing as a stereo signal. The turntable preamps, tape deck and console levels were chosen so that the individual dual pots run fully clockwise and are effectively out of the circuit under most conditions.

The bi-polar power supply was purchased for \$3 from a surplus supply

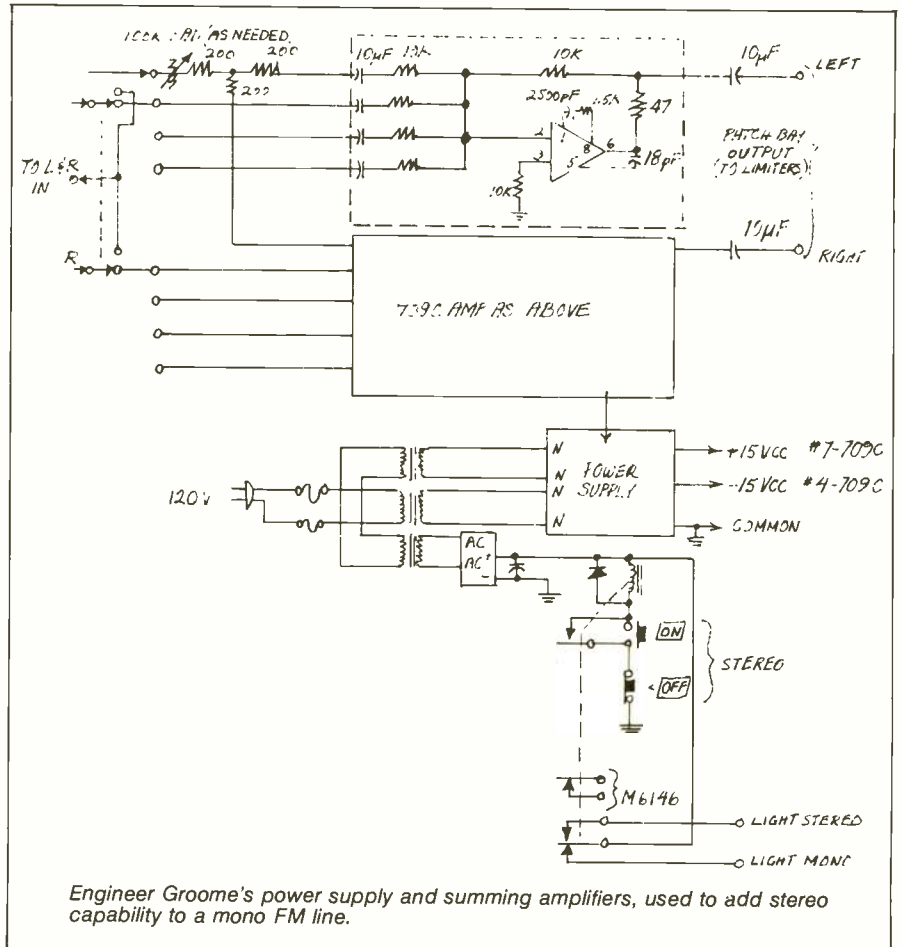
house. The 24 VDC supply powers the stereo pilot lamp and was built from spare parts.

The unity-gain summing amps have good isolation between sources. The values of input and output capacitors shape low-end response. The 47 ohm resistor at pin 6 of the 709 IC prevents spurious oscillations. Each amp operates with  $-10$  VU in and out.

The normal operation has the selector switch pre-set so the turntable preamp feeds directly to an input of the Gateway console. This input is normally in Cue mode. After cueing a record, the switch is set to stereo, and the output brought up via the dual pots. We have only three stereo sources at present, but more can be added to the IC amp.

A pc board holds everything down. The amplifiers, power supply, etc. fit into a 19-in. enclosure. Our total expenses to go stereo: less than \$1500.

continued on page 54



Engineer Groome's power supply and summing amplifiers, used to add stereo capability to a mono FM line.



**THOMSON-CSF LABORATORIES, INC.**

**CBS LABORATORIES**  
A Division of CBS Inc.

**One good  
name becomes  
another.**

CBS Laboratories Professional Products Department, responsible for the development, manufacturing and marketing of broadcast products, has become Thomson-CSF Laboratories, Inc., a wholly owned subsidiary of Thomson-CSF, S.A.

Thomson-CSF, S.A., one of the world's leading professional electronics companies with over 48,000 employees, has, with this acquisition, further increased its commitment to the American broadcasting industry.

Although our name is new, we will continue to offer the very finest in broadcast equipment including Audimax<sup>®</sup>, Volumax<sup>®</sup>, Vidifont<sup>®</sup>, Image Enhancer, Color Correction Systems and the complete line of Thomson-CSF products including the revolutionary TTV 1515 triax camera.

And we will continue to expand our research effort in the same tradition of professional excellence that has made CBS Laboratories the standard for the industry. We also will maintain the same professional development, engineering and marketing management staff.

You will continue to find the same innovative thinking and the same dedication to quality. We've got it all together under one great new name... Thomson-CSF Laboratories, Inc.



**THOMSON-CSF LABORATORIES, INC.**

37 Brownhouse Road, Stamford, Connecticut 06902

(203) 327-7700 / TWX (710) 474-3346

Circle 129 on Reader Service Card

## GREAT IDEAS

### 18. Dubbing to Previously Recorded Cart Without Adding "Stop" Cue.

Tom Hayes, Engineer, WGIV-AM, Charlotte, N.C.

**Problem:** To edit audio cuts and add material on previously recorded carts without adding Stop Cue tones. Ordinary modification of Gates ATC gear requires modifying the recorded 1 kHz stop tone. Some stations, to our knowledge, make the modifications with two switches and two buttons to switch, requiring an octopus or very agile set of arms to make this work.

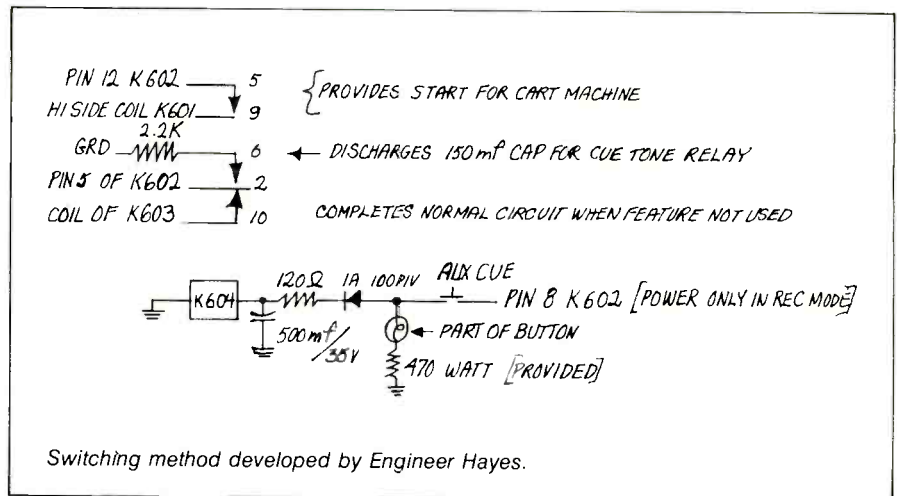
**Solution:** Stopping the cart at the end of the previously recorded material, and punching the Record Set button sets things up. Pushing the Aux Cue button both nullifies the addition of a 1 kHz tone, and starts the machine. Remote control is also now simpler to achieve. This feature can only be activated with the recorder on, so there are fewer problems with accidents.

Changes that an engineer might

forget:

(1) remove the jumper on pins 6 and 8 of remote control connector and put wire from pin 8 to pin 6;

(2) move indicator light (+) lead to anode of diode;  
(3) remove C904, the Aux tone coupling capacitor.



### 19. Eliminate Video Level Differences Between TCR-100 and TR-61.

David Williams, Engineering Supervisor, WALB-TV, Albany, Ga.

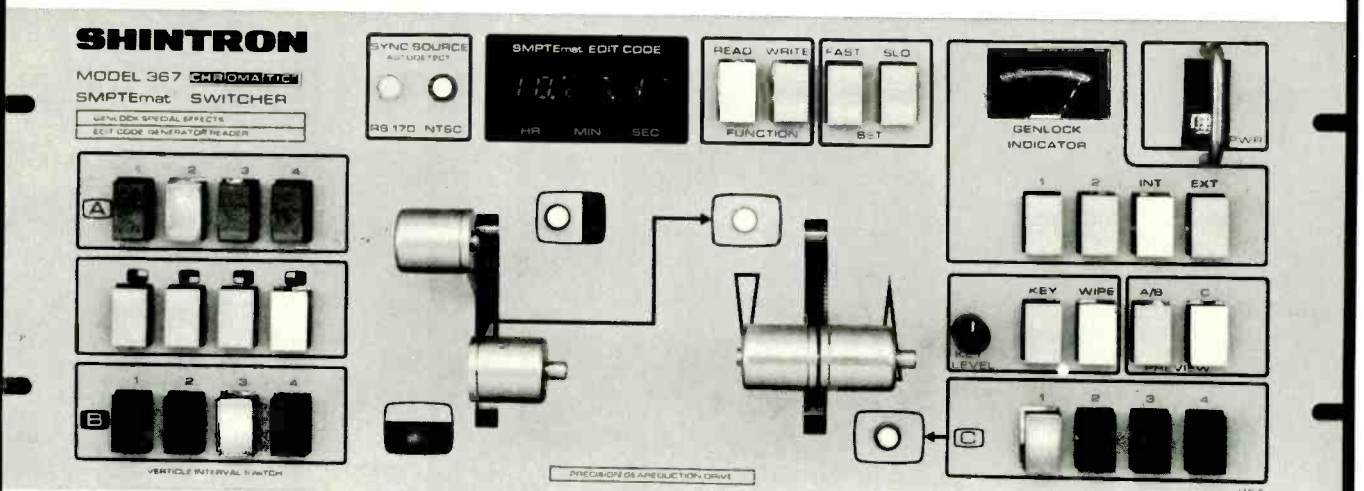
**Problem:** To eliminate video and chroma level differences between the

TCR-100 and TR-61 video tape machines on playback.

**Solution:** When using a TCR-100 as a slave machine to a TR-61, the playback electronics of the -61 are time shared by the -100. This presents a problem when playing back carts in a 30 minute or hour show, or when carts and a reel-to-reel tape run in the same break. The video and

continued on page 56

## End the Identity Crisis in your videotape library! Model 367 Post Production Switcher for the 'Videotape Generation' \$3,780.00 List

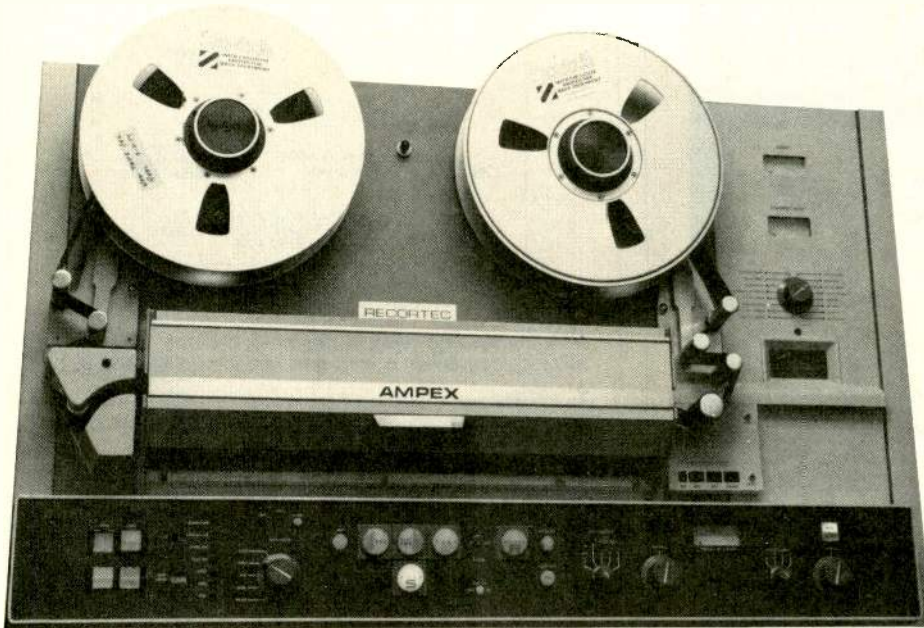


- total color switcher + SMPTE edit code generator/reader
- + color count-down genlock (to Helical VTR)

**SHINTRON**  
Cambridge, MA 02142 (617) 491-8700

...The Precision People

*put a* **NEW ENGINE**  
*in your* **VTR**



Are you impressed  
with the superior  
tape handling of a  
vacuum buffered VTR?

**For 6% of its cost  
Recortec R-Mod will  
Upgrade your present  
VTR to provide**

- RELIABLE REMOTE OPERATION
- ELIMINATION OF TAPE STRETCH
- HANDLING OF TWO HOUR REELS
- CONSTANT SHUTTLE SPEED
- FRAME ACCURATE ELECTRONIC TIMER
- ACCURATE PLAYBACK OF CUE SIGNAL
- AUTOMATIC END-OF-TAPE SENSOR
- CONSISTENT LOCK-UP TIME

R-MOD is a modification package which can be easily installed in the field to provide constant tension for your quadruplex VTR.

R-MOD is derived from reliable hardware used in other proven Recortec products such as

VIDEO TAPE CONDITIONER

VIDEO TAPE EVALUATOR

VIDEO TAPE TIMER

Recortec has handled your tape cleaning for years—now, with R-MOD on your VTR, we'll handle your tape cleanly for years.

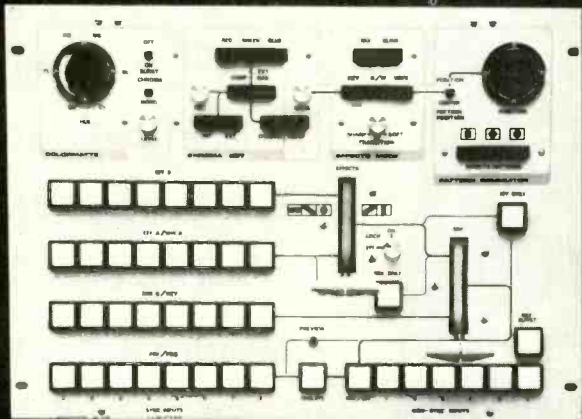
## **RECORTEC, INC.**

777 PALOMAR AVENUE • SUNNYVALE, CALIF. 94086 • PHONE (408) 735-8821

Circle 131 on Reader Service Card

# VISCOUNT 1150B PRODUCTION SWITCHER

PROFESSIONAL...  
and... AVAILABLE



## KEY FEATURES:

- \* 14 inputs - 8 sync, 6 non
- \* 4 busses
- \* 27 std. wipe patterns
- \* int., ext., chroma key
- \* composite, ext. RGB
- \* soft key, wipe of key
- \* mix-blink on wipe-key
- \* spot light effect
- \* black burst, clr. mat. gen
- \* 'on-air' inputs indication
- \* full preview
- \* colour timed, any path
- \* vert. int. switching
- \* processing amplifier
- \* remote control panel

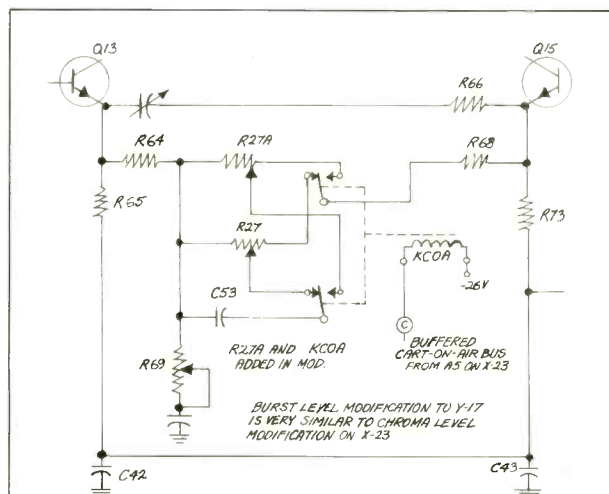
\* \$9250 - '1150B'  
(shown above)

also available:

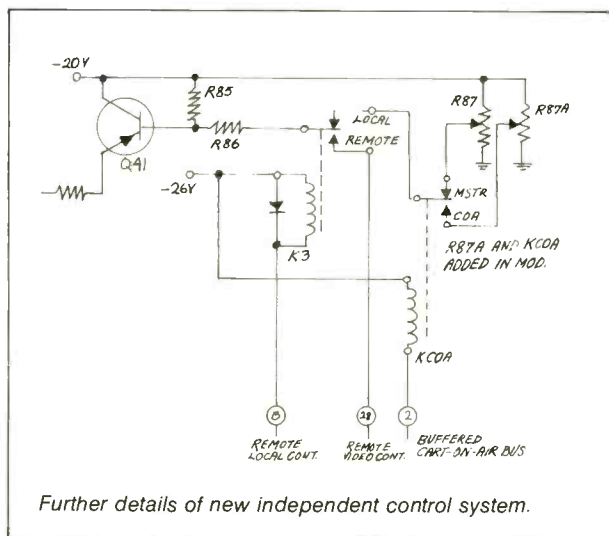
\$7500 - '1150A'

**VISCOUNT INDUSTRIES LTD.**  
105 EAST 69th AVENUE  
VANCOUVER, BRITISH COLUMBIA  
CANADA V5X 2W9  
PHONE (604) 327-9446 TELEX (04) 508-605

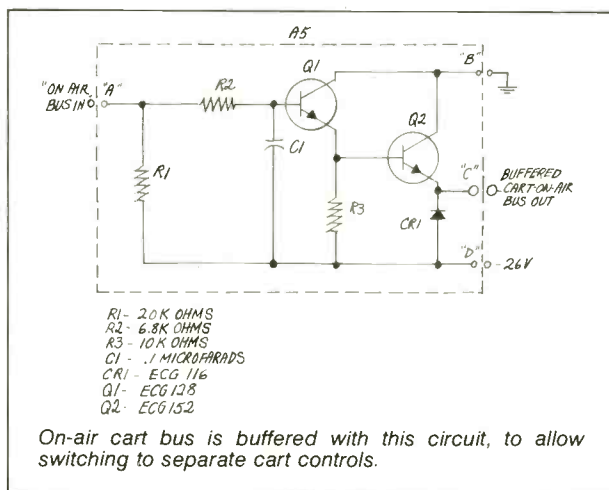
## GREAT IDEAS



New control and relay in Engineer Williams modification allow setting levels of cart and reel-to-reel separately.



Further details of new independent control system.



On-air cart bus is buffered with this circuit, to allow switching to separate cart controls.

chroma level on the reel-to-reel may (or may not) be the same as the cart. To eliminate improper video levels on either the cart or reel-to-reel, depending on which was chosen to set the levels, we have installed separate video, chroma and burst level controls for both

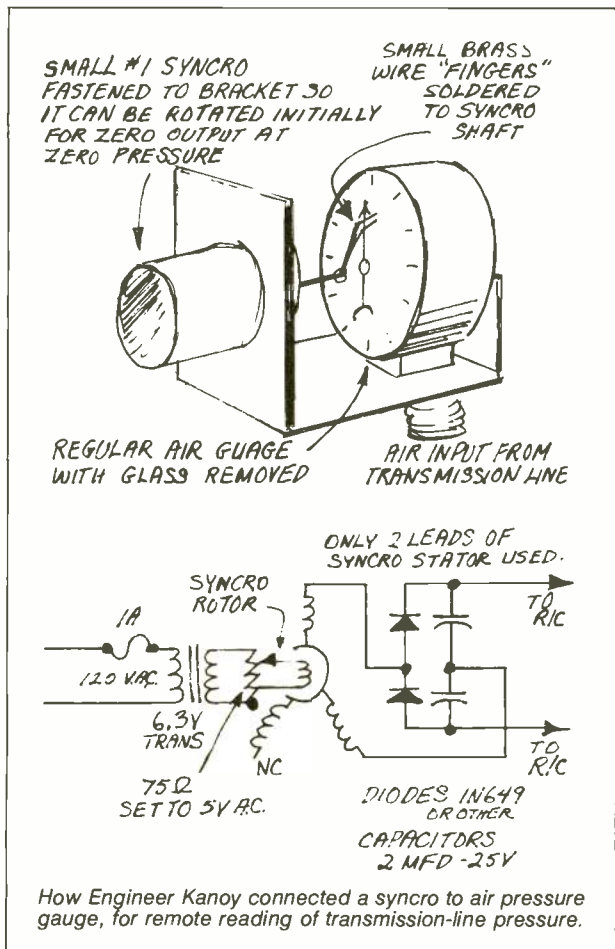


machines. The burst level control also was needed because the chroma control affects burst level.

The cart machine provides a vertical interval switched cart-on-air bus for switching between the playback -100 and -61 at the proper time. By taking this bus output and buffering it, we now have a buffered cart-on-air bus capable of driving the relays necessary for switching to the separate cart controls when this machine is operating. The new controls were mounted in such a manner to complement the appearance of the machine. Push-to-turn knobs were used on the added controls so they can't be adjusted inadvertently.

## 20. Measure Transmission Line Pressure Remotely.

Lewis Kanoy, Engineer, WFDD-FM, Winston-Salem, N.C.



**Problem:** To measure transmission line dry air pressure remotely at the studio control point.

**Solution:** Air pressure, as measured on a standard air gauge with the glass front removed, is used to drive the rotor of a small syncro via small brass wire fingers coupled to the pointer. The syncro is a small surplus unit designed for 400 cycle current at 24 volts, but it works well on 60 cycle AC when voltage is dropped to 5 VAC. To set up the meter as shown in the diagram, connect the reduced voltage to the rotor. Then rotate the syncro in the bracket until there is no induced voltage in the stator connections. This corresponds to zero line pressure. The

continued on page 58

**Anyway you look at them, Unimedia's SMT color monitors are good news! Professional quality . . . affordable prices.**

The SMT Line is a complete family of one-gun color monitors, from 9-inch portables and rack models through 12, 15, 17, up to 19-inch rack-mount models. All share the same clean styling, single gun color tube picture quality, and blue-gun only set-up convenience. Professional options include pulse-cross, A-B input, external sync, switchable underscan, and tally-light features. Most are priced right around \$1,000. Some higher . . . some considerably less.

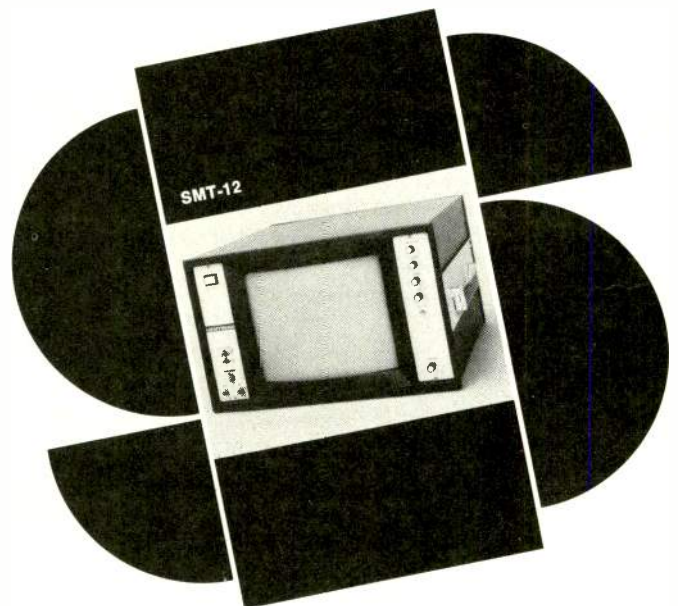
If you're a broadcaster, CCTV or Cable operator, or production studio operator you can share in the dollar savings inherent in Unimedia's simple, straightforward SMT design. Now you have a golden opportunity to replace obsolete monochrome models with new SMT color monitors at attractive prices. Or replace temperamental large-screen color jobs with SMT 12s, 15s, 17s, or even the new 19s. If you're starting a new facility, Unimedia monitors can save enough to buy you an additional piece of needed equipment.

And Unimedia SMT Color Monitors are professional in every sense of the word. Their long-term dependability is the result of engineered design simplicity and quality components. We've delivered over four thousand units to satisfied customers in the last four years. You'll find NTSC and RGB models. In the nine-inch line you'll choose from singles, duals, and combination models with waveform monitors, vectorscopes, or audio speaker-amplifiers. Or combine a color nine with a high resolution monochrome nine for camera focus and registration.

You really owe it to yourself to check out the complete Unimedia line before you install another monitor in your facility. Write . . . or phone today. Remember . . . saving money isn't all that bad!

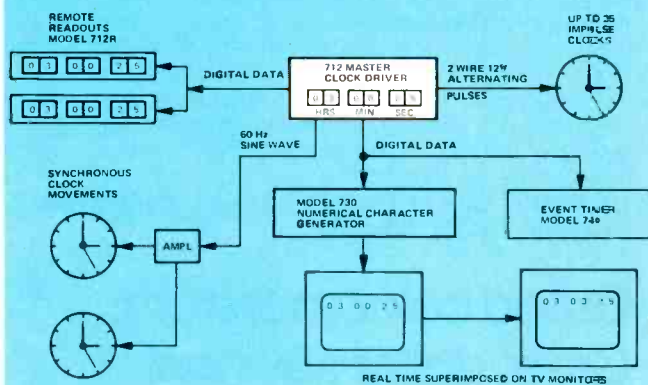
**UNIMEDIA, Lake of The Pines, Auburn, California 95603**  
Telephone: (415) 782-2600.

## Grand color monitors... Great dollar savings!



**unimedia**  
**unimedia**  
**unimedia**  
**unimedia**

# Cooke Model 712 Master Clock and Time Distribution Systems



Timing excellence for the small station — only \$1250.

- High intensity 12 or 24 hour digital readout.
- Accuracy of 1 second per month from internal time base. Also accepts external reference.
- Includes double count and fractional second controls.
- Auto switching to DC battery power if AC is lost.
- Master operates remote digital readouts, synchronous movements, and impulse clocks.
- Digital data output controls Cooke Event Timers, Numerical Character Generators and other equipment.

*Cooke Engineering Company*

Division of Dynatech Laboratories, Inc.  
900 Slaters Lane • Alexandria, Va. 22314 • 703/548-3889

Circle 134 on Reader Service Card

## GREAT IDEAS

syncro is now fastened permanently to the bracket.

Now as air pressure rotates the syncro rotor, voltage is induced in the stator for meter read-out. We found a voltage doubler circuit gave us a more workable range. A small chart showing remote meter readings vs. air pressure can be made to give actual air pressure in pounds.

## GREAT IDEA CONTEST 1975: RULES

**1. Eligibility:** All station personnel are eligible. Consultants to the industry may enter if the entry indicates the specific station or stations using the idea or concept. Manufacturers of equipment or their representatives are not eligible.

**2. How to Enter:** Use the Official Entry Form on this page or simply send *BM/E* a description of your work. State the objective or problem and your solution. Include diagrams, drawings, or glossy photos, as appropriate. Artwork must be legible but need not be directly reproducible but not exceeding three in number. Camera reproducible material is preferred. Length can vary, but should not exceed 500 words. *BM/E* reserves the right to edit material. Entry should include: Name, title, station affiliation, and the class of station—TV, FM, AM. Indicate if idea is completely original with you.

**3. Material Accepted for Publication:** *BM/E* editors will make all decisions regarding acceptability for publication. If duplicative or similar ideas are received, *BM/E* editors will judge which entry or entries to accept. A \$10 honorarium will be paid for each item published.

**4. Voting:** Every reader of *BM/E* is entitled to rank the ideas published. This can be done on the Reader Service Card in the magazine or by letters or cards sent to the *BM/E* office. To vote, readers should select the three ideas they like best and rank them 1, 2, or 3.

**5. Winners:** Relative ranking of each month's entries will be published periodically. Top-rated entries for various categories will be republished in late 1975 for a second and final round of scoring. Final winners will be picked in February 1976 and notified by mail. Winners will be published in the March 1976 issue of *BM/E*.

**6. Prizes and Awards:** Three top prizes will be awarded: a color TV set for the entry receiving the most votes in the respective categories of AM, FM and TV. Ten AM-FM radios will be awarded as secondary prizes for the highest voted entries in the following additional categories (except the three top winners): audio (three prizes one each in categories AM, FM, TV); (three prizes one each in the categories of AM, FM, TV); Control (three prizes one each in the categories of AM, FM, TV); Video (one prize in TV).

### Entry Form for *BM/E* Great Idea Contest—1975

Mail to: Editors, *BM/E*  
274 Madison Avenue  
New York, New York 10016

Name \_\_\_\_\_ Title \_\_\_\_\_

Station Call Letters \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_ Zip \_\_\_\_\_

Telephone No. \_\_\_\_\_

Licensee \_\_\_\_\_

Class of Station at which idea is used (check one)

TV \_\_\_\_\_ FM \_\_\_\_\_ AM \_\_\_\_\_

Category: Audio \_\_\_\_\_ RF \_\_\_\_\_ Video \_\_\_\_\_ Control \_\_\_\_\_

Objective or Problem: (in few words; use separate sheet for details) \_\_\_\_\_

Solution: (Use separate sheet—500 words max)

I assert that, to the best of my knowledge, \* the idea submitted is original with this station; and I hereby give *BM/E* permission to publish the material.

Signed \_\_\_\_\_ Date \_\_\_\_\_

\*If you feel credit for prior work or antecedents should be given to someone outside of the station, indicate to whom and when.

# BROADCAST EQUIPMENT

For more information  
circle bold face numbers  
on reader service card.

**Modular broadcast color television camera**, the model BCC-1, features a weatherproof head housing, optical assembly suspended on a single front casting with a one-point suspension hook-on lens mount, and tiltable viewfinder. A return viewfinder feed enables the operator to view the same picture on his viewfinder that the director sees on the switching monitor. One



person can set up both camera and CCU with the built-in stairstep, pulse and bar test signals. Measuring 22" long x 19" wide x 11" high and weighing 79 pounds without lens and viewfinder, the BCC-1 ranges in price from \$70,000 to \$107,000, depending on accessories. Deliveries are scheduled to begin in December 1975. AMPEX. **300**

**Portable video system** features three components: the BCC-2 hand-held color camera, VR-3000B battery-powered video tape recorder/playback and TBC-900 digital time base corrector. The BCC-2 camera head, equipped with 10X zoom lens and portable viewfinder, weighs 15 pounds and runs for 1½ hours on batteries. The 55-pound VR-3000B records at 15 and 7½ ips,

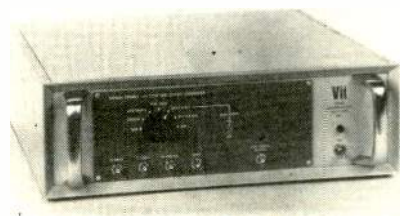
and includes automatic backup and restart logic that puts recorded segments immediately next to each other on the tape. The TBC-900 time base corrector includes auto-chroma, velocity compensator, demodulator unit, dropout compensator, and standard sync generator. System price is approximately \$125,000. AMPEX **301**

**Data interface module** plugs onto the Slimline digital panel instruments from Nationwide Electronic Systems and makes them ASCII compatible. Called the ASCII Bustle, it permits any of these instruments (clocks, timers, DVMs, thermometers) to be connected directly to printers, teletypewriters, CRT displays, modems, computers and other ASCII devices. Up to 100 panel



instruments can be connected on a single pair of wires, and any one instrument can be interrogated by transmitting its ID. The input/output of the module is 10 or 11-bit ASCII from 110 to 9600 baud. DTL/TTL, 20 mA, 60 mA, and EIA RS232C interfaces are all available. Prices range from \$195 to \$256. NATIONWIDE ELECTRONIC SYSTEMS **302**

**CCTV test signal generator** helps evaluate the video signal transmission and storage quality of recorders, distri-



bution amps, switchers and special effects generators. The Signal Source 101 combines these test signals: multi-burst, gray scale, pulse and bar, window, bar, dot, and flat field. An internal sync generator accessory is available, useable at any scanning rate, and provides outputs in the format of EIA Standard RS-170, RS-330 and RS-343, including H Drive, V Drive, Blanking and Sync. The instrument can be calibrated for operation at various scan rates from 525 to 1225. Price is \$1,495. The internal sync accessory costs \$500. VISUAL INFORMATION INSTITUTE INC. **303**

**Turntables** for the audiophile or small broadcaster include the L-85 IC. This model has a 16-pole synchronous motor with belt drive, integrated circuitry, illuminated stroboscope, viscously damped spring suspension and anti-skating device. The Swiss-made turntable (Lenco) has a 12½-inch platter, and is priced at \$303.50 with dust cover and base. JHER OF AM. **304**

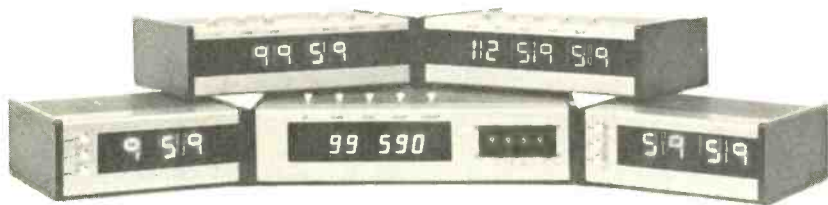
**Super-8 horizontal editing machine**, model PPC-M, is a 4-plate (one picture, one sound track) device with the following features: variable speed control, 5 x 7-inch screen, built-in mixer and preamp. Modular additions enable the basic machine to expand to a 2-picture, 3-sound track table. SUPER 8 RESEARCH ASSOCIATES **305**

**Low-cost color video production system** uses Super-8 products; a mass-market movie camera and new sync sound recorder, the Super 8 Sound. Recorder combines functions of on location recorder, studio dubber and transfer recorder. Editing is done by cutting film and sound using conventional film editing practices. Transfer of the edited program material to video is done on the Kodak Videoplayer VP-1 which uses a flying-spot-scanner technology to encode the video output into a fully-interlaced NTSC signal. SUPER 8 SOUND **306**

**Flat cable mount** attaches cable to panels or cabinets at right angles to the mounting surface. The flat cable run is held between two mounting devices and secured using an intermediate cross-section cable tie. A stand-off ac-

# PERFECT TIMING

## Low Cost ESE Right On Timers



- ES-300: Four digit incandescent display, one hundred minute timer (99:59) with six controls: Count Up, Count Down, Min-Set, Sec-Set, Stop, Reset. **\$168.00**
- ES-301: Identical to ES-300 except with planar, gas discharge display. **\$185.00**
- ES-302: Equivalent to ES-301 plus fast-set lever wheel programming. **\$238.00**
- ES-400: Three digit ten minute timer (9:59) with Start, Stop, Reset. **\$ 98.00**
- ES-510: Four digit sixty minute timer (59:59) with Start, Stop, Reset. **\$125.00**
- ES-500: Six digit, twelve hour combination clock/timer with five controls: Start, Stop, Reset, Fast Advance, Slow Advance. **\$150.00**

**STANDARD OPTIONS AVAILABLE:** Kit; Slave; BCD Output; Remote Connector; 6' Remote Cable and Pushbutton Set; 220V A.C., 50Hz; 9" or 19" Front Panel 3½" high; 3 Wire Cord and Molded Plug. Tenths of seconds are available on all timers except the ES-500. Relay Contact Closure at Zero and/or Stop at Zero available on ES-300, 301, and 302. Crystal Timebase available for ES-500. Custom options and special orders available.

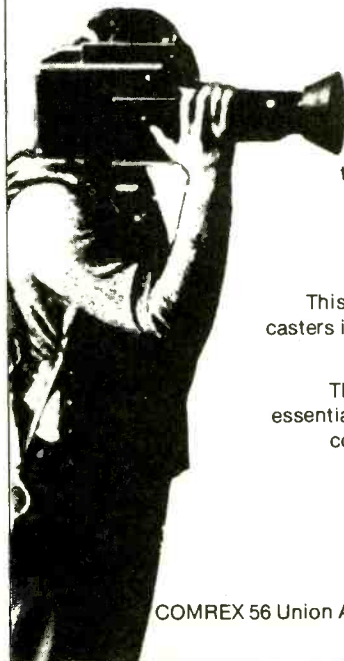


WRITE, WIRE OR CALL TODAY

505½ Centinela Avenue • Inglewood, California 90302 • (213) 674-3021

Circle 135 on Reader Service Card

# ABSOLUTELY FREE



If your hard news is becoming entangled in cables, COMREX can change that to an absolutely free approach. The COMREX 450 MHz Wireless Microphone System allows absolute freedom from wires and restricting cables. News gathering becomes a natural, unrestricted piece of information rather than the traditional bound-to-the-camera type of reporting.

The "COMREX 450" is a rugged high frequency system which provides extremely reliable operation along with broadcast quality audio.

This is a legal system. The FCC permits its use by broadcasters in the 450-451 MHz remote broadcast band under FCC rules, Part 74, Subpart D. Paragraph 74.437.

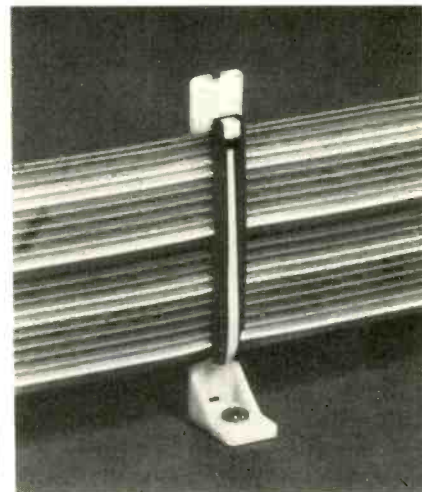
The COMREX 450 MHz Wireless Microphone System is essential for "HARD NEWS" coverage. Call or write today for complete information and arrange for a demonstration.

## COMREX

COMREX 56 Union Avenue/Sudbury, Massachusetts 01776 617/358-4042  
"Where ever broadcast news happens!"

Circle 136 on Reader Service Card

## PRODUCTS



cessory is mounted to almost any surface in any position. Three available cable plates accommodate flat cable widths up to 3 inches. **PANDUIT 307**

**Reel-to-reel recorder/reproducer, series 1400**, is built on a die-cast aluminum main frame, and has a DC servo drive system. Units are available in full, half, and quarter track head configurations and operate at 3¾, 7½ and 15 ips. At 15 ips the stated frequency response is 35 Hz to 22 kHz ± 2



dB, and a 60 dB signal-to-noise ratio. The series is equipped with a dual-tap power transformer for 110-130 VAC and 220-260 VAC 50/60 Hz service. The rack mount units are priced from \$1,645. Remote control stations are optional. **TELEX COMMUNICATIONS 308**

**Portable equipment carrying case, the model A30A**, protects remote gear. The A30A is made of ½-inch plywood covered with fabric-backed vinyl and has heavy-duty latch assemblies and handle. On-location gear can be operated by removing the case front and rear covers. The carrying case can be used with any rack-mountable equipment of 3½-inch height, besides Shure products for which it was made. Price is \$55.50 net. **SHURE BROTHERS 309**

**Power line frequency stabilizers for**

**We guarantee**  
the unique  
individually tested

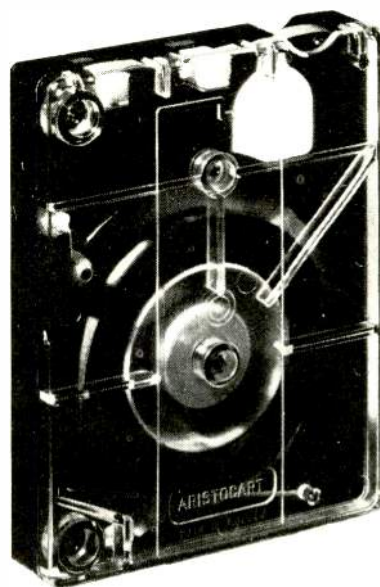
**ARISTOCART**

will deliver  
a consistently higher  
standard of voice and  
music reproduction  
than you'll get from  
any other cartridge on  
the market.

**SPECIFICALLY:**

Aristocart's exclusive internal guidance system delivers reel-to-reel fidelity — 20Hz to 15kHz — for the life of the tape. Phase stability is better than 90° to 12.5kHz with any properly aligned machine. Wow and flutter have been minimized.

Every Aristocrat cartridge is factory tested before shipment for phase and frequency response. We replace at our expense any cartridge which fails to perform within areas indicated.



**believe your own ears**

Switch to

**ARISTOCART**

A DIVISION OF WESTERN BROADCASTING LTD.  
505 Burrard Street, Vancouver, Canada V7X 1M6  
Tel. (604) 687-2844

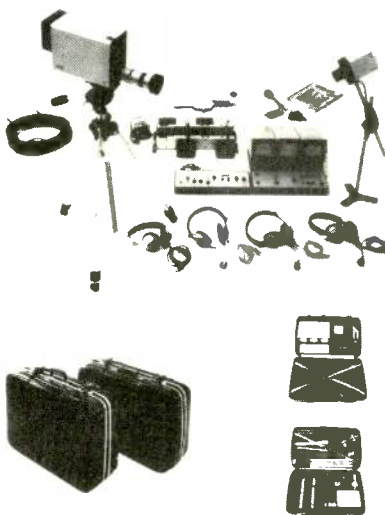
Distributors: U.S.A. — McCurdy Radio Industries Inc., Buffalo N.Y. — IGM, Bellingham, Wash. CANADA — McCurdy Radio Industries Ltd., Toronto, Ont. — L. A. Varah Ltd., Vancouver, B.C. GREAT BRITAIN — Selkirk Communications Limited, London, Eng. AUSTRALIA — Syntex Electronic Distributors, Pty., Castle Cove, N.S.W.

Circle 150 on Reader Service Card

JULY, 1975—BM/E

50, 60, or 400 Hz, and with stabilities of 0.1%, 0.01% or 0.0001%, control frequency-sensitive instruments where greater than available power line stability is needed. A typical application includes powering closed circuit TV and helical scan video tape recorders in mobile TV trucks. Available in a choice of single-phase power output capabilities from 100 VA to 6 KVA, the frequency stabilizers also provide 0.1% amplitude stability as standard with servo feedback amplitude stability to 0.01% available as an option. Output voltages of 0 to 120 volts rms are standard with other ranges to 270 volts available. Prices start at \$720 for the 100 VA model. CALIFORNIA INSTRUMENTS 310

Two-camera b&w TV audio-visual program origination center packs into two luggage-sized carrying cases. Suited for non-professional applications, the Mini-Studio produces scenes originating from microscopes, 35 mm slides and film projectors as well as caption material. Video and aural output can be recorded on a VTR. The Mini-Studio includes two cameras,



a 3-monitor console, generator, video mixer-fader-special effects generator, audio mixer, microphones, tripods, all cables, power supplies and lenses. The system is energized from 117 volts AC or 12 volts DC, and consumes 85 watts. The output signal waveform is in accordance with EIA RS-170 specifications. PHILIPS AUDIO VIDEO SYSTEMS CORP. 311

Reel-to-reel tape deck with Dolby B noise reduction system, the model A-2300SD, features three motors, three heads and electronics that are optimized for the encode/decode processing of the Dolby system. Signal-to-noise ratio is said to be 74 dB. There is an FM/Copy switch on the back which allows the user to record broadcast program material encoded while simul-

**what's a  
nice color  
like  
bright rose  
doing with  
bastard  
amber?**

Bright Rose  
and Bastard Amber!  
Just two of 23 colors in  
the Gelatran line up.

**Gelatran® Color media by Colortran.**

Excellent transmission and color range. For motion pictures, television, theatrical and photographic applications, indoors and out.

Moisture proof, heat and fade resistant. Won't dry out and crack with age. Tear and puncture resistant. Deep dye technology outlasts all other expendable media. Comes in rolls and sheets.

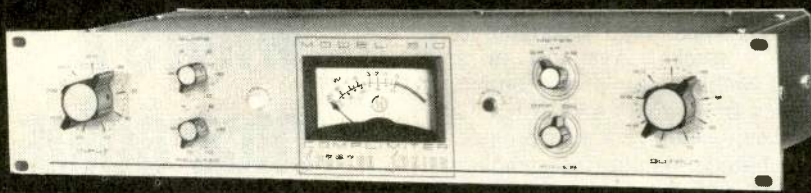
Free Gelatran swatch book on request. Write today . . . See Bright Rose, Bastard Amber and their colorful friends, True Blue, Surprise Pink, Warm Straw and many others!

**Colortran**

A Division of Berkey Photo Inc. Berkey Colortran • 1015 Chestnut St. Burbank, Calif. 91502 • 213 843-1200

Circle 137 on Reader Service Card

# COMPLIMITER™



MODEL 610

Used in recording studios; disc mastering studios; sound reinforcement systems; TV, AM, FM broadcast stations to maintain a *sustained average signal* at a level *significantly higher* than that possible in conventional limiters, and with performance that is seldom attained by most *linear amplifiers*. Rack mounted, solid state, functional styling, the Model 610 is in stock for immediate shipment.

Specifications are available from:

**SPECTRA SONICS**

770 WALL AVENUE, OGDEN, UTAH 84404  
(801) 392-7531

Circle 139 on Reader Service Card

## Announcing VTC-1000



### All-new Mastering Video Tape \$160.00 per hour\*

From the Video Tape Company—the firm that promptly supplies any of your video tape needs!  Prices lower than all competition—including Program Duplicating Stock @ \$125.00 per hr./ Spot Duplicating Stock @ \$1.00 per min. \*—(22 min. max. length)  100% guaranteed.  VTC-1000 promises: low dropouts  hi signal-to-noise  excellent color performance  extended headwear  exceptional durability  each reel tested end-to-

end.  Lowest prices. Guaranteed quality. And immediate, personal attention to every video tape product or service you need.\* And we'll pay the freight anywhere in the continental U.S. with each order of 6 or more reels! (In California, add 6% for sales tax.)  
**Call collect: (213) 985-1666**



4212 Lankershim Blvd.  
N. Hollywood, Ca.  
91602  
Keith Austin, Pres.

Mail this coupon today for free price-and-information brochure.

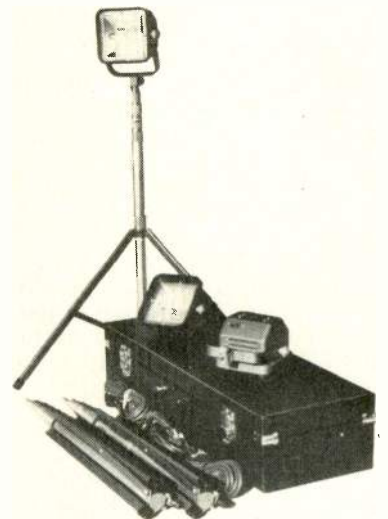
Name \_\_\_\_\_  
Title \_\_\_\_\_  
Company and/or Channel \_\_\_\_\_  
City \_\_\_\_\_  
State \_\_\_\_\_ Zip \_\_\_\_\_

Circle 138 on Reader Service Card

## PRODUCTS

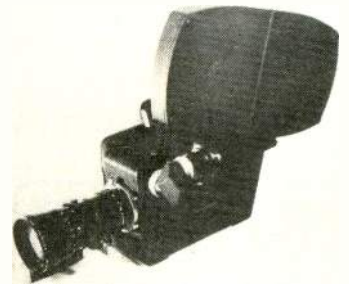
taneously monitoring the decoded signal. Any external Dolby source can be decoded with the A-2300SD. Retail price is \$739.50. TEAC **312**

**Location lighting kit** weighs 17½ pounds. It includes three non-focusing miniature broad fill lights, three 10 foot long three-wire cables with in-line switches and parallel blade U-ground



plugs and three aluminum light stands. Called 'Cat Kit,' it operates at 120 volts AC/DC with 650 watt double-ended quartz lamps. Price is \$275. CINEMA PRODUCTS CORP. **326**

**Zoom lens** ranges from 10-150 mm. Model 15 × 10 is offered with BCP mount for use with all Angenieux CP-16R reflex 16 mm cameras. This lens can focus down to 32" from the image plane to cover a 1-inch × 1⅜-



inch field size. Working distance in this position is 24-inches. Accessories include a rubber sunshade, a data ring set, and bracket for the J-5 zoom control. Price is \$2,850. CINEMA PRODUCTS CORP. **317**

# Matthey LOW PASS VIDEO FILTERS



with phase equalization

Impedance.....75Ω

Frequency range 0.5MHz to 10MHz

Supplied in metal box with BNC connectors or PCB

Basic Loss Approx..... 0.5dB

Insertion Loss:

Frequency	3dB@	≤45dB@
4.5MHz	4.56mHz	5.63mHz
5.5MHz	5.65mHz	6.92mHz

Price.....\$ 133.00

Television Equipment Associates, Inc.  
 BILL PEGLER 516 • 628-8068  
 Box 1391 • BAYVILLE, N. Y. 11709 **TEA**

Circle 140 on Reader Service Card

# NEW LIT

For copies of these literature offerings, circle number for appropriate items on Reader Service Card.

**Antennas and ground communications equipment** for single channel per carrier, television receive-only, shipboard terminal and tracking, telemetry and command systems are described in new brochure. Product descriptions and application notes for satellite communications uses included. Scientific-Atlanta, Inc. **250**

**Proposed AM stereo transmitting system** described in new booklet. Evaluation criteria for AM stereo broadcast systems also discussed. RCA. **251**

Series of continuous voltage **tunable phase shifters** described in technical data sheet. Units are available with any center frequency from 1-18GHz with up to full octave frequency bandwidth. Engelmann Microwave Co. **252**

A 20-page, full color **Fan and Blower Catalog** describes series of fans guaranteed for the life of the product in which installed. Catalog also contains performance curves, rating tables, specifications, application data, dimensional drawings. Howard Industries. **253**

Complete line of **frequency synthesizers** and related instrumentation described in new 36-page, two-color catalog. Eleven standard instruments, or families of instruments, for frequency synthesis are presented in 29 pages. Adret Corp. **254**

A 70-page "**Wire and Cable Engineering Guide**" is intended for engineers who specify wire and cable in a variety of applications: computers, telecommunications, process control, aerospace, and electronic systems. Available at \$10 per copy from Brand-Rex Co., Publication WC-74, Willimantic, Conn. 06226. **255**

Optically-tuned set-up or remote control **converter for CATV** is the subject of new specification sheet. Complete descriptions and features provided. Magnavox. **256**

Regulated high voltage DC **power supply modules** are described in new product specification sheet. Outline drawings, dimensions and installation instructions included. Spellman High Voltage Electronics, Corp. **257**

**Solid state modular communication**

system, including equipment for radio, microwave and multiplex installations in 960MHz and 2GHz bands, is described in free 12-page brochure. Descriptive text, charts and illustrations included. Cardion Electronics. **258**

**A 15-foot transportable satellite terminal**, including equipment designed for trans missions to and reception from synchronous satellites in bands 592HZ and 3700-4200MHz, is described in a new bulletin. Three types of feed systems: circular, linear and CP or LP modes are described. Complete specs plus details for antenna reflector and mount are provided. RF Systems, Inc. **259**

**Surge supressor cross reference** listing nearly 140 competitive part numbers and the IR replacement units is now available free of charge. International Rectifier Corp. **260**

**Hysteresis synchronous torque motors** and a series of automatic cartridge tape splice finders and bulk erasers are described in a single page catalog sheet. UMC Electronics. **261**

New, **noise-canceling microphone** for the noisiest environments is described in free bulletin. Frequency response, 100 to 6,000HZ, rising to 4,000Hz. Shure. **262**

# EBS 760

**EMERGENCY BROADCASTING SYSTEM**

**READY WHEN IT COUNTS!**

Write or call for full facts on the most important investment you'll ever make.

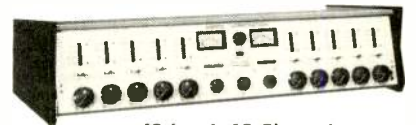
**TET TIME & FREQUENCY TECHNOLOGY INC.**  
 3000 Olcott St., Santa Clara, CA. 95051 (408) 246-6365

Circle 142 on Reader Service Card

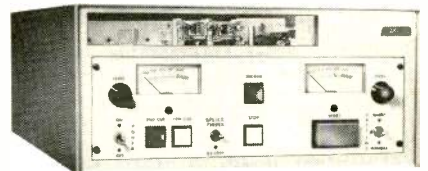
## Station Managers: AMPRO HAS PROVEN THAT YOU CAN DO IT . . .

We have designed a line of Audio Consoles and Cartridge Tape Equipment that has all the technical features and reliability of the most expensive equipment on the market. The only difference is in the cost of our equipment. It allows you to stay well within your budgets.

Before you sign that purchase order for your new Consoles and Cart Equipment, have your CE check out AMPRO. Financing available to qualified buyers. Call collect today for details.



40 Input, 10 Channel Stereo Console



Stereo Recorder/Reproducer with Splice Finder Option



**AMPRO CORPORATION**  
 2220 MAPLEWOOD AVE.  
 WILLOW GROVE, PA. 19090  
 (215) 657-3100

Professional Equipment For Broadcasting Professionals

Circle 141 on Reader Service Card

# BM/E CLASSIFIED MARKETPLACE

## CLASSIFIED ADVERTISING RATES

DISPLAY CLASSIFIED ADVERTISING: \$32.50 per inch 1x; \$30.00 per inch 6x; \$27.50 per inch 12x. ALL OTHER CLASSIFIED ADVERTISING 35¢ per word; minimum \$3.50. BLIND BOX NUMBER: \$1.00 extra charge. Replies sent to address below will be forwarded to you. PAYABLE IN ADVANCE; send check with order. CLOSING DATE: 5th of 2nd month preceding issue date.

BM/E, Monterey and Pinola Avenues, Blue Ridge Summit, Pa. 17214 Phone 717/794/2191

### EMPLOYMENT OPPORTUNITIES

## TECHNICAL INSTRUCTOR

### SOLID STATE/VTR/TV EXPOSURE Metropolitan NYC area

Significant opportunity to join this major international electronics manufacturer in the capacity of technical instructor.

The scope of this position encompasses conducting technical classes for service technicians in the repair of TV and VTR equipment.

The successful candidate should have exposure to and experience in Solid State TV, technical bench experience with academic background (technical school graduate). VTR desired, however if not, we will train. Some light travel required.

We offer a good starting salary, comprehensive benefits package and growth opportunity in a progressive environment.

Send resume including salary history & req'ts:

Box #775-2, c/o BM/E Magazine, Blue Ridge Summit, Pa. 17214

An Affirmative Action Employer M/F

### FIELD SERVICE ENGINEER

Extensive Travel. All Benefits. Experience in Color video and switching systems preferred. Contact: Mr. Buzan, Vital Industries, Inc., 3700 N.E. 53rd Avenue, Gainesville, FLA. 32601 Phone: (904) 378-1581.

CHIEF ENGINEER—Troubleshooter and man who likes exciting audio sounds want to caress carousel, activate automation, and make our small Midwestern daytimer sound better than anyone else. Good salary and good challenge with extra money for extra skills. Reply to Box 775-1, c/o BM/E Magazine, Blue Ridge Summit, PENNA. 17214.

WANTED: Committed Christian television engineer qualified in VTR, color camera and microwave maintenance for studio and remote truck operations. Christian production center in Southeast. Salary commensurate with experience and ability. Send resume to P.O. Box 25328, Charlotte, N.C. 28212.

### EQUIPMENT FOR SALE

**CLEARANCE SALE—MAKE OFFER ALL OR PART**  
ALLEN cable equalizers—eight on panel, CONRAC and AV 12C tuner—RM twin seven inch tube-type monitors, GRASS VALLEY 761 SYNAC with color lock, EICO 315 RF signal generator, HEATH TV sweep generator, DAGE 431 sync generator, RIKER 540F special effects generator cards and rack mounts plus OA's—color bar generator—no control panel, needs rack wiring, 3M BW drop out comp, TEKTRONIX RM 526 vectorscope—RM 529 "A" scope—511 AD with cart, SONY CV2100 BW VTR with 10 hours tape, CLT-A color pack. All schematics and manuals included. A.O.F. INDUSTRIES, P.O. Box 732, Los Angeles, CAL. 90028. Phone: (213) 465-3030.

One stop for all your professional audio requirements. Bottom line oriented. F.T.C. Brewer, Box 8057, Pensacola, Florida 32505.

TWO IVC VTR's model 870 editing and remote control. One model 700 playback. All excellent condition. Best Offer. Jim Merriam. (813) 649-7626.

SPOTMASTER, FIDELIPAC, RUSSCO, ROH, ELECTRO-VOICE, OTARI, RAMKO, SCOTCH, STANSON, NORTONICS, SHURE, SENNHEISER, TELEX, MAGNECORDER AND VIKING are all items distributed and serviced by COMMUNICATION MEDIAS/BROADCAST COMPONENT DISTRIBUTORS, P.O. Box 54, Allentown, PA. 18105. (215) 437-0607. "Sudden Service"—Our Specialty.

### EMPLOYMENT OPPORTUNITIES

### EQUIPMENT FOR SALE (Cont'd)

COMPLETE GATES—ATC automation system with 3, r to r Stereo record-playbacks plus 3, single cart machines and 1, 55 cart machine. \$7,500. See in operation. Available July. Radio Station XKIC-FM, Iowa City, IOWA. 52240. Phone: (319) 354-1181.

- RECORDING STUDIO AND BUSINESS FOR SALE**
- DESIGNED FOR INDUSTRIAL, COMMERCIAL AND MUSIC PRODUCTION
  - LARGE & BEAUTIFULLY APPOINTED STUDIO, CR, OFFICES, LOUNGE & SHOP
  - 12 x 4 CUSTOM CONSOLE—FULL EQ, COMP, ECHO, ETC.
  - STUDIO INSTRUMENTS—GRAND PIANO, MOOG
  - ESTABLISHED, SIX YEAR OLD BUSINESS
  - SUCCESSFUL HISTORY WITH MAJOR COMPANIES AND FAMOUS ARTISTS
  - LOCATED IN BEAUTIFUL MIDWEST COMMUNITY
- Call Mr. Roehl for full information. (507) 454-5160.

SPOTMASTER PARTS—24 hour service—repairs and rebuilding of your equipment. Franchised SPOTMASTER repair service. COMMUNICATION MEDIAS/BROADCAST COMPONENT DISTRIBUTORS, P.O. Box 54, Allentown, PA. 18105. (215) 437-0607.

### Lebow Labs Inc. 56 Chestnut Hill Ave. Boston, Mass. 02135

New England's foremost pro audio/video distributor. Representing over 100 major manufacturers. Sales, consulting, design, and service by expert staff. Broadcasting, industrial, educational, and recording installations. Contact:

Frank Petrella (617) 337-6303 or  
(617) 782-0600

AMPEX, SCULLY, TASCAM, all major professional audio lines. Top dollar trade-ins. 15 minutes George Washington Bridge. PROFESSIONAL AUDIO VIDEO CORPORATION, 342 Main Street, Paterson, N.J. 07505. (201) 523-3333.

FOR SALE: RCA TR-70B highband video tape machine—good condition—loaded covec, VCC, editor, TEP, RCO, 3 Heads \$55K. Contact Don Hain, WQLN-TV, 8425 Peach Street, Erie, PA. 16509, or (814) 868-4654.

MICA AND VACUUM transmitting capacitors. Large stock; immediate delivery. Price lists on request. SURCOM ASSOCIATES, 1147 Venice Boulevard, Los Angeles, Calif. 90015. (213) 382-6985.

### EQUIPMENT FOR SALE (Cont'd)

Broadcast mixer for remote out of studio programming. Can be used as inexpensive second console for college and small radio stations. D.J.'s can now originate programming at home. Simultaneous mixing of two stereo phonographs, a tape machine and a microphone. Precise for all inputs with built in monitor headphone amplifier. Send for literature. 8-325. Professional discount, use letterhead. G.L.I. Box 2076, DEPT BM E, Brooklyn, N.Y. 11201. Phone: (212) 875-6992.

BROADCAST AND RECORDING EQUIPMENT: Scully, V.I.F. International, Metrotech, Langevin, Electrodyne, Q.R.K., Micro-Trak, MRL, Nortronics, McMartin, U.R.E.I., E.V., A.K.G., Stevenson, Gately, D.B.X., Advent, Altec, Fairchild, Audio Designs, 3M, Magnecord, Telex, Inovonics, Nagra, Uher, Tape-Athon, Package Deals, Installations, Service, Request Flyer. Weigand Audio, Middleburg, PA. 17842. (717) 837-1444.

### AUTOMATION STEREO SYSTEM FOR SALE

SCHAFFER 800 C/W ALL OPTIONAL EQUIPMENT and six years old:

- 10 stereo sources, 1 stereo output +4DBM, 6 rows of sequence switches (5 optional) make it possible to run 6 different formats with format selector
- Network joiner provides 15 function and the capability to terminated the program in one second
- Program control is by means of a 25Hz tone, photo cell and window tape or by real time using internal pin clock
- An Audio clock provides live time announcements at one minute intervals on reel to reel machines
- Four TRU-8 record units (3 optional) will allow to prepare program material for the Automation System on Auxiliary Equipment
- Silence sensor and many other features

### BEST OFFER

FOR INFORMATION CONTACT:  
Mr. Kurt Mayer  
Ryerson Polytechnical Institute  
50 Gould Street  
Toronto, Ontario  
M5B 1E8 595-5287

WHATEVER YOUR EQUIPMENT NEEDS—new or used—check us first. We specialize in broadcast equipment. Send \$1.00 for our complete listings. Broadcast Equipment and Supply Co., Box 3141, Bristol, TN 37620.

CCA AM250D Transmitter. Excellent. Low Hours. Now in use. \$2,900 FOB San Bernardino, CA. LaVern Garton. (714) 885-6555.

Solid state audio modules-console kits, power amplifier kits, power supplies. Octal plug-ins mic. eq. line, disc, tape play, tape record, amplifiers. Audio & tape bias oscillators. Over 50 audio products. Send for free catalog and applications. Opamp Labs Inc. 1033 N. Sycamore Ave. Los Angeles, Calif. 90036. (213) 934-3566.

SYLVANIA LAMPS 50% OFF! Quartz, Projection, Studio, Enlarging, Movie Lamps, in stock for immediate delivery. Write or call for price list. SAWYER CAMERA COMPANY, 6820 Santa Monica Blvd., Hollywood, CAL. 90038. (213) 466-6113.

### EQUIPMENT WANTED

WANTED TO BUY—EQUIPMENT. WWC requires new or used AM guyed tower. 480 feet above base insulator. Contact Peter Marcus. (203) 758-2468 or (201) 944-8817.



## EQUIPMENT WANTED (Cont'd)

WE NEED USED 250, 500, 1KW, 5KW AM Transmitters, 250, 1000 Watt FM transmitters. No junk. Guarantee Radio Supply Corp., 1314 Iturbide St., Laredo, TX, 78040.

## FRANCHISES AVAILABLE

The town of Cairo, in Greene County, New York invites applications for a cable television franchise. Applications should be prepared and submitted in accordance with a "Request for Proposals" available from the undersigned. Applications will be accepted until August 30, 1975 and all applications received will be available for public inspection at the office of the clerk.

Walter Dorpfeld, Cairo Town Clerk  
Box 25, Aera, N.Y. 12405  
Telephone: (518) 622-3120

## SERVICES

### RCA Microphone Repair and Reconditioning Service

Restore your RCA Broadcast Microphones to original performance specifications. Complete rebuilding service like-new condition. For details and pricing, write Technical Services, RCA, Bldg. 2-8, Camden, N.J. 08102.

## INSTRUCTIONS

First phone through tape recorded lessons at home plus one week personal instruction in Washington, D.C., Atlanta, Boston, Detroit, New Orleans, Minneapolis, Seattle, Denver, Portland, Los Angeles. Proven results. Our 17th year teaching FCC license courses. Bob Johnson Broadcast License Training, 1060D Duncan, Manhattan Beach, Calif. 90266. 213-379-4461.

# WGAL-TV SAYS... NOW THERE'S A BETTER WAY

WGAL-TV... Lancaster, Pa. has joined the new, total in-house "Better Way" of Cox Data Systems. It's their very own system and they join these other Cox Data Systems users:

- WTVT - Tampa, Fla.
- KSD - St. Louis, Mo.
- WHAS - Louisville, Ky.
- WIBC - Pittsburgh, Pa.
- WHIO - Dayton, Ohio
- WSOC - Charlotte, N.C.
- WSB - Atlanta, Ga.
- KTVU - San Francisco, Ca.

For more information about THE BETTER WAY of Computerized handling of availabilities, orders, traffic and accounting for your station ...  
Call Ron Jones at (404) 897-7384.

COX DATA SYSTEMS



Circle 144 on Reader Service Card

## WORLD'S BEST STEREO GENERATOR WILKINSON ELECTRONICS SG1E

### POSITIVE PROOF

- \* 60 db separation ..... 50 Hz-7500 Hz
- \* 55 db separation ..... 7500 Hz-10000 Hz
- \* 50 db separation ..... 10 KHz 15 KHz
- \* FM Noise - 75 db ..... Cross Talk - 60 db



COMES COMPLETE WITH POWER SUPPLY  
REQUIRES ONLY 3½" RACK SPACE  
ONLY ONE FRONT PANEL ADJUSTMENT  
REMOTE STEREO ON/OFF FUNCTION

## WORLD'S BEST FM EXCITER WILKINSON ELECTRONICS FME10

### POSITIVE PROOF

- \* Frequency response  $\pm 1/4$  DB 15 HZ-350 KHz.
- \* FM Noise Level - 70 DB below 100% Mod.
- \* Distortion - 0.3%
- \* Modulation - Direct FM
- \* Power Output - Adjustable to 18 watts
- \* Stability 1 part in 100000
- \* Requires no oven and is not susceptible to rumble and microphonics



FCC TYPE ACCEPTED  
POWER SUPPLY INCLUDED  
REQUIRES 7" VERT. SPACE  
IMMEDIATELY USABLE IN ANY TRANSMITTER  
SHIELDED BY BOTH STEEL & ALUMINUM  
COMPLETELY METERED  
ADJUSTMENT FREE

NO ONE CAN MATCH THIS COMBINATION

# WILKINSON ELECTRONICS, INC.

701 Chestnut St.  
Trainer (Chester) PA. 19013  
Telephone (215) 497-5100

Circle 143 on Reader Service Card

**CLASSIFIED (Cont'd)**

**PROFESSIONAL CARDS**

**COHEN & DIPPEL, P.C.**  
**CONSULTING ENGINEERS**  
 527 Munsey Bldg.  
 (202) 783-0111  
 Washington, D. C. 20004  
*Member AFCEE*

**RALPH E. EVANS ASSOCIATES**  
*Consulting TeleCommunications Engineers*  
 AM-FM-TV-CATV-ITFS  
 3500 North Sherman Boulevard  
 MILWAUKEE, WISCONSIN 53216  
 Phone: (414) 442-4210  
*Member AFCEE*

**Midwest Engineering Associates**  
 Consulting Engineers  
 F.W. Hannel, P.E.  
 BSEE; MSEE  
 7304 N. Oxford, Peoria, Illinois 61614  
 (309) 691-3426

**McCLANATHAN & ASSOCIATES**  
*Consulting Engineers*  
 APPLICATIONS & FIELD ENGINEERING  
 TURNKEY INSTALLATIONS — RADIO & TV  
*Domestic and Foreign*  
 P. O. Box 750  
 PORTLAND, OREGON 97207  
 Phone: 503/246-8080

**PROGRAM SERVICES**

"FREE" CATALOG ... Everything for the Deejay! Custom I.D.'s, Promos, Airchecks, Wildtracks, Books, FCC Tests, Comedy, and more! Write: Command, Box 26348-A San Francisco 94126.

Deejays! New Comedy! 11,000 classified one-line gags, \$10. Catalog FREE! Edmund Orm, 2786-M West Roberts, Fresno, CA. 93705.

**ADVERTISER'S INDEX**

AKAI America Ltd .....	19
Alpha Electronic Services Inc. ....	66
American Data Corp. ....	3
Amperex Electronic Corp. ....	50, 51
Ampro Corporation .....	63
Aristocart .....	61
Asaca Corporation .....	27
BIAS .....	24
Belar Electronics Lab. Inc. ....	66
Berkey Colortran, Inc. ....	61
Broadcast Electronics, Inc. ....	66
Canon, U.S.A., Inc. ....	18, 29
Central Dynamics Ltd. ....	21
Cinema Products Corp. ....	13
Cohu Electronics, Inc. ....	Cov. III
Collins Radio Group, Rockwell Intl. ....	Cov. IV
Computer Image Corp. ....	17
Comrex .....	50
Control Design Corp. ....	37
Cooke Engineering Co. ....	58
Cosmicar Optical Co., Ltd. ....	41
Cox Data Systems .....	65
Datatek, Inc. ....	8
Datatron, Inc. ....	25
Dynair Electronics, Inc. ....	41

Dynasciences Video Products .....	30
ESE .....	60
Eastman Kodak Co. ....	9
Grass Valley Group .....	5
Harris Corp. Broadcast Equipment Div. ....	31
Ikegami Electronics Ind., Inc. ....	11
International Tapetronics Corp. ....	12
McCurdy Radio Industries, Inc. ....	Cov. II
Panasonic .....	22, 23
Paperwork Systems, Inc. ....	20
Potomac Instruments .....	18
RCA Broadcast Systems .....	14, 15
Recortec, Inc. ....	55
Schafer Electronics Corp. ....	28
Shintron Co., Inc. ....	54
Sony Corp. of America .....	7
Spectra Sonics .....	62
Strand Century .....	16
Systems Marketing Corp. ....	43
Television Equip. Associates .....	63
Thomson-CSF, Div. G.T.E. ....	53
Time and Frequency Technology, Inc. ....	63
Telemation, Inc. ....	42
UREI .....	10
Unimedia .....	57
Video Tape Company .....	62
Viscount Industries, Ltd. ....	56
Wilkinson Electronics, Inc. ....	65

**STOP DON'T BUY EBS**

**DON'T SIGN THAT EBS ORDER YET!**

Alpha brings ten years of experience with tone equipment in the two-way radio industry to broadcasting with better performance and a realistic price in EBS two-tone monitor/generator systems.

**NO. 1 IN TONE SIGNALLING**

CIRCLE BINGO NUMBER OR CALL FOR DETAILS



**ALPHA ELECTRONIC SERVICES INC**  
 8431 MONROE AVE., STANTON, CA. 90680  
 714-821-4400

Circle 146 on Reader Service Card

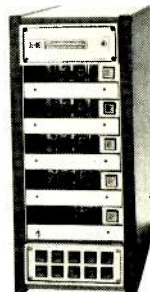
**ask about our new  
am | fm | tv monitors**



*Call or Write ARNO MEYER*  
**BELAR ELECTRONICS LABORATORY, INC.**  
 Lancaster Ave. at Dorset, Devon, Pa. 19333  
 (215) 687-5550

Circle 147 on Reader Service Card

**SPACE SAVERS  
FOR YOUR  
CROWDED  
STUDIO**



- Same built-in performance and reliability as our famous single units.
- 3, 5 or 15 deck units, cabinet or rack mount.
- Mono and stereo with record, switcher, electronic cross fading, sequencer, and remote control options.
- May be incorporated into programmed automation systems.

*Spotmaster*  
 ALSO  
 SINGLE DECK  
 CARTRIDGE  
 MACHINES AND AUDIO  
 CONSOLES

**EBS BROADCAST ELECTRONICS**  
 8810 Brookville Road  
 Silver Spring, Maryland 20910  
 Phone: 301-588-4983

Circle 145 on Reader Service Card

# We don't play the games people play.

PRICE

That's why Cohu puts these seven features on all 1550 telecines at no extra cost. Base price includes them all and gives you a completely operable telecine with nothing else to buy.

**IMAGE ENHANCER**—The Cohu 1550 series cameras provide automatic, two level horizontal and vertical enhancement and adjustable detail coring to ensure clean, crisp pictures with no streaking.

**AUTOMATIC BLACK AND WHITE BALANCE**—Available at the touch of a button, Cohu automatic black and white balance compensates for unequal amounts of color in film.

**INSTANT PAINT**—Cohu's Instant Paint feature allows an operator to manually adjust black and white balance in order to achieve a desired picture quality.

**COLOR ENCODER**—Cohu's color encoder furnishes an encoded color signal that meets all

applicable NTSC, EIA, and FCC specifications plus color bars full or split.

**REMOTE SETUP AND CONTROL PANELS**—Cohu's remote setup and control panels are both dc operated. Controls are provided for the electronic switcher, auto balance, instant paint, sensitivity, and black and white levels, plus provisions for controlling video detail, polarity reversal, test pulse generator circuits, and color encoder.

**THREE SEPARATE MESH VIDICONS**—Unlike other telecines, Cohu's basic price also includes three separate mesh vidicons. Cohu's highly efficient electron beam coated optical system permits vidicon operation with extremely low target voltage extending tube life, and providing excellent signal-to-noise ratio, low dark current for minimum lag, and better gray scale tracking.

**CABLE ASSEMBLIES**—Cohu provides the necessary cables to remotely operate the camera up to a distance of 50 feet. We even include extension test cables and an extender board

for maintenance should it ever be required.

Manufacturers can create the illusion of a low priced telecine by listing as options those items necessary and required for operation, but we don't play the price games people play... the 1550 includes it all. You expect more from Cohu and you get it.

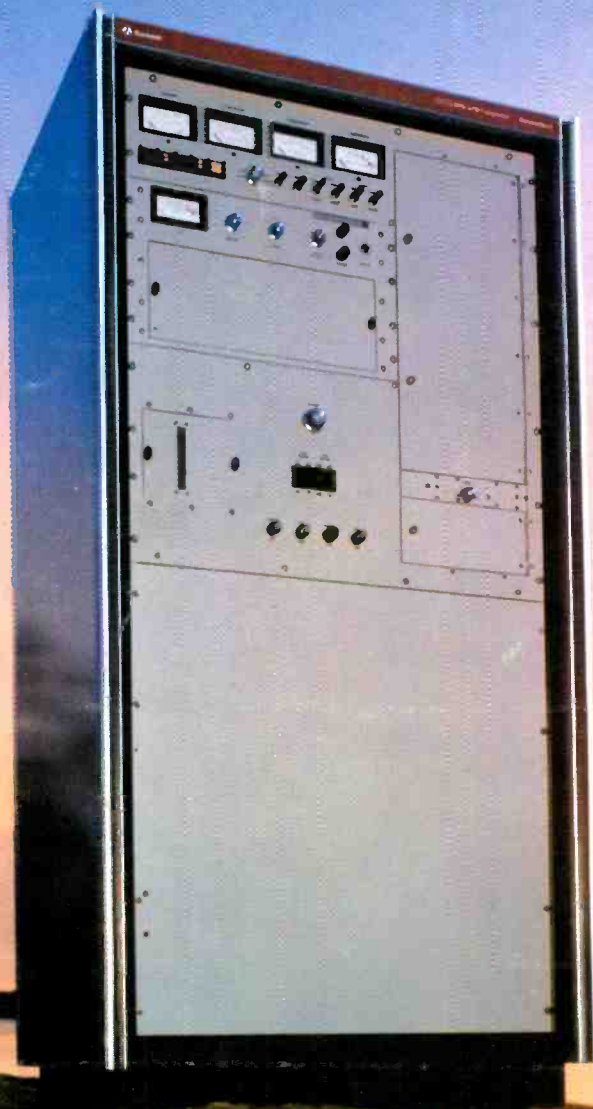
Contact your local Cohu sales office or Cohu, Inc., Electronics Division, P.O. Box 623, San Diego, CA 92112 or telephone (714) 277-6700. TWX 910-335-1244.



**COHU SALES OFFICES:**

**NEW ENGLAND** Bedford, MA 617-275-0370 • **NEW YORK** Florham Park, NJ 201-377-6636 • **WASHINGTON, DC** 301-656-3061  
**PENNSYLVANIA** Wayne, PA 215-688-7325 • **GREAT LAKES** Michigan City, IN 219-874-3333 • **NORTH CENTRAL STATES** Lincoln, NE 402-467-2900 • **SOUTHEAST** Orlando, FL 305-896-4881, Huntsville, AL 205-881-6220, Greensboro, NC 919-273-1918 • **ROCKY MOUNTAIN** Denver, CO 303-573-8835 • **TEXAS** Arlington, TX 817-461-1707 • **CALIFORNIA** San Diego 714-278-8931, Costa Mesa 714-949-5884, Cerritos 213-926-7002, Palo Alto 415-326-0280

# Collins announces the next generation of FM transmitters. The Generation 4 line.



They're here now. Nine new FM transmitters from Collins. Named Generation 4™ because they're a full generation ahead of anything else on the market. And because every feature is the product of 4 decades of Collins broadcast experience.

At the heart of everything is Collins' new, field-proven Phase 4™ Exciter. The best FM exciter available today at any price. Just one part of a system designed to meet the requirements of today's new generation of radio audiophiles with discrete quad compatibility and stringent specifications on all the things that count, like intermod distortion.

Choices? Everything from the big 4C-KW

831H-2, the 22½-KW 831G-2B, and 2½-KW 831D-2, to the 10-watt 831A-2. And five more models in between. And they're available right now at prices that are going to be a pleasant surprise. With the same superior Collins quality you've come to expect. Backed with the same unexcelled 24-hour parts and field service.

Act now, while we're still able to hold our current pricing. Contact your local Collins Broadcast salesman. Or Broadcast Marketing, Collins Radio Group, Rockwell International, Dallas, Texas 75207. Phone 214-690-5574 or 214-690-5219.

